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Alexithymia as a potential source of symptom over-reporting: An exploratory study in forensic patients and non-forensic participants

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The traditional interpretation of symptom over-reporting is that it indicates malingering. We explored a different perspective, namely that over-reporting of eccentric symptoms is related to deficits in articulating internal experiences (i.e., alexithymia). Given that alexithymia has been linked to sleep problems and that fatigue may fuel inattentive responding to symptom lists, we administered measures of alexithymia (TAS-20) and symptom over-reporting (SIMS), but also sleep quality (SLEEP-50) to forensic psychiatric outpatients (n = 40) and non-forensic participants (n = 40). Forensic patients scored significantly higher on all three indices than non-forensic participants. In the total sample as well as in subsamples, over-reporting correlated positively and significantly with alexithymia, with rs being in the 0.50–0.65 range. Sleep problems were also related to over-reporting, but in the full sample and in the forensic subsample, alexithymia predicted variance in over-reporting over and above sleep problems. Although our study is cross-sectional in nature, its results indicate that alexithymia as a potential source of over-reporting merits systematic research.

Key words: Alexithymia, malingering, symptom over-reporting, forensic sample, sleep.

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INTRODUCTION

The endorsement of atypical or even bizarre symptoms is known as symptom over-reporting. Research on symptom over-reporting is booming (see for reviews Bass & Halligan, 2014; Sweet & Breting, 2013; Tracy & Rix, 2017). The dominant conceptual framework for addressing this phenomenon is malingering, that is, the dishonest production of symptoms in order to obtain certain benefits (e.g., obtaining stimulant medication, financial compensation). Symptom over-reporting has been particularly well-studied in forensic settings (e.g., Wygant, Sellbom, Ben-Porath, Stafford, Freeman & Heilbronner, 2007), where the presence of incentives (e.g., financial compensation for injuries; evasion of criminal responsibility) is often so obvious that an interpretation of over-reporting in terms of malingering possesses prima facie plausibility. Indeed, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013) holds that the forensic setting itself is a red flag for malingering (but see Niesten, Nentjes, Merckelbach & Bernstein, 2015).

Many researchers found that the presence of incentives may motivate symptom over-reporting (e.g., Frueh, Hamner, Cahill, Gold & Hamlin, 2000; Merckelbach, Langeland, De Vries & Draijer, 2014), but not every instance of symptom over-reporting is motivated by financial gain or the expectation of other types of benefits (Merten & Merckelbach, 2013; Merckelbach, Boskovic, Pesy, Dalsklev & Lynn, 2017). For instance, inattentive responding might lead to spurious over-endorsement of symptoms on standard clinical scales (Cook, Faust, Meyer & Faust, 2016; Ziegler, 2015). Inattentive responding to symptom lists may occur when participants are sleepy, tired or bored and fail to carefully read questionnaire instructions and items. Meade and Craig (2012) observed that around 10% of participants completing a lengthy test battery can be identified as inattentive responders.

In the current study, we explored yet another factor that might be involved in symptom over-reporting, but that has received little or no attention so far. Specifically, we were interested in alexithymia, a trait that refers to having difficulties in articulating internal sensations coupled with an orientation towards the external world (Bagby, Parker & Taylor, 1994). In its most radical form, alexithymia can be viewed as an emotion processing deficit and it is therefore not surprising that raised levels of alexithymia have been observed in various psychiatric conditions, including personality disorders (e.g., Lysaker, George, Chaudoin–Patzoldt *et al*., 2017) and mood and anxiety disorders (Hiirola, Pirkola, Karukivi *et al*., 2017).

Indirect evidence suggestive of a link between alexithymia and over-reporting comes from three sources. First, a review by De Gucht and Heiser (2003) concluded that alexithymia is associated with heightened levels of somatic symptom reporting. More recent studies have confirmed that both in patient samples (e.g., Porcelli, Guidi, Sirri *et al*., 2013) and in undergraduate samples (e.g., female students: Bogaerts, Rayen, Lavrysen *et al*., 2015; male and female students: Wearden, Lamberton, Crook & Walsh, 2005), alexithymia is intrinsically related to a tendency to (mis) label psychological distress as physical symptoms. However, in these studies the focus was on plausible symptoms rather than on the eccentric symptoms that are commonly listed by psychometric tools intended to detect "malingering."

Second, Kashdan, Elhai and Frueh (2007) found among veterans diagnosed with post-traumatic stress disorder that those who engaged in symptom over-reporting (n = 30) scored higher

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on emotional numbing (Cohen's d = 0.34) and anhedonia (d = 0.47) than patients who did not over-report symptoms (n = 197). Emotional numbing and anhedonia are conceptual neighbors of alexithymia (see, for empirical evidence, e.g., Badura, 2003; Gooding & Tallent, 2003). Third, Brady, Bujarski, Feldner and Pyne (2017) observed in veterans with post-traumatic stress disorder (N = 75) that heightened alexithymia scores were accompanied by self-reports of rare symptoms (r = 0.49, $p < 0.01$).

In sum, the extant literature on alexithymia and increased symptom reporting indicates that people with alexithymia tend to misattribute normal arousal to symptoms (Grynberg, Davydov, Vermeulen & Luminet, 2012; Taylor, Bagby & Parker, 1991). Does alexithymia encourage inaccurate symptom reporting to such a degree that it is related to over-endorsement of bizarre symptoms on "malinger" tests? This is the central question that we sought to answer. However, if alexithymia is, indeed, associated with over-reporting of such symptoms, an alternative interpretation of this tendency could be that it is carried by sleep difficulties. Alexithymia is known to correlate with sleep problems such as insomnia and excessive sleepiness (Bauermann, Parker & Taylor, 2008). Some researchers (e.g., Hyyppä, Lindholm, Kronholm & Lehtinen, 1990) have argued that the inability to verbalize internal sensations – as implicated by alexithymia – fosters nocturnal arousal and daytime sleepiness. Daytime sleepiness and fatigue could, in turn, may make people inattentive responders to symptom scales (see, for a discussion of the fatigue hypothesis of inattentive responding: Bowling, Huang, Bragg, Khazon, Liu & Blackmore, 2016).

In the current study, we measured over-reporting of eccentric symptoms, alexithymia, and sleep problems in forensic psychiatric patients and non-forensic participants. On the basis of previous work, we anticipated that forensic outpatients would score higher on symptom over-reporting (e.g., Niesten *et al*., 2015), alexithymia (Hornsveld & Kraaimaat, 2012), and sleep problems (Kamphuis, Dijk, Spreen & Lancel, 2014) than non-forensic participants. We were specifically interested in whether a connection between alexithymia and over-reporting would emerge in forensic and non-forensic participants and if so, whether it would remain intact when correcting for sleep problems.

We included both non-forensic and forensic participants for two reasons. First, and as said earlier, over-reporting of eccentric symptoms has often been observed in forensic psychiatric samples and the default interpretation of this is that it reflects malingering. However, in some forensic settings, incentives for symptom over-reporting are largely absent. The current study relied on forensic patients who attended a psychiatric outpatient clinic because the court had required them to undergo outpatient treatment as the final part of a penal program or as an alternative punishment. For this category of patients, deliberate symptom over-reporting (i.e., malingering) increases the risk that their compulsory treatment will be prolonged.

Second, we examined the potential link between alexithymia and symptom over-reporting and the extent to which it is carried by sleep problems in a heterogeneous sample of forensic and non-forensic participants because we wanted to avoid restriction-of-range problems.

METHOD

Participants

The patient group consisted of 40 consecutive psychiatric outpatients (36 men, 4 women) who attended the forensic outpatient clinic Radix, Heerlen, the Netherlands. Patients were in their post-trial phase and attended the clinic for a court-ordered treatment because the court had determined that their minor offences (e.g., domestic violence, vandalism, theft) were the result of psychological problems (e.g., substance abuse, impulsivity, autism). Their mean age was 35.1 years (SD = 11.1; range = 19–57). The non-forensic group consisted of 40 participants (22 men, 18 women) who were selected so as to match patients as much as possible in terms of age. Mean age in the non-forensic group was 34.9 years (SD = 14.6, range = 18–59). The groups did not differ with regard to age: $t\,(78) = 0.06$, $p = 0.95$.

Patients were only included if they had good Dutch language proficiency and were excluded when they suffered from acute psychotic symptoms (e.g., hearing voices) that may interfere with reality testing and/or when they were less than four weeks in treatment. Intelligence level, diagnosis, substance use, medication, and description of the offense were extracted from the electronic patient files. In total, 37 patients gave permission to inspect their files. Of these, 63% had an average or above average intelligence quotient (IQ) as measured by the Wechsler adult intelligence scale (Wechsler, 1997). As to Axis I diagnoses, 28% suffered from an addiction problem and 22% had an impulse control disorder. Other diagnoses were: mood disorder (8%), attention deficit hyperactivity disorder (8%), autism (8%), schizophrenia (3%), and post-traumatic stress disorder (3%). As to Axis II diagnoses, 13% was diagnosed with borderline personality disorder. Other diagnoses in this category were: personality disorder not otherwise specified (11%), narcissistic personality (8%), and antisocial personality (5%). A slight majority (58%) did not use any medication. Of those who were prescribed medication (n = 17), 41% was on mirtazapine and 18% on benzodiazepines. The most frequent index crimes for which patients had been convicted were domestic violence (23%), property crimes (15%), and theft or vandalism (13%).

The non-forensic group was a convenience sample recruited through advertisements at local football clubs. Participants were included when their age ranged between 18 and 65 years and when they possessed adequate Dutch language proficiency. There were no specific exclusion criteria. All participants received financial compensation in return for their participation. The study was approved by ethical committee of the Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, the Netherlands (ECP_158_07_11_2015).

Measures and procedure

Symptom over-reporting was measured with items taken from the Structured Inventory of Malingered Symptomatology (SIMS, Smith & Burger, 1997), which lists 75 bizarre and eccentric symptoms such as: "Sometimes when writing a phone number, I notice that the numbers come out backwards even though I don't mean to do it." Typically, SIMS items are presented in a yes/no-format and a cut point of 16 is employed to identify over-

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reporting (Van Impelen, Merckelbach, Jelicic & Merten, 2014). However, as our other measures (see below) relied on non-dichotomous response formats, we decided to have participants evaluate the SIMS symptoms on visual analogue scales (VAS). Thus, participants rated items on 0–100 VASs, with the anchors 0 and 100 defined as "totally not and never true for me" and "totally/very often true for me," respectively. A total over-reporting (0–100) score was calculated by averaging across items. Cronbach's α for this measure across the full sample was 0.84. To make comparisons with previous studies possible, we also counted for each participant the number of SIMS symptoms that were evaluated with at least 40 (as a rough approximation of yes-answers).

Participants also completed the twenty-item Toronto Alexithymia Scale (TAS-20), a self-report measure developed by Bagby, Taylor, and Parker (1994) that taps into three dimensions: difficulty identifying emotions (DIF; e.g., "I am often confused about what emotion I am feeling"*)*, difficulty describing emotions (DDF; e.g., "It is difficult for me to find the right words for my feelings"), and externally oriented thinking (EOT; e.g., "I prefer talking to people about their daily activities rather than their feelings"). The DIF subscale assesses to what extent people experience difficulties in making adequate mental representations of their emotions. The DDF subscale gauges problems in finding words to express affect. The EOT items reflect lack of interest in internal phenomena (e.g., emotions). TAS total and subscale scores have been found to be relatively stable over time (Hiirola *et al*., 2017). Bagby, Taylor, and Parker (1994) summarized evidence as to the effectiveness of these subscales to capture impairments in experiencing and describing emotions. All TAS-20 items are rated on a 5-point-Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Scores are summed to obtain a total TAS-20 score that ranges from 20 to 100, with higher scores indicating higher levels of alexithymia (Cronbach's alpha in the current study = 0.83). Scores that exceed 60 are thought to indicate clinically raised levels of alexithymia.

Sleep complaints were measured with the Dutch version of the SLEEP-50 (Spoormaker, Verbeek, van den Bout & Klip, 2005), a self-report measure that covers several domains such as insomnia, sleepwalking, and nightmares. Its items consist of 50 statements such as "Thoughts go through my head and keep me awake" and "I feel sleepy during the day and struggle to remain alert." Statements are rated on a 4-point-scale ranging from 1 (not at all) to 4 (very much). We summed up all items and calculated a mean total score, ranging from 1 to 4. Cronbach's alpha of the SLEEP-50 in the current study was 0.91. We also looked at whether total scores on the impact subscale exceeded 14, a cut-off that has been proposed for the screening of sleep disorders (Spoormaker *et al*., 2005).

When patients were willing to participate, their therapists judged whether they met the inclusion criteria. The second author evaluated whether non-forensic participants met the inclusion criteria. She instructed patients and non-forensic participants briefly about the measures and that it was important to complete them in an honest way. Patients were asked permission to extract information (e.g., diagnosis, IQ, medication use, index offense) from their files. Then, informed consent was signed and all participants completed the measures. After that, they were given a pilot version of a Rubber Hand Illusion task, which will not be considered here. Finally, participants were asked what they thought about the questionnaires and the purpose of the study, after which they were thanked for their participation.

RESULTS

Table 1 shows the mean scores of the two groups on over-reporting, TAS-20, and SLEEP-50. Forensic patients scored significantly higher on all three measures than non-forensic participants, all *t*s(78) > 4.13, all *p*s < 0.01, all Cohen's *d*s > 0.90. A categorical approach (i.e., using cutoffs) confirmed this pattern. That is, clinically raised levels of over-reporting, alexithymia, and sleep problems were more prevalent in the forensic than in the non-forensic group, all $\chi 2$s (1) > 6.37, all *p*s < 0.05 (see Table 1).

We next tested whether scores within the forensic group differed as a function of IQ. Thus, we differentiated between patients with below average IQ ($n = 12$) and patients with average or above average IQ ($n = 20$).[1] The two groups had similar scores on over-reporting [$t(30) = 1.04$, $p = 0.30$] and TAS-20, [$t(30) = 0.76$, $p = 0.45$]. However, those with average or above IQ had higher SLEEP-50 scores than those with below average IQ, $t(30) = 2.43$, $p = 0.02$, Cohen's $d = 0.96$. Furthermore, we compared patients who were on medication ($n = 13$) with those who were not on medication ($n = 23$).[2] The two subgroups did not differ significantly in TAS-20 scores, $t(34) = 1.81$, $p = 0.08$. Patients with medication had higher SLEEP-50 scores [$t(34) = 2.81$, $p = 0.01$, Cohen's $d = 0.88$] and engaged more often in over-reporting [$t(34) = 2.76$, $p = 0.01$, Cohen's $d = 0.91$] than those without medication.

There were only three women in the forensic group and so it was impossible to examine possible gender differences with regard to the dependent variables. However, in the non-forensic group we could compare men ($n = 22$) and women ($n = 18$). Men and women did not differ significantly in terms of TAS-20 or SLEEP-50 scores, both *t*s (38) < 1.32, both *p*s > 0.20. Women, however, did exhibit stronger over-reporting tendencies than men, $t(38) = 2.25$, $p = 0.03$, Cohen's $d = 0.70$.

Next, we calculated Pearson product-moment correlations between over-reporting, TAS-20, and SLEEP-50 for both subsamples and across the total sample ($N = 80$). The results are shown in Table 2. As can be seen, TAS-20 and SLEEP-50 correlated positively and significantly with symptom over-reporting and this was evident for the total sample and the

Table 1. *Mean and standard deviations (in parenthesis) for forensic and non-forensic groups on measures*

Measure	Total sample ($N = 80$)	Forensic patients ($n = 40$)	Non-forensic participants ($n = 40$)
Over-reporting (0-100)	11.8 (6.5)	15.5 (6.1)	8.0 (4.6)
. . ..*n* (%) > 16	11 (14%)	11 (28%)	0 (0%)
TAS-20 (20-100)	50.8 (12.2)	56.0 (12.7)	45.7 (9.3)
.. . .*n* (%) > 60	15 (19%)	13 (33%)	2 (5%)
SLEEP-50 (1-4)	1.5 (0.4)	1.7 (0.4)	1.4 (0.3)
. . ..*n* (%) > 14	31 (39%)	21 (53%)	10 (25%)

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Table 2. *Correlations between symptom over-reporting (SIMS), alexithymia (TAS-20), and sleep problems (SLEEP-50) for forensic patients (n = 40), non-forensic participants (n = 40), and total sample (N = 80)*

		Groups	
Pairs	Total sample	Forensic	Non-Forensic
Symptom over-reporting-Alexithymia	.65	.56	.51
Alexithymia-Sleep problems	.69	.56	.71
Sleep problems-Symptom over-reporting	.71	.63	.58

Note: All *p*s < 0.01.

forensic and non-forensic subsamples. To test whether the significant connection between TAS-20 and over-reporting would remain intact when correcting for SLEEP-50, we calculated partial correlations. In the full sample and the forensic subsample, the correlation between TAS-20 and over-reporting remained significant, partial *r*'s being 0.31 (df = 77, p = 0.005) and 0.32 (df = 37, p = 0.045), respectively. For the non-forensic sample, however, the partial correlation fell short of significance: r (37) = 0.17, p = 0.29.

A hierarchical multiple regression analysis performed on full sample data, with over-reporting as the dependent variable and age and gender, TAS-20, and SLEEP-50 as predictors, confirmed the potential of TAS-20 scores to statistically predict over-reporting. Age and gender together predicted 7% of the variance in over-reporting [adjusted R^2 = 0.05, F(2, 77) = 2.94, p = 0.06]. When TAS-20 was added to the equation, it explained an extra 38% [R^2 change = 0.38, F(1,76) = 52.88, p = 0.001]. When SLEEP-50 was added, it accounted for an additional 12% of the variance in over-reporting [R^2 change = 0.12, F(1, 75) = 20.43, p = 0.001]. Standardized beta for TAS-20 dropped from 0.62 (t = 7.27, p = 0.001) to 0.30 (t = 2.85, p = 0.006) when SLEEP-50 entered the model, but remained significant.

The supplemental table gives the correlations between the separate TAS-20 subscales and symptom over-reporting for forensic and non-forensic participants. As can be seen, positive and significant connections with over-reporting emerged for the DIF and DDF, but not for the EOT subscales of the TAS.

DISCUSSION

The main results of this study can be summarized as follows. First, as was expected on the basis of previous research, forensic outpatients scored higher on symptom over-reporting (e.g., Niesten *et al*., 2015), alexithymia (Hornsveld & Kraaimaat, 2012; Manninen, Therman, Suvisaari *et al*., 2011;), and sleep problems (Kamphuis *et al*., 2014) than non-forensic participants. Second, replicating earlier studies (e.g., Bauermann *et al*., 2008), we found alexithymia and sleep problems to be related to each other. The causal mechanism underlying this association remains unclear. It might be that the inability to describe and verbalize internal states as implicated by alexithymia fosters nocturnal arousal and insomnia (Hyyppä *et al*., 1990). Another possibility is that chronic sleep problems disrupt emotion regulation (Kamphuis *et al*., 2014) and alexithymia might be the manifestation of this disruption. Clearly, the causal connection between sleep problems and alexithymia warrants further study.

Third, and most importantly, extending the work of Brady *et al*. (2017), who reported that alexithymia is linked to symptom over-reporting in veterans with post-traumatic stress disorder, we found in both forensic and non-forensic participants that alexithymia was significantly correlated with endorsement of eccentric symptoms. The association between alexithymia and eccentric symptom endorsement might be due to alexithymics' tendency to over-interpret common experiences as highly intense phenomena (e.g., see for the augmenting profile associated with alexithymia: Grynberg *et al*., 2012). The precise mechanisms involved in this tendency are not clear. Our results do suggest, however, that sleep problems cannot fully account for the association between alexithymia and symptom over-reporting. While it is true that tiredness and fatigue may make participants inattentive when they complete questionnaires (Bowling *et al*., 2016) and although we found sleep problems and symptom over-reporting to be connected with each other, our data speak against sleep-related inattentiveness as the sole source of symptom over-reporting. That is, alexithymia was a statistical predictor of symptom over-reporting over and above sleep problems in the full sample and partial correlations suggested that this was also true in the forensic subsample. Perhaps, then, alexithymia and sleep-related inattentiveness operate as two distinct pathways to symptom over-reporting that are differentially present in clinical and non-clinical samples (see also Merckelbach *et al*., 2017). This two-pathway interpretation deserves testing in samples that are matched not only for age, but also for gender and IQ.

Alternatively, one could interpret the correlations between alexithymia, sleep problems, and symptom over-reporting as reflecting a global tendency to exaggerate when filling out self-report scales. This is not a very plausible interpretation because some aspects of alexithymia were unrelated to symptom over-reporting. Specifically, the external orientation factor of alexithymia was *not* correlated with over-reporting, suggesting that a diffuse tendency to exaggerate is unlikely to be the principal driver of the correlations that we observed. Nonetheless, future studies could provide a stronger test of the link between alexithymia and over-reporting when they would measure alexithymia in a way that is not dependent on self-report instruments (e.g., an observer measure of alexithymia: Haviland, Warren & Riggs, 2000).

Several limitations of our study deserve comment. One point is that women were underrepresented in our sample, especially in the forensic subsample. Furthermore, the groups were not matched for IQ and we did not rule out psychopathology in the non-forensic participants. Although we may safely assume that psychopathology was more pronounced in the forensic than in the non-forensic participants, our sample size was too small to examine how various levels and types of psychopathology (e.g., negative affectivity; Van den Bergh & Walentynowicz, 2016) interacted with alexithymia and contributed to symptom over-reporting. Most importantly, our study was cross-sectional in nature, which precludes causal interpretations of the data. Future studies should preferably rely on samples sizes that make

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structural equation modeling possible so as to evaluate the merits of several causal pathways to symptom over-reporting. Interventions that are focused on reducing alexithymia might provide another avenue for testing causal directions. For example, interoceptive training, affect labeling, and diary methods have all been found to suppress symptom reports in certain patients groups (e.g., patients with medically unexplained symptoms; see, for a review, Van den Bergh & Walentynowicz, 2016). It would be highly informative to examine whether such interventions might weaken symptom over-reporting tendencies in other categories of participants as well. Meanwhile, the causal pathways involved are likely to be complex, as evidenced by our finding that forensic patients who were on medication had more sleep problems, but also more often engaged in over-reporting of eccentric symptoms than patients who had no medication. Clearly, this is another issue that is worthy of further investigation.

In sum, we found evidence for a link between alexithymia and over-reporting of eccentric symptoms. There were no obvious incentives for our participants to endorse such symptoms. What our data suggest, then, is that over-reporting might reflect other features than just malingering and that clinicians should therefore be cautious in framing over-reporting in terms of malingering (see also Merten & Merckelbach, 2013). Also, during psychodiagnostic assessments, it might be informative to consider alexithymia as a contributing factor to over-reporting.

NOTES

[1] In total, 37 patients gave permission to inspect their files. Information as to IQ was missing in five files.
[2] Information about medication was missing in one file.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article at the publisher's web site:

Table S1. Pearson product-moment correlations between over-reporting, difficulty identifying emotions (TAS-DIF), difficulty describing emotions (TAS-DDF), externally oriented thinking (TAS-EOT), and SLEEP-50

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