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Review article

Symptom overreporting and dissociative experiences: A qualitative review

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ABSTRACT

We discuss a phenomenon that has received little attention to date in research on dissociative phenomena, namely that self-reports of these phenomena overlap with the tendency to overendorse eccentric items. We review the literature documenting the dissociation-overreporting link and then briefly discuss various interpretations of this link: (1) overreporting is an artifact of measuring dissociative symptoms; (2) dissociative psychopathology engenders overreporting of eccentric symptoms through fantasy proneness or impairments in internal monitoring; (3) an overreporting response style as is evident in malingerers, for example, promotes reports of dissociative symptoms. These three interpretations are not mutually exclusive. Also, the dissociation-overreporting link may have different origins among different samples. Because overreporting may introduce noise in datasets, we need more research specifically aimed at disentangling the dissociation-overreporting link. We suggest various avenues to accomplish this goal.

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Contents

1. Introduction . . . 133
2. Measuring dissociative symptoms . . . 133
   2.1. The dissociative experiences scale (DES) . . . 133
   2.2. The Cambridge depersonalization scale (CDS) . . . 134
3. Symptom overreporting . . . 134
   3.1. Symptom validity tests . . . 135
   3.2. Symptom validity and dissociative symptoms . . . 136
      3.2.1. Correlational studies . . . 136
      3.2.2. Group comparison studies . . . 136
4. Interpretations of the dissociation-overreporting link . . . 138
   4.1. Overreporting as an artifact . . . 138
   4.2. Dissociative pathology leads to overreporting . . . 139
   4.3. Overreporting leads to self-reports of dissociative symptoms . . . 139
5. Implications and future directions . . . 140

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6. Conclusion . . . 141
Acknowledgments . . . 141
References . . . 141

1. Introduction

Dissociative symptoms form a heterogeneous group of subjective phenomena (Holmes et al., 2005) that encompass such diverse experiences as difficulties in retrieving autobiographical memories (i.e., amnesia) and feelings of being an outside observer of one's body (i.e., depersonalization). Dissociative symptoms may range from everyday cognitive lapses (e.g., so-called highway hypnosis) to more pathological symptoms (e.g., confusion about one's identity) and eccentric experiences (e.g., not recognizing oneself in a mirror; Giesbrecht, Lynn, Lilienfeld, & Merckelbach, 2008).

The dominant view in the literature is that dissociative symptoms reflect transient disruptions in memory, perception, and/or consciousness that emanate from adverse life events (e.g., Dalenberg et al., 2012; Spiegel et al., 2011). By this view, dissociative symptoms would enable individuals to distance themselves from the emotional impact of such events (Gershuny & Thayer, 1999). Although there is evidence – primarily correlational in nature – for this interpretation, the wide diversity of subjective experiences that fall into the category of dissociative symptoms implies the possibility of multiple pathways to dissociative symptoms (see also Lynn, Berg, et al., 2012; Lynn, Lilienfeld, Merckelbach, Giesbrecht, & van der Kloet, 2012).

In this article, we consider an arena of investigation that has been largely ignored in the extant literature, namely the tendency of dissociative individuals to overreport eccentric experiences. Our primary focus is on dissociative symptoms across the full spectrum of nonclinical groups and patient samples and as indexed by psychometrically sound assessment tools. We will not present an in-depth analysis of specific Dissociative Disorders such as Dissociative Identity Disorder (DID), because literature on the role of symptom overreporting in these conditions is largely based on case studies and clinical judgment (e.g., Draijer & Boon, 1999).

Thus, in what follows, we briefly review empirical studies that employed validated scales to evaluate the dissociation-overreporting link, consider various interpretations of this association, and discuss the implications of our findings for future research. Before doing so, we turn to how dissociative symptomatology and overreporting are commonly measured.

2. Measuring dissociative symptoms

Because no objective biomarker of dissociative symptomatology exists, research and diagnosis of dissociative experiences and symptoms necessarily depend on self-reports. The Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) and Cambridge Depersonalization Scale (CDS; Sierra & Berrios, 2000) are the most widely used self-report screening measures for dissociative symptoms.

2.1. The dissociative experiences scale (DES)

The 28 items of the DES pertain to a broad range of phenomena, including absorption, amnesia, derealization, and depersonalization. Illustrative items are "Some people have the experience of finding themselves dressed in clothes that they don't remember putting on. Mark the line to show what percentage of the time this happens to you" (item 4) and "Some people have the experience of looking in a mirror and not recognizing themselves. Mark the line to show what percentage of the time this happens to you" (item 11). Participants or patients use 0–100 scales to indicate how often (in percentage of time) they experience these symptoms in daily life. Item scores are averaged to obtain a total DES score that varies between 0 and 100%, with higher values thought to imply more severe pathology. Values above 20 (e.g., Mueller-Pfeiffer et al., 2013) or 30 (Putnam, Carlson, Ross, & Anderson, 1996) are considered to be indicative of clinically relevant dissociation.

There is no consensus regarding the factorial structure of the DES. Authors have reported two-, three-, and even seven-factor solutions (see for reviews: Holmes et al., 2005; Schimmenti, 2016), indicating that the subjective phenomena represented in DES items are heterogeneous and cluster in ways that cannot be replicated on a consistent basis.

Researchers have found that DES scores correlate with eccentric self-reports. For example, Lipsanen, Lauerma, Peltola, and Kallio (1999) observed in their nonclinical sample that reports of visual distortions such as microscopia (i.e., objects appear smaller than normal) and macroscopia (i.e., objects appear larger than normal) are linked to elevated dissociation levels. One might interpret these self-reported distortions as manifestations of severe psychopathology (Allen & Coyne, 1995 Lipsanen, Korkeila, Saarijärvi, & Lauerma, 2003). However, Simeon et al. (1998) noted in their clinical interviews with Depersonalization Disorder (DPD) patients that the patients themselves typically did not relate to or identify with eccentric visual items (e.g., "not recognizing yourself in a mirror") and often referred to them as bizarre or crazy. Admittedly, DPD is one specific type of Dissociative Disorder and it might be the case that patients with other types (e.g., DID) are able to relate to these atypical experiences. Still, the Simeon et al. (1998) findings raise the possibility that self-reports of such eccentric experiences reflect overreporting rather than legitimate psychopathology (see also Merckelbach & van de Ven, 2001).

Pope and Kwapil (2000) reported for their sample of college undergraduates that DES scores correlate positively ($r = 0.44$) with scores on a Magical Ideation Scale measuring beliefs in implausible causality (e.g., the belief that numbers such as 13 or 7 have special powers). Likewise, several studies found that paranormal beliefs and experiences (e.g., psi experiences, precognition) are linked to dissociative symptoms (e.g., Gray & Gallo, 2016; Wilson & French, 2006; Wolfradt, 1997; but see Council, 1993). Johnson, Edman, and Danko (1995) observed that individuals who score high on dissociation more often endorse "bad things" such as "I have been short changed in shops" compared with individuals who score low on dissociation. One could argue that this pattern of findings indicates that dissociative individuals exhibit an extraordinary sensitivity, but a more parsimonious explanation would be that they employ different standards for reporting experiences (see for a similar line of reasoning: Merckelbach, Muris, Horselenberg, & Stougie, 2000).

To construct a measure that taps specifically into the pathological spectrum of dissociation, Waller, Putnam, and Carlson (1996) developed the DES-Taxon (DES-T) that contains eight items from the original DES, which are believed to address pathological dissociation, including derealization, depersonalization, psychogenic amnesia, and identity alteration. Simeon and co-workers (1998) reported that compared with the standard DES, the DES-T is better able to differentiate between patients with DPD and control individuals. For clinical purposes, Simeon et al. (1998) recommended a cut score of 13 for the DES-T.

It is a well-established finding that undergraduates have elevated DES levels. Hacking (1995) speculated that enhanced creativity of this group fosters non-pathological dissociation. If this interpretation were correct, one would expect that undergraduate samples would score relatively low on pathological dissociation, as measured by the DES-T. Nevertheless, Giesbrecht, Smeets, Merckelbach, and Jelicic (2007; see for similar findings: Schimmenti, 2016) found a mean DES-T score of 11 ($SD = 10$) in their student sample, which is not very discrepant from the cut-off of 13 recommended by Simeon et al. (1998). This finding implies that the DES-T is not a pure index of pathology and that it also may be sensitive to overreporting (see also Merritt & You, 2008; Modestin & Erni, 2004).

2.2. The Cambridge depersonalization scale (CDS)

The CDS (Sierra & Berrios, 2000) was specifically designed to screen for subjective manifestations of depersonalization such as out-of-body experiences and lack of agency feelings. An illustrative item is: "Out of the blue, I feel strange, as if I were not real or as if I were cut off from the world" (item 1). The CDS includes 29 symptoms that are rated in terms of frequency and duration over the past six months. Frequency of symptoms is evaluated on a 0–4 scale, and the duration of symptoms is rated on a 1–6 scale. Scores are summed to obtain a total CDS score (range: 29[1]-290). Sierra and Berrios (2000) reported a cut-off of 70 to be optimal in discriminating between individuals with DPD and clinical control persons.

When Sierra and Berrios (2000) set out to develop the CDS, they decided to include items referring to subjective experiences that are not key features of DPD, yet may occasionally accompany it. These items pertain to eccentric visual experiences such as autoscopy (item 15), which refers to the experience of seeing oneself in external space (see also Dening & Berrios, 1994), and feelings of hand or feet enlargement (item 12). Sierra and Berrios (2000) noted that these items have relatively low correlations with the CDS items that address core symptoms of depersonalization. Accordingly, the authors found in their follow-up research that the CDS scores are best described by a multiple-factors solution, although the number and nature of the underlying factors are the subject of discussion (Sierra et al., 2005; Simeon et al., 2008). The likely multifactorial nature of the CDS prompted Sierra and David (2011) to conclude that depersonalization does not refer to one unitary experience, but rather to a clinical composite of several distinct symptoms.

It is important to also consider the manner in which patients or research participants are instructed regarding how to complete the CDS. The introduction to the test states that the CDS "describes strange and funny experiences that normal people may have in their daily life" (Sierra & Berrios, 2000; p. 156). Although this formulation aims to discourage underreporting of depersonalization symptoms, it may, instead, create demand characteristics, thereby increasing the potential for overreporting. Indeed, Hunter, Sierra, and David (2004) commented on the high prevalence rates of depersonalization symptoms in student samples and pointed out that overreporting is a factor to be considered in evaluating high rates of symptoms in this population.

3. Symptom overreporting

Symptom overreporting has been a prominent research topic in neuropsychology for some decades now (see for reviews e.g., Sweet & Guidotti Breting, 2013; Young, 2014). The term symptom overreporting is often used as an equivalent of malingering, but these concepts are actually distinct and describe different levels of explanation (Merten & Merckelbach, 2013a). Malingering refers to the deliberate exaggeration or fabrication of symptoms motivated by external benefits (e.g., compensation money; legal advantages). Malingering is, by definition, a form of symptom overreporting. However, the reverse is not true: People might overreport symptoms for reasons other than obtaining benefits (see Fig. 1). For example, students who are involved as research participants in a lengthy or boring test procedure might complete symptom scales in a quick and care-

[1] Sierra, Baker, Medford, and David (2005) state that the range of the total CDS score is 0–290, but given that the duration aspect of the symptoms is rated on a 1–6 scale, a minimum score of 0 is impossible.

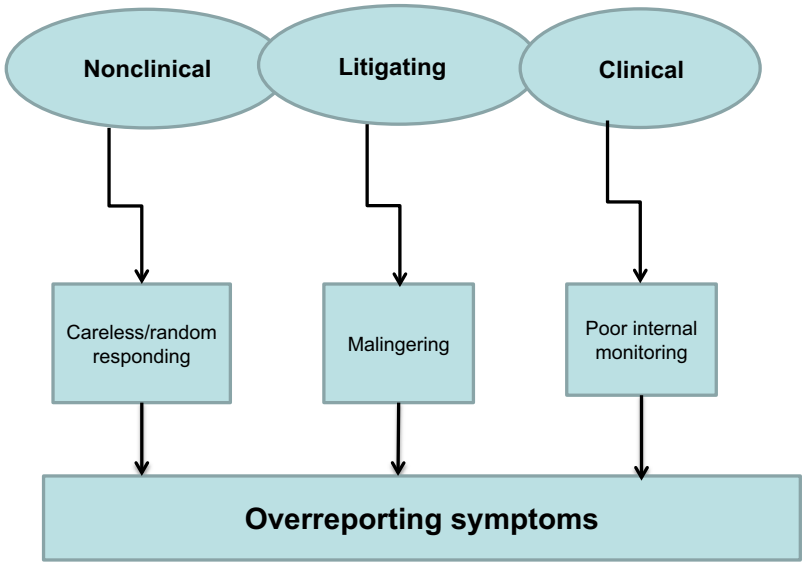

Fig. 1. Factors raising the probability of symptom overreporting in different types of samples.

less way. Careless or random responding may occur at rates of up to 10% of the respondents (e.g., Meade & Craig, 2012) and sometimes at even higher rates (An, Zakzanis, & Joordens, 2012). Importantly, even when occurring at relatively low rates, careless or random responding might compromise the quality of psychometric data, as Meyer, Faust, Faust, Baker, and Cook (2013) found. Suppose an individual responds carelessly by marking midscale positions on the DES or CDS. He or she would obtain mean DES and CDS scores of 50 and 145, respectively, which are well beyond the clinical cut-offs (20/30 and 70, respectively; *cf.* supra). In the absence of validity checks, DES or CDS protocols generated by careless responding, might, at face, appear to be clinical protocols (Giger, Merten, Merckelbach, & Oswald, 2010; Gilbertson et al., 1992).

Whereas careless or random responding might be expected to occur when research participants are asked to complete boring tests, another form of overreporting emerges when patients lack the introspective abilities to determine whether or not they experience certain symptoms. This difficulty in identifying internal sensations is one key aspect of alexithymia, a concept that is related to emotional numbing and anhedonia. Several studies have found that dissociative symptomatology is associated with high scores on scales that specifically assess this aspect of alexithymia. For example, Evren et al. (2008) administered the DES and the Toronto Alexithymia Scale (TAS-20), which encompasses a subscale measuring difficulties in identifying feelings, to alcohol dependent, but detoxified inpatients ($N = 176$). The researchers found a correlation of $r = 0.52$ between the DES and this subscale. Elzinga, Bermond, and van Dyck (2002) administered similar measures to a large group of undergraduates ($N > 800$) and obtained a correlation of $r = 0.46$ between dissociation and difficulties in identifying feelings.

Relative to normal scorers, high alexithymia scorers are less adept in heart beat detection (Herbert, Hberbert, & Pollatos, 2011) and exhibit a relatively poor ability to integrate multiple sensory sensations (e.g., Grynberg & Pollatos, 2015). It is easy to see how poor interoceptive accuracy can contribute to a symptom overreporting style. Ambiguous symptoms are highly prevalent in the general population (Petrie, Faasse, Crichton, & Grey, 2014), and a failure to calibrate their breadth and intensity may lead to an overinclusive bias such that benign sensations are pathologized (see also Aronson, Feldman Barrett, & Quigley, 2006). Indeed, researchers have, without exception, found that difficulty in identifying feelings is associated with heightened symptom reporting (see for a review: De Gucht & Heiser, 2003). There is also evidence for the reverse connection. Kashdan, Elhai, and Frueh (2007) found among veterans diagnosed with Post-traumatic Stress Disorder (PTSD) that those who engaged in symptom overreporting ($n = 30$) scored higher on emotional numbing (Cohen's $d = 0.34$) and anhedonia ($d = 0.47$) than non-overreporters ($n = 197$). Interestingly, Hunter, Salkovskis, and David (2014) observed in their study on symptom attributions that relative to clinical and nonclinical comparison groups, DPD patients tended to give catastrophic interpretations to ambiguous symptoms, believing these symptoms reflected serious mental health problems.

3.1. Symptom validity tests

Researchers have developed several scales – often dubbed symptom validity tests - to directly assess an overreporting response style. Wildman and Wildman (1999), for example, developed a checklist, which addresses implausible symptoms (Wildman & Wildman, 1999). Illustrative items are: "I have headaches that are so severe my feet hurt" and "The buzzing in my ears keeps switching from the left to the right." These and other items from the Wildman & Wildman checklist have been used to gauge the quality of self-reported information in surveys (e.g., Merckelbach, Langeland, de Vries, & Draijer, 2014).

The Structured Inventory of Malingered Symptomatology (SIMS; Widows & Smith, 2005) also covers a wide range of atypical symptoms. It consists of 75 true-false items that describe rare experiences (e.g., "The voices that I hear, have never stopped since they began") that span five domains: amnesia, neurological impairment, psychosis, affective disorders, and low intelligence (see for a review: Van Impelen, Merckelbach, Jelicic, & Merten, 2014).

Another frequently used tool is the Structured Interview of Reported Symptoms (SIRS; Rogers, Bagby, & Dickens, 1992), which is composed of 172 items that are administered verbally to patients or research participants. Some items address symptoms that are so absurd that their endorsement raises the suspicion of feigning. Other SIRS items pertain to realistic symptoms, but endorsing certain combinations of them or endorsing them at extreme intensity levels may signal symptom amplification (see for a review: Green & Rosenfeld, 2011).

The Miller Forensic Assessment of Symptoms Test (M-FAST; Miller, 2001) is also a structured interview, but with its 25 items, it is considerably shorter that the SIRS. The M-FAST was designed to screen for overreporting of psychiatric symptoms and it looks specifically at unusual and extreme symptomatology, rare combinations of symptoms, and unusual symptom course. Scores may vary between 0 and 25 and while Miller (2001) recommended a cut point of 6, other studies suggest that a cut point of 8 may be safer in the sense that it reduces the number of false positives in psychiatric samples (Veazey, Wagner, Hays, & Miller, 2005).

Apart from freestanding symptom validity tools such as the Wildman Checklist, the SIMS, the SIRS, and the M-FAST, a number of validity indices are embedded in widely used clinical measures such as The Personality Assessment Inventory (PAI; Morey, 2007) and the Minnesota Multiphasic Personality Inventory (e.g., MMPI-2; Tellegen & Ben-Porath, 2008). Although the PAI assesses clinical conditions such as psychotic disorders and borderline personality features, it also includes three scales for detecting endorsement of rare symptoms or unlikely combinations of symptoms: The Negative Impression scale (NIM), the Malingering Index (MAL), and Rogers Discriminant Function (RDF). There is some discussion among workers in the field regarding the effectiveness of these indices to detect overreporting, with some authors suggesting that the RDF is successful in laboratory studies in which participants are instructed to behave as malingerers, but fails in studies that include real (i.e., uninstructed) malingerers (Sellbom & Bagby, 2008). Like the PAI, the MMPI-2 is sensitive to a broad spectrum of clinical conditions and also contains several embedded protocol validity indicators (e.g., the "fake bad" – F-scale). An extensive literature is available on the effectiveness of the various MMPI screening indices to detect overreporting (e.g., Wygant & Granacher, 2015).

3.2. Symptom validity and dissociative symptoms

To explore the nature of the link between dissociation and symptom validity, we searched for studies up to the end of 2015 that administered dissociative symptom scales and symptom validity tests to patient groups and/or nonclinical samples. We conducted computer-based searches (Google Scholar; Psycinfo) using combinations of terms (dissociative*, dissociation, overreporting, symptom validity, feigning, and/or malingering) and examined reference lists of relevant articles to locate sources for analysis. To be included, a study had to: use a symptom validity test; use a scale to measure dissociative symptoms or rely on clinical diagnoses of a Dissociative Disorder; rely on samples > $N = 10$; and report sufficient data. We identified 16 relevant studies, six of which were correlational in nature and 10 that relied on group comparisons.

3.2.1. Correlational studies

Table 1 presents an overview of studies that administered dissociation screens along with symptom validity scales and calculated correlations between the two types of instruments. As can be seen, correlations were obtained in different types of samples, with different measures of dissociation and symptom validity tests. The six studies listed involved eight samples with a total N of 652. Of the 14 correlations between dissociative symptoms and symptom validity scores, 10 were > +0.40 and five were > +0.50, indicating that there is a statistically meaningful and robust connection between self-reported dissociative symptomatology and endorsement of rare and/or unlikely symptoms. Stadnik, Brand, and Savoca (2013) and Merckelbach et al. (2015) obtained in their clinical groups findings that deviate from this general pattern. Stadnik et al. (2013) observed a negative correlation between the RDF index of the PAI and the DES, but this might have to do with the poor quality of the RDF as a symptom validity tool (cf. *supra*). Merckelbach et al. (2015) found in their undergraduate samples significant correlations between dissociation and overreporting. Yet, in their group of psychiatric inpatients these associations fell short of significance, probably due to ceilings effects and a small sample size ($N = 21$).

3.2.2. Group comparison studies

One could argue that the correlational studies in Table 1 are of limited value because they did not take into account whether substantial proportions of participants exceeded the cut-offs on the symptom validity tests. According to a strict criterion, overreporting can only be assumed when participants fail a symptom validity test (i.e., exceed a cut-off, e.g., >8 on the M-Fast). Four group comparison studies are therefore particularly relevant, because they compared dissociation scores of individuals who failed or passed symptom validity tests. Smith and Frueh (1996) conducted one of the earliest studies of Vietnam veterans who met the criteria for PTSD ($N = 145$). The researchers created two groups: veterans (apparent exaggerators) with elevated scores on an MMPI-2 index of overreporting (i.e., F-K index) and veterans with scores in the normal range on this index (nonexaggerators). The apparent exaggerators scored significantly higher on the DES compared with the nonexaggerators, with a mean of 54 ($SD = 18.2$), clearly in the clinical range, and 26 ($SD = 14.5$), respectively. Both groups

Table 1
Summary of correlations reported by studies on the dissociation-overreporting link.

Study	Dissociation index		
Allen and Coyne (1995)	**DES**		
N = 98 traumatized inpatients			
F (MMPI-2)	0.48*		
Giesbrecht and Merckelbach (2006)	**DES**		
N = 87 students			
SIMS	0.51*		
Kunst et al. (2011)	**PDEQ-10**		
N = 125 victims			
SIMS	0.41*		
Stadnik et al. (2013)	**DES**		
N = 42 patients with DID or DDNOS			
NIM (PAI)	0.60*		
MAL (PAI)	0.43*		
RDF (PAI)	−0.41*		
Merckelbach et al. (2015)	**DES**	**DES-T**	
Study 1: *N* = 139 students			
Wildman Checklist items (4)	0.55*	0.56*	
Study 2: *N* = 113 students			**CDS**
SIMS			0.45*
Study 3: *N* = 21 psychiatric inpatients	**DES**	**DES-T**	**CDS**
SIMS	0.25	0.28	0.32
Van der Heide and Merckelbach (2016)	**DES**		
Study 3: *N* = 27 inpatients (asylum seekers)			
SIMS	0.79*		
MENT	0.41*		

Note. DES = Dissociative Experiences Scale; F (MMPI-2) = Infrequent symptoms Minnesota Multiphasic Personality Inventory; SIMS = Structured Inventory of Malingered Symptomatology; PDEQ-10 = Peritraumatic Dissociative Experiences Questionnaire; DID = Dissociative Identity Disorder; DDNOS = Dissociative Disorder Not Otherwise Specified; NIM (PAI) = Negative Impression Management Personality Assessment Inventory; MAL = Malingering; RDF = Rogers Discriminant Function; DES-T = DES Taxon; CDS = Cambridge Depersonalization Scale; MENT = Morel Emotional Numbing Test.
* $p < 0.05$.

exhibited similar rates of compensation seeking, which implies that the heightened symptom levels in apparent exaggerators could not be explained in terms of malingering.

In a study of traumatized female outpatients (*N* = 117), Elhai, Klotz Flitter, Gold, and Sellers (2001) administered the MMPI-2 along with clinical measures, including the DES. Next, the authors carried out discriminant analyses to define various clusters (subgroups) of respondents. The subgroup (*n* = 20; 17%) that attained an invalid profile on the F-index of MMPI-2 also had the highest mean DES scores (*M* = 40; *SD* = 17.2); again, clearly in the clinical range. Elhai et al.'s (2001) results suggest a considerable specificity of the dissociation-overreporting link. That is, the authors did also administer depression and other clinical measures to their participants, but it was specifically with regard to the DES that the group with invalid MMPI-2 profiles scored higher than all the other subgroups. In a subsequent study, Elhai, Frueh, Davis, Jacobs, and Hamner (2003) employed a similar strategy in a sample of 113 male veterans diagnosed with PTSD. The cluster with the highest fake bad scores on the MMPI-2 also attained the highest and, once again, clinically significant, DES scores (*M* = 67; *SD* = 17.9).

In a recent study, Constans et al. (2014) administered the M-FAST along with self-report measures of psychopathology – among which the DES – to 124 veterans. The authors compared veterans who exceeded the cut point on the M-FAST (overreporting) with those who did not (non-overreporting) and found that the first group attained the highest scores on the DES. Specifically, overreporters all had a diagnosis of PTSD and their mean DES score was 58.8 (*SD* = 20.3), against 30.2 (*SD* = 15.9) for non-overreporters with PTSD and 28.9 (*SD* = 21.5) for non-overreporters without PTSD. Again, this pattern is suggestive of a specific connection between dissociative symptomatology and overreporting.

Another set of six papers addressed performance on symptom validity tests of people high and low on dissociativity, although it should be added that the topic of symptom overreporting per se was often of secondary interest to the authors of these papers. In Leavitt's study (2001), patients with serious dissociative pathology (*n* = 119) scored higher on the MMPI-2 F-scale than did psychiatric comparison patients (*n* = 97). Likewise, Welburn et al. (2003) compared patients diagnosed with DID (*n* = 12), schizophrenia (*n* = 9), and healthy individuals instructed to feign DID (*n* = 10) and found that patients with schizophrenia had the lowest – i.e., most normalized – F-scale score. Merritt and You (2008) compared MMPI-2 profiles of students low on the DES (*n* = 476), high on the DES (*n* = 111), and high on specifically the DES-T (pathological dissociation; *n* = 90). Dissociative students had higher F-scale scores than low-DES individuals, even though protocols with extreme elevations of F had been eliminated from analysis. Most interestingly, the rate of invalid protocols (F > 90T) was 7% in low-DES students, 14% in students scoring high on the DES, and 29% in students scoring high on the DES-T. The latter proportion approaches the 37% rate of invalid MMPI protocols (F too high) that Allen and Coyne (1995) reported based on their sample of inpatients with trauma-related psychopathology.

Brand, McNary, Loewenstein, Kolos, and Barr (2006) administered the SIRS to 20 DID patients and concluded that in seven cases (35%) patients obtained scores suspicious of symptom exaggeration, which they interpreted as evidence that the SIRS may misclassify DID patients as feigners. Similarly, as part of a larger study, Rogers, Payne, Correa, Gillard, and Ross (2009) administered the SIRS to 37 traumatized patients, most of whom exhibited severe dissociative symptoms: 31% of these patients attained a score that would have justified classification as a feigner, although the authors interpreted this percentage in terms of false positives (misclassification of honest patients as feigners). Finally, Rogers, Gillard, Wooley, and Ross (2011) examined how PTSD patients with (n = 19) or without (n = 21) comorbid DID performed on the validity indices of the PAI. Those diagnosed with PTSD and DID scored considerably higher on the NIM (but not the MAL or RDF) than did patients with PTSD. The authors concluded that the NIM loses much of its accuracy as an overreporting index when it is used in PTSD patients who also suffer from dissociative symptoms.

To summarize, we briefly discussed 10 studies, together involving more than 1420 participants with different backgrounds (PTSD, DID, students) and relying on different symptom validity measures (MMPI, M-FAST, SIRS, PAI). Despite the diversity of the samples and test instruments employed for analyses, the conclusions converge and underline those of the correlational studies (Table 1)—namely, the available evidence supports a robust and specific connection between dissociative symptoms and the overreporting of rare symptoms.

4. Interpretations of the dissociation-overreporting link

It is clear that dissociative symptoms go hand in hand with a tendency to overreport eccentric symptoms. Yet, we might ask why? We have identified three possible interpretations of the dissociation-overreporting link: (1) overreporting is an artifact of measuring dissociative symptoms, (2) dissociative pathology contributes to overreporting, and (3) an overreporting response style or bias engenders elevated levels of self-reported dissociative symptoms. Below, we will consider the merits of these three interpretations.

4.1. Overreporting as an artifact

A technical explanation for the dissociation-overreporting link is that it reflects shared item content. For example, forensic psychologists have noted that giving approximate answers to simple questions (e.g., 2 + 2 = 5) is a red flag for intentional exaggeration (Conroy & Kwartner, 2006; p. 37). Nevertheless, the very same symptom is also considered to be virtually pathognomic for a dissociative condition known as Ganser syndrome (Merckelbach, Peters, Jelicic, Brands, & Smeets, 2006).

A prominent DES item is not recognizing yourself in the mirror (item 11), which in some forensic literature is cited as an indication that the patient or defendant is exaggerating symptoms (e.g., Hall & Poirier, 2011; Van der Heide & Merckelbach, 2016). Moreover, various CDS items allude to experiences that are thought to accompany DPD, but they also appear as unlikely symptoms in the SIMS (Widows & Smith, 2005). Thus, the CDS includes items such as "The flavor of meals no longer gives me a feeling of pleasure or distaste" (item 7), "I have the feeling that my hands or my feet have become larger or smaller" (item 12), "Out of the blue, I find myself not feeling any affection towards my family and close friends" (item 18), and "I cannot feel properly the objects that I touch with my hands for it feels as if it were not me who were touching it" (item 20). These experiences call to mind the following SIMS items: "Food doesn't taste the same as it has in the past" (item 5), "I have noticed that my body changes shape even though my weight stays the same" (item 10), "At times, I've been unable to remember the names or faces of close relatives so that they seem like complete strangers" (item 25), and "Sometimes, I lose all feelings in my hand so that it is as if I have a glove on" (item 1).

Thus, symptom validity tests often include genuine dissociative symptoms, which may inflate correlations between instruments such as CDS and SIMS (e.g., Merckelbach et al., 2015). But can this overlap in item content fully account for the dissociation-overreporting link? We would argue that shared item content is unlikely to be the sole source. For example, dissociative undergraduates also score high on symptom validity screens that are entirely composed of non-existent symptoms (e.g., headaches so severe that feet hurt; Merckelbach et al., 2015). As another example, a considerable proportion of asylum seekers (70%) who report depersonalization symptoms perform below chance levels on a forced-choice task involving identification of basic emotions, which is suggestive of symptom exaggeration (Van der Heide & Merckelbach, 2016).

Related to the issue of shared item content are so-called context effects (e.g., Council, 1993). That is, when dissociation screens and symptom validity tests are presented together, respondents may perceive the two measures to be related because they are administered in the same experimental context. Due to perceived demand characteristics or the wish to maintain a consistent impression, this shared context may promote overendorsement of eccentric items. Germane to this issue is Council's (1993) pioneering work, which showed that dissociative scores and paranormal beliefs intercorrelate when they are measured in the same test context, but not when they are assessed in distinct contexts, as purportedly separate experiments. More recent studies have confirmed that subtleties in the way symptoms scales are administered affect endorsement patterns. For example, a cluster of common symptoms may increase endorsement of subsequently presented rare symptoms (Kwan, Wojck, Miron-shatz, Votruba, & Olivola, 2012; see also Lemons & Lynn, 2016). In effect, participants develop a "yes set" to respond to symptoms, regardless of their content.

4.2. Dissociative pathology leads to overreporting

A popular idea is that symptom overreporting is a "cry for help" (e.g., Allen & Coyne, 1995). This notion, however, is difficult to reconcile with findings that in clinical groups, endorsement of noncredible symptoms predicts a lack of engagement in the therapy process, early termination from treatment, and a failure to cooperate with treatment planning (e.g., Anestis, Finn, Gottfried, Arbisi, & Joiner, 2014; Goedendorp, van der Werf, Bleijenberg, Tummers, & Knoop, 2013; Greene, 1988; Horner, VanKirk, Dismuke, Turner, & Muzzy, 2014). It strains credulity that patients would prematurely terminate treatment if they experienced a strong need for therapeutic attention.

Brand et al. (2006) argued that overreporting is a severity marker, indicating the diverse and serious comorbidity of patients (for a similar position with regard to PTSD, see Brady et al., 2015). Rogers et al. (2012; p. 78) advanced the related traumatogenic hypothesis, according to which "traumatized patients may experience intensified symptoms and impairment that elevate both clinical and validity scales." In a similar vein, Rogers et al. (2009; p. 436) argued that "dissociation also affects clinical presentations with extreme elevations on validity scales", thereby suggesting that the causal pathway goes from trauma and dissociation to overreporting.

Perhaps it does, but researchers who have put forth such accounts have, to date, not articulated a mechanism that could explain *how* trauma and dissociation cause overreporting. We suggest that poor interoceptive monitoring associated with alexithymia might be a candidate mechanism that produces overreporting (Aronson et al., 2006). Thus, given that dissociation measures comprise common manifestations of dissociation (e.g., missing part of a conversation) as well as more eccentric items (e.g., "I have the feeling that my hands or my feet have become larger or smaller") that also appear in symptom validity tests, poor interoceptive monitoring might explain why the connection between dissociation and overreporting emerges. Importantly, the inability to describe inner states is a prominent and recurrent theme in clinical descriptions of dissociative patients (see for an extensive analysis: Sierra & David, 2011).

Alternatively, fantasy proneness might be the lynchpin between dissociation and overreporting. Fantasy proneness is a well-established concomitant of dissociation (Merckelbach, Horselenberg, & Schmidt, 2002; Rauschenberger & Lynn, 1995), and there are indications that people with this trait tend to overendorse eccentric symptoms (e.g., report hallucinatory illusions when in fact they hear white noise; Merckelbach & van de Ven, 2001). Although few studies have specifically examined fantasy proneness and symptom reporting, researchers have determined that medical students high on fantasy proneness more often develop the medical student syndrome compared with their low fantasy prone counterparts (Candel & Merckelbach, 2003). Also, high fantasy proneness levels are associated with elevated SIMS scores, indicating that fantasy prone people tend to endorse eccentric symptoms (Merckelbach & Smith, 2003). Furthermore, Peace and Masliuk (2011) instructed undergraduates to feign traumatic stress symptoms and found that those who were at baseline high on fantasy proneness more often scored higher on atypical symptoms compared with low fantasy prone students.

Both fantasy proneness and alexithymia are robust correlates of dissociative pathology (Elzinga et al., 2002; Rauschenberger & Lynn, 1995), which in itself is enigmatic because impoverished fantasy is a typical feature of alexithymia. Nevertheless, fantasy-prone individuals may, like individuals with alexithymia, also fail to engage in monitoring of internal sensations, but for a different reason--their attentional resources may be deployed to fulfill the demands of imaginal and fantasy-based activities and preoccupations, thereby detracting from or competing with interoceptive monitoring.

Monitoring failures may extend beyond internal sensations to cognitive and behavioral activity as well. Lynn et al. (2016) elaborated the hypothesis that highly dissociative individuals exhibit fluid and hyperassociative cognitions (Van Heugten-van der Kloet, Merckelbach, & Lynn, 2013), shift attention easily from one task to another (Chiu, Yeh, Huang, Wu, & Chiu, 2009), and display subtle deficits in attentional control and inhibitory functions (Soffer-Dudek, 2014). These characteristics—also likely shared with fantasy-prone individuals--may interfere with interoceptive awareness and promote careless and inconsistent responding to test items, thereby engendering overreporting.

4.3. Overreporting leads to self-reports of dissociative symptoms

If healthy people are instructed to malinger a serious but believable memory problem, they will present with radical symptoms such as amnesia, confusion, and forgetting names of friends (Iverson, 1995). In many ways, these symptoms resemble the amnesia symptoms tapped by the DES. Similarly, when normal subjects are instructed to play the role of a murderer who during interrogation is confronted with abundant evidence of his guilt, their most frequently chosen strategy is to claim dissociative amnesia for the criminal act and to attribute it to an internal force that they cannot control (Spanos, Weekes, & Bertrand, 1986). This, of course, does not imply that dissociative amnesia is always a feigned impairment just as the fact that people are able to simulate a broken leg does not mean that broken legs are a malingered condition. Kopelman (2000) provides a thoughtful overview of the various pathways to dissociative/psychogenic amnesia. One of the key points in his review is that these pathways often include a complex chronology of various interacting factors. For example, a person may gradually recover from severe organic amnesia due to an accident, and meanwhile exacerbate memory impairments as a way to cope with difficult life circumstances.

Why is it that healthy people who are instructed to malinger psychiatric problems exhibit a preference for dissociative symptoms? Based on an analysis of how malingering is portrayed in novels, Kuperman (2006; p. 70) came up with the following observation: "When madness is feigned, the eccentricity of simulation (..) sends a message to observers: 'I'm not myself, so I'm not responsible'." Thus, lay people may have the idea that dissociative symptoms (e.g., amnesia, depersonal-

ization) compromise personal responsibility and in some settings (e.g., in court), this is precisely the impression that people would be motivated to convey.

The probability of malingering is raised when patients are involved in civil or criminal procedures. For example, Elhai et al. (2003) found compensation-seeking veterans to be overrepresented in the cluster with the highest fake bad scores on the MMPI-2 and the highest DES scores. This constellation of responses might point to malingering. Yet, malingering is unlikely to be the only or even the most important factor underlying overreporting. First, the base rate of malingering is estimated to be in the range of 40% ± 10% and some workers in the field have argued that is closer to or even below 15% (e.g., Young, 2015), meaning that the majority of patients involved in litigation or compensation seeking is not malingering.

Second, some studies failed to find any association between compensation seeking status and symptom overreporting (e.g., DeViva & Bloem, 2003; Smith & Frueh, 1996). Third, one recent study (Constans et al., 2014) examined the relation between symptom overreporting and performance on the Modified Stroop Task in veterans with PTSD. Patients with PTSD are reliably slower in color-naming trauma words than patients without PTSD. Constans et al. (2014) reasoned that if overreporting were a sign of malingering, then one would expect it be associated with normal or even faster color-naming of trauma words. In fact, these authors found that veterans with PTSD and an overreporting style exhibited slower color-naming latencies for trauma words than PTSD patients with no such overreporting style. Because color-naming latencies on the Stroop task are difficult to manipulate (Buckley, Galovski, Blanchard, & Hickling, 2003), this pattern of response seems to contradict the idea that overreporting invariably reflects malingering. However, Stroop data do not provide foolproof evidence against a malingering interpretation of overreporting. An important point to consider here is that slower color-naming latencies of certain word categories primarily reflect current concerns. In keeping with this, one could argue that intentionally exaggerating trauma-related symptoms may foster preoccupation with trauma, causing delayed color-naming of words referring to trauma (for empirical evidence, see Cannon, 2003).

Fourth, researchers have also documented the dissociation-overreporting link in student samples (see Table 1). It is difficult to specify exactly what the incentives for intentional overreporting would be in such samples. A more plausible factor here is careless or random responding. Clearly, the assumption that students are always motivated to participate in research and/or that they will exercise optimal test-taking efforts is naïve. Indeed, several studies have documented subgroups of students who intentionally exert poor effort (An et al., 2012) and/or respond carelessly (Meyer et al., 2013) because they are bored or even irritated by the test situation.

Whether malingering or careless responding occur and produce symptom overreporting may entirely depend on the sample characteristics (see Fig. 1). Obviously, the issue of how sample characteristics such as involvement in legal proceedings and involvement in lengthy test procedures may explain the dissociation-overreporting link deserves systematic research.

