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Substance abusers report being more alexithymic than others but do not show emotional processing deficits on a performance measure of alexithymia

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Abstract
Substance abusers report that they have deficits in emotional processing (''alexithymia''; Taylor et al. 1990), but is their actual emotional processing performance actually deficient? The prevalence of self-reported alexithymia in a group of newly abstinent substance abusers ($N = 40$) was 50%, which is considerably higher than that found in normal and psychiatric outpatient samples. However, the actual performance of this group on a task that required them to identify and describe feelings was not significantly different from either a group of university students (after controlling for IQ, age, and gender) or a normal group of adults. In addition, there was no relationship between self-reported and actual emotional processing performance, which is contrary to what has been found in a normal sample. Substance abusers believe they are more alexithymic than others, but do not perform as if they are so.

Keywords: *Alexithymia, level of emotional awareness, emotion regulation*

It has been hypothesized that substance abusers use drugs to help manage unpleasant emotional states, which are experienced as unmanageable because of difficulty in understanding and effectively dealing with those emotions (Taylor et al. 1990). Individuals with alexithymia have difficulty in identifying and describing feelings, difficulty

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in differentiating feelings from bodily sensations, and diminished affect-related fantasy (Sifneos 1972; Taylor and Taylor 1997; Lane et al. 2000).

Emotions often signal a person to engage in emotion regulation, in which cognitive and behavioral processes are used to down-regulate affective states viewed as problematic (Larsen 2000). Alexithymics appear to be less able to recognize their emotion signals and regulate emotions effectively (Taylor et al. 1997; Ciarrochi et al. 2008). They are more likely to misinterpret their emotions as being symptoms of illness (Taylor and Bagby 2004), and are more likely to engage in a wide range of maladaptive regulation strategies such as substance abuse (Taylor 2000).

Several studies have found a relationship between alexithymia and substance abuse, using the Toronto Alexithymia Scale (TAS) or the revised TAS (TAS-20) (Haviland et al. 1988; Taylor et al. 1990; Haviland et al. 1994; Haviland and Reise 1996; Helmers and Mente 1999). Finn et al. (1987) found that sons in families at high risk for alcoholism (i.e., whose fathers were alcoholic, and who had an extensive family history of alcoholism) were more alexithymic than sons in lower risk families or families without any history of alcoholism. Studies have reported the prevalence rates for alexithymia among recently abstinent substance-dependent patients to be 41.7% (Haviland et al. 1994), 50.4% (Haviland et al. 1988), and 50% (Taylor et al. 1990). These rates are higher than the levels of alexithymia found in normal samples (4–18%) and psychiatric comparison group samples (12.5–33%) (Taylor 2000).

This research suggests that people with substance use disorders believe that they are less competent in their ability to process emotions. To what extent do these beliefs relate to actual emotional processing competency? Recent research suggests that people's self-reported emotional competencies may not always be strongly related to their actual emotional competence (Ciarrochi et al. 2001a, 2001b, 2002). For example, adolescents who believe that they are highly competent at perceiving emotions are not actually better than others at perceiving emotions in faces (Ciarrochi et al. 2001a, 2001b). This disassociation between self-report and performance measures may occur for at least two reasons. First, people may not have an accurate understanding of their competencies. Second, self-report and performance measures may appear to be measuring the same construct, but in fact be validly measuring unrelated constructs. For example, self-report measures may assess beliefs about emotional competence, and these beliefs may be just as important in influencing behavior as actual competence (Ciarrochi et al. 2001a, 2001b).

Lane and his colleagues have developed a performance measure of alexithymia (Lane et al. 1990, 1996, 2000), namely, the Levels of Emotional Awareness Scale (LEAS). The LEAS presents people with scenarios involving themselves and another person, and allows them to describe what they and the other person would experience in each scenario. People score low on this scale if they provide descriptions that reflect an undifferentiated experience of emotion with a focus on somatic sensation, rather than on consciously experienced emotions (Lane et al. 2000). The LEAS has been shown to relate to the TAS-20 (Lane et al. 1996, 2000) and to individual differences in cerebral blood flow in the anterior cingulate cortex during the processing of emotional stimuli (Lane et al. 1998). Low emotional awareness has also been associated with a relatively high likelihood that irrelevant moods will bias judgments (Ciarrochi et al. 2003).

The present study investigated whether substance abusers have high rates of alexithymia, as indicated by both a self-report (TAS-20) and a performance-based measure (LEAS). A secondary aim was to examine whether both types of measures were equally influenced by positive and negative mood states (more on the relevance of this later).

Method

Participants and procedure

Participants in the drug treatment sample were 40 residents (28 male, 12 female) who had been admitted voluntarily to one of three alcohol and/or drug residential treatment programs. They had completed a 7–10-day detoxification program prior to being admitted to the residential treatment program, and had been an average of 60.5 days in the residential program. The program provides a reasonably controlled environment. Residents were prohibited from using drugs, had to complete daily duties, and were required to actively participate in all aspects of the program.

Over 90% of the drug treatment sample indicated that they had used alcohol, cannabis, and opiates in the past. Eighty-five percent had used stimulants, 78% had used benzodiazapines and hallucinogens, while 35% indicated they had used inhalants. The subject's mean age was 31 (range = 19–69). Forty-nine percent of the drug treatment sample had not completed high school, and only 12% completed a higher degree at a University or technical college.

We compared our drug treatment sample to a number of pre-existing comparison groups. For self-reported alexithymia, two comparison groups were taken from Taylor (2000), and consisted of a group of normal adults and psychiatric patients not diagnosed with substance dependence. For the performance measure of alexithymia, one comparison group consisted of Barrett et al. (2000) large community sample. We also compared our findings to a nonsubstance-dependent control group, which consisted of 89 (31 males, 58 females) university students who participated in the study to satisfy a course requirement. These participants completed an anonymous assessment procedure, involving the TAS-20, the LEAS, and measures of fluid and crystallized intelligence. Our drug treatment sample also completed these measures, and in addition completed the Positive and Negative Affect Scale (PANAS).

Materials

The LEAS requires the participant to describe his or her anticipated feelings and those of another person in each of 20 vignettes. Highly reliable scoring criteria are used to evaluate the "degree of differentiation and integration of words denoting emotion attributed to self and other. Higher scores reflect greater differentiation in emotion, greater awareness of emotional complexity in self and others, and relative absence of alexithymia" (Lane et al. 1996, p. 205). The internal reliability and inter-rater reliability of this measure was high, $\alpha = 0.89$, $r = 0.99$, respectively (All reported reliabilities are based on responses in the present sample). The validity of the LEAS has been demonstrated in a number of studies, which suggest that the LEAