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Associations Between Dimensions of Alexithymia and Psychometric Schizotypy in Nonclinical Participants

Frank Larøi, PhD, Martial Van der Linden, PhD,*† and André Aleman, PhD‡*

Abstract: The goal of the following study was to examine the association between alexithymia and various aspects of psychometric schizotypy in nonclinical participants. One hundred and seven participants completed the Launay-Slade Hallucinations Scale, the 21-item version of the Peters et al. Delusions Inventory, the Schizotypal Personality Questionnaire, and the Bermond-Vorst Alexithymia Questionnaire. There was found an association between interpersonal schizotypy and difficulties verbalizing and identifying emotions. Hallucination-proneness was associated with higher levels of fantasizing and emotionalizing. Finally, delusion-proneness was associated with difficulties identifying emotions, and with higher levels of fantasizing and emotionalizing. These findings suggest that alexithymia dimensions are differentially associated with psychometric schizotypy. In particular, symptoms such as hallucinations and delusions seem to be related to elevated levels of emotionalizing, whereas interpersonal schizotypy is related to difficulty verbalizing and identifying emotions.

Key Words: Alexithymia, schizotypy, hallucinations, delusions, emotionalizing, fantasizing.

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Emotional dysfunction in schizophrenia may involve a wide variety of aspects such as dysfunctions in emotional expression, emotional perception or recognition, and emotional experience (i.e., a surplus of emotional experience) (Aleman and Kahn, 2005). One example of deficits in emotional expression may involve verbal expression such as alexithymia, a term first introduced by Nemiah and Sifneos (1970) that signifies the difficulty in recognizing, identifying, and describing one's own emotions. A number of studies suggest a relation between alexithymia and schizophrenia (Cedro et al., 2001; Nkam et al., 1997; Stanghellini and Ricca, 1995; van't Wout et al., 2007), and between alexithymia and psychometric schizotypy in nonclinical participants (van't Wout et al., 2004). Furthermore, alexithymia has been shown to be differentially associated with dimensions of symptoms. Studies have shown that nonparanoid symptomatology, compared with paranoid symptomatology, is related to greater levels of alexithymia (Stanghellini and Ricca, 1995), and that paranoid patients have higher levels of alexithymia when compared with healthy controls (Cedro et al., 2001). Negative symptomatology has been found to be associated with alexithymia (Nkam et al., 1997; van't Wout et al., 2007; van't Wout et al., 2004). Finally, an inverse relation between hallucinations and the emotionalizing dimension of alexithymia has been observed in nonclinical participants (van't Wout et al., 2004), and an inverse relation between hallucinations and alexithymia has also been reported in nondeficit schizophrenia (Nkam et al., 1997).

However, there are some difficulties with the studies completed to date. Most importantly, relations between symptom dimensions and alexithymia have not been directly examined. For example, in Cedro et al. (2001), a group of schizophrenic patients with paranoid symptomatology were compared with normal controls, but no comparison groups (e.g., nonparanoid patients) were included. Furthermore, those studies that have directly examined symptom dimensions (e.g., positive vs. negative symptoms) have not done so in an optimal manner. For instance, in Stanghellini and Ricca (1995) it is not clear which positive and/or negative symptoms the 2 patient groups (paranoid and nonparanoid) actually had. Finally, a limitation in van't Wout et al., (2004) is that correlations between symptom dimensions (based on a measure of psychometric schizotypy) and alexithymia were computed on a group of (nonclinical) participants consisting of the highest and lowest scoring participants on a measure of hallucination-proneness, which were thus not continuously distributed.

Although studies have shown that schizophrenia and schizotypy is associated with alexithymia, the important issue concerning relations between symptom dimensions and alexithymia remains poorly understood. It is important to better clarify this issue as this will allow one to distinguish between patients (i.e., in terms of symptomatology) with difficulties in the verbal expression of emotions and those without such difficulties. Therefore, the aim of the present study was to examine associations between alexithymia and dimensions of psychometric schizotypy. In general terms, we predicted that alexithymia would be differentially affected in schizotypy. More specifically, and based on the literature (see Green, Kern, Braff, and Mintz, 2000 for a review), we predicted that

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scores on subscales assessing interpersonal (or negative) schizotypal signs would be significantly correlated with alexithymia and, in particular, with alexithymia dimensions such as difficulty expressing, identifying, and analyzing emotions. In contrast, the presence of symptoms such as hallucinations and delusions may not be considered as essentially reflecting difficulties in these areas but, rather, might be more closely related to higher levels of emotionalizing. We therefore predicted that hallucination-prone and delusion-prone participants would demonstrate significantly lower scores on the alexithymia dimension assessing difficulty in emotionalizing. Finally, based on studies suggesting an association between hallucination-proneness and fantasizing (van de Ven and Merckelbach, 2003; van't Wout et al., 2004), we also predicted that higher levels of fantasizing would be significantly related to hallucination-proneness.