5. Implications and future directions

The factors hypothesized to mediate or moderate the dissociation-overreporting link are not mutually exclusive. One important issue is the potentially different meaning of this association across student and clinical samples. In patients who are not involved in litigation, symptom overreporting might reflect an integral part of their dissociative pathology. Brady et al. (2015) examined heart rate variability as a predictor of symptom severity in PTSD patients and found that the tendency to overreport eccentric symptom failed to moderate the predictive power of heart rate variability, implying that overreporting in this group was not an indicator of intentional feigning. Likewise, Spadoni, Kosheleva, Buchsbaum, and Simmons (2015) observed in their PET study involving veterans with mild traumatic brain injury that individuals who failed a symptom validity test exhibited decreased brain metabolism in the ventromedial prefrontal cortex, compared with patients who did perform normally on the symptom validity test. This decreased ventromedial prefrontal activity is very different from the increased activity in the prefrontal regions that the majority of fMRI studies on intentional deception found and that is thought to reflect cognitive load due to lying (e.g., Lee et al., 2009). Neither Brady et al. (2015), nor Spadoni et al. (2015) specifically examined dissociative pathology, but their research at a minimum suggests that overreporting might be a non-artifactual feature of patient groups that are known to score high on dissociation. Delineating the mechanisms that underlie the dissociation-overreporting link may shed light on a recurrent theme in the clinical literature, namely that high levels of comorbid dissociative symptomatology are related to poor outcome in several disorders (e.g., borderline personality disorder: Kleindienst et al., 2011; obsessive compulsive disorder: Rufer et al., 2005).

The picture might be different in student samples in which overreporting is most likely to be driven by careless responding. Such responding may artificially raise the base rate of apparent clinically significant cases of dissociation (Merckelbach et al., 2015) and obscure the relations between dissociative symptoms and their potential parameters. Indeed, the practice to relate students' self-reported dissociative symptoms to other measures (e.g., memory performance, physiological arousal) without excluding overreporting may produce contradictory findings. For example, some studies have reported that dissociative undergraduates possess superior working memory capacity (e.g., Veltman et al., 2005), whereas other studies with undergraduates have found no relation between dissociation and working memory or even a negative relation (Brewin, Ma, & Colson, 2012). Accordingly, the cognitive profile of dissociative individuals may become much clearer and more replicable, when researchers check for symptom overreporting and exclude undergraduates who manifest this tendency.

A similar argument can be made for the contradictory literature on dissociation and physiological arousal. Some studies have found that dissociative symptoms in young people accord with lower physiological arousal during stress, supporting the idea that dissociation allows individuals to detach themselves from stressful events (Koopman et al., 2004). In contrast, other authors have reported that hyperarousal fuels dissociative experiences (Sterlini & Bryant, 2002) or that some, but not all, aspects of dissociation are linked to hyperarousal (Giesbrecht et al., 2007). Whether and how dissociativity is related to arousal may become much clearer when researchers identify and exclude research participants who engage in symptom overreporting.

Arguably, when empirically derived patterns of findings survive correction for overreporting, it testifies to their robustness. An example is provided by the link between dissociative symptoms and sleep disturbances (e.g., recurrent dreams, hypnagogic hallucinations), which a number of researchers have documented (see review by Van der Kloet, Merckelbach, Giesbrecht, & Lynn, 2012). The significant and positive correlation between dissociativity and sleep disturbances in undergraduates remains intact, even when it is corrected for participants' scores on the SIMS (Giesbrecht & Merckelbach, 2006; see also Merckelbach et al., 2015), which implies a robust and likely non-artifactual connection. We believe that research on the etiology and correlates of dissociation in nonpatient samples could profit from this type of corrective approach.

It will also be important for researchers to parse out the effects of dissociative symptoms on overreporting from those that are commonly comorbid with dissociative conditions and disorders (e.g., Lynn et al., 2016; Muris, Merckelbach, & Peeters, 2003).

Three types of future studies might prove helpful in clarifying the causal mechanisms underlying the dissociation-overreporting link. First, factor analyzing scores of nonclinical and clinical respondents on dissociation screens, alexithymia scales, fantasy proneness measures, and symptom validity tests might be highly informative, especially when data would be obtained in both single and in separate testing contexts. To minimize the spurious effects of item overlap, it would be essential to employ symptom validity tests (e.g., forced-choice performance tasks; Merten & Merckelbach, 2013b) that do not refer in any way to symptoms that may be construed as dissociative experiences. With this approach, it is possible to test whether dissociation, fantasy proneness, alexithymia, and symptom validity failure cluster differentially in nonclinical and clinical samples and whether context effects emerge (see Lemons & Lynn, 2016).

Second, laboratory studies in which dissociative symptoms are induced might shed light on how this may affect performance on interoceptive signal monitoring and symptom validity screens. For example, when participants gaze at their face in the mirror, it reliably induces a dissociative reaction (Brewin et al., 2012). Does such a reaction produce poor interoceptive monitoring and overreporting on a subsequently administered symptom validity test?

Third, as was pointed out more than a decade ago by Jureidini (2004), in light of the enormous symptomatic diversity that is subsumed under the definition of dissociation, it is highly unlikely that dissociation refers to a single unified process or marker. Therefore, this domain of research would greatly benefit from the network analysis techniques described by Borsboom and Cramer (2013). The crux of their innovative approach is that it focuses on symptoms and how they are causally connected, rather than on latent and not identifiable disease entities (e.g., "pathological dissociation") that might produce such symptoms. To build such networks of symptoms and to identify symptoms that may act as causal agents (e.g., a hypothetical candidate in the current context would be poor interoceptive monitoring) that shift the symptom constellation from one stage (e.g., core dissociative symptoms) to the other (e.g., core dissociative symptoms and eccentric symptoms), longitudinal data collection is necessary.

6. Conclusion

Our review provides evidence that the dissociation-overreporting link is robust and specific. Nevertheless, it also makes plain that a dearth of research exists clarifying to what extent symptom overreporting is a cause, consequence, and/or artifact of dissociation. We contend that conducting research along the lines delineated above may help to understand the dissociation-overreporting link and ultimately help therapists to focus on the most crucial, treatment relevant symptoms of dissociative patients.

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