METHODS

Participants

Participants consisted of 107 nonclinical participants who were approached for their cooperation, which was voluntary and no incentive was offered for participation. An exclusion criterion for all participants was that they were not clinically referred, or had not received a psychiatric or neurological diagnosis in the past 3 years. Average age of participants was 22.2 years ($SD = 2.4$; range = 18–30 years) and average years of education was 13.8 ($SD = 1.3$). Forty-six percent of participants were men, while 54% were women.

Instruments

A revised version (Larøi and Van der Linden, 2005) of the Launay-Slade Hallucinations Scale (LSHS) was administered to assess hallucination-proneness, the 21-item version of the Peters et al. Delusions Inventory (PDI-21; Peters and Garety, 1996) evaluated delusion-proneness, and the Schizotypal Personality Questionnaire (SPQ; Raine, 1991) was administered to assess psychometric schizotypy. For all these questionnaires, participants were explicitly asked not to report experiences when under the influence of alcohol or narcotic substances and were asked to report experiences within the last 5 years.

Alexithymia was assessed with the help of a French adaptation (Zech et al., 1999) of the 40-item Bermond-Vorst Alexithymia Questionnaire (BVAQ; Vorst and Bermond, 2001). The BVAQ consists of 5 subscales. The "emotionalizing" subscale refers to the degree to which someone is emotionally aroused by emotion inducing events; "fantasizing" refers to the degree to which someone is inclined to fantasise, imagine, daydream, etc.; "identifying" refers to the degree to which one is able to define one's arousal states; "analyzing" is the degree to which one seeks out explanations of one's own emotional reactions; and "verbalizing" refers to the degree to which one is able or inclined to describe or communicate about one's own emotional reactions. Each of the subscales consists of 8 items. Half of the questions are positively formulated in reference to the trait and the other half is negatively formulated in reference to the trait. Answers are scored on a 5-point scale (1 = certainly does not apply to me, up to 5 = certainly applies to me), where high scores are an indication for alexithymia. Studies reveal that both the original and the French adaptation of the BVAQ possess adequate psychometric properties (Taylor et al., 2000; Vorst and Bermond, 2001; Zech et al., 1999) and that the BVAQ is highly correlated with the widely-used Toronto Alexithymia Scale (Vorst and Bermond, 2001).

RESULTS

Table 1 presents correlations between the BVAQ and SPQ. The SPQ total score was not significantly correlated with the BVAQ total score. However, the cognitive-perceptual and disorganization subscores of the SPQ were inversely correlated with the BVAQ total score. In contrast, there was a positive correlation between the interpersonal subscore and the total BVAQ score. More specifically, both the cognitive-perceptual and disorganization subscales of the SPQ were inversely correlated with the fantasizing and emotionalizing dimensions of the BVAQ. The interpersonal SPQ subscore was positively correlated with verbalizing and identifying, but was inversely associated with fantasizing.

Table 1 also presents correlations between BVAQ dimensions and the total LSHS score and total PDI-21 score. There were significant negative correlations between the LSHS total score and the fantasizing and emotionalizing dimensions of the BVAQ. That is, lower scores on the

TABLE 1. Correlations Between the Bermond-Vorst Alexithymia Questionnaire (BVAQ), and the Schizotypal Personality Questionnaire (SPQ), the Launay-Slade Hallucinations Scale (LSHS), and the 21-Item Version of the Peters et al. Delusions Inventory (PDI-21)[a]

	SPQ Total Score	SPQ Cognitive-Perceptual	SPQ Interpersonal	SPQ Disorganisation	LSHS	PDI-21
BVAQ total score	−0.07	−0.25**	0.24**	−0.20*	−0.28**	−0.16
Verbalizing	0.18	−0.02	0.44***	0.17	0.00	−0.07
Fantasizing	−0.33**	−0.39***	−0.20*	−0.39***	−0.40***	−0.26**
Identifying	0.26**	0.17	0.29**	0.17	0.14	0.24*
Emotionalising	−0.23*	−0.32***	−0.08	−0.25**	−0.34***	−0.30***
Analysing	−0.14	−0.23**	−0.02	−0.21*	−0.17	−0.09

[a]Means, standard deviations, and Cronbach alphas for all the questionnaires may be obtained upon request from the corresponding author.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

fantasizing and emotionalizing dimensions (indicating higher levels of fantasizing and emotionalizing) were significantly related to higher the scores on the LSHS. In terms of delusion-proneness, there were significant negative correlations between PDI-21 total score and the fantasizing and emotionalizing dimensions of the BVAQ, and there was a significant positive correlation between PDI-21 total score and the identifying dimension of the BVAQ. That is, lower scores on the fantasizing and emotionalizing dimensions (indicating higher levels of fantasizing and emotionalizing) were significantly related to higher scores on the PDI-21. In contrast, higher scores on the identifying dimension (indicating greater difficulty in identifying emotions) were significantly related to higher scores on the PDI-21.

DISCUSSION

In the present study, relations between psychometric schizotypy and alexithymia were investigated. More specifically, we predicted that interpersonal schizotypy would be associated with alexithymia. This hypothesis was confirmed. Alexithymia was found to be significantly correlated with the interpersonal schizotypal subscale. In particular, alexithymia dimensions assessing difficulty verbalizing and identifying emotions were significantly correlated with the interpersonal subscale. We also predicted that hallucination-prone and delusion-prone participants would demonstrate significantly lower scores on the alexithymia dimension assessing difficulty emotionalizing compared with nonprone participants. This second hypothesis was also confirmed. The emotionalizing dimension was significantly associated with both hallucination-proneness and delusion-proneness. That is, the presence of hallucinations and delusions were related to greater sensitivity to emotional arousal. Finally, high levels of fantasizing were associated with both hallucination-proneness and delusion-proneness.

The finding that alexithymia is associated with interpersonal schizotypy replicates previous studies including patients with schizophrenia (Stanghellini and Ricca, 1995; van't Wout et al., 2007) and nonclinical participants (van't Wout et al., 2004). It might be that these emotional handicaps (i.e., difficulty verbalizing, and identifying emotions) represent a developmental pathway to interpersonal (negative) schizotypy. The finding that hallucination-proneness is associated with higher levels of fantasizing is in line with previous reports (van de Ven and Merckelbach, 2003; van't Wout et al., 2004). Delusion-proneness was also associated with increased levels of fantasizing. To the best of our knowledge, this is the first time that such a relation has been examined in the literature. Finally, with regards to findings of increased sensitivity for emotional arousal in hallucinations and delusions, this is compatible with previous reports with hallucination-prone participants (van't Wout et al., 2004), and with studies including schizophrenic patients with hallucinations, (Delespaul, de Vries, and van Os, 2002), and delusions (Myin-Germeys, Delespaul, and de Vries, 2000).

The observed pattern of difficulty identifying emotions and increased emotionalizing and fantasizing in the current study might be related to the proposed distinction between Type I and Type II alexithymia (Bermond, 1997; Larsen, Brand, Bermond, and Hijman, 2003). According to this view, Type I alexithymia is characterized by the absence of the emotional experience (and consequently by the absence of the cognition accompanying the emotion), whereas Type II alexithymia is characterized by a selective deficit of emotional cognition with the sparing of emotional experience. That is, persons with Type II alexithymia consciously experience emotional arousal, however the awareness of emotional arousal is not accompanied with emotional cognition (e.g., difficulty identifying emotions) and may lead to a heightened physiological stress response, such as skin conductance. The pattern of reduced capacity of identifying emotions and increased emotionalizing and fantasizing in the present study may be therefore related to a more Type II alexithymic pattern. This is also in accord with the results reported in van't Wout et al., (2007) where schizophrenia patients had more problems in verbalizing and identifying their emotions than control subjects, whereas they at the same time experienced higher levels of emotional arousal. Evidence suggests a pattern of reduced identifying and increased emotionalizing may correspond to hypoactivation of frontal brain regions involved in cognitive aspects of emotion regulation on the one hand, and hyperactivation of limbic regions involved in emotional arousal, on the other (e.g., Ochsner et al., 2004; Taylor, et al., 2005).

It is important to mention that the present study included a limited sample size (n = 107). Also, other domains such as general psychopathology (e.g., anxiety, dissociation) and trauma were not assessed. To better elucidate relations between alexithymia and psychosis-proneness measures such as those used in the present study, it would prove fruitful for future studies to include such measures. Finally, studies suggest different developmental pathways leading to alexithymia. For instance, some authors have proposed that there is a heritable component to alexithymia (Valera and Berenbaum, 2001) and that early family environment is an important factor to take into account in alexithymia (James and Berenbaum, 1994). Indeed, the heritable component in alexithymia may explain, at least in part, the overlap between alexithymia and schizotypy observed in the present study. These (and other) possible developmental pathways leading to alexithymia warrant investigation in future studies that include both clinical and nonclinical participants.

Although these findings clearly need to be replicated in schizophrenia patients, the clinical implications include the fact that symptom profiles may suggest type and degree of alexithymia in patients. Specifically, individuals with negative symptoms may be more likely to reveal difficulties verbalizing and identifying emotions compared with, for example, individuals expressing a more positive symptomatology (e.g., hallucinations and delusions), where high levels of emotionalizing may be more pertinent. This may furthermore assist clinicians in choosing the most appropriate intervention strategies for patients.

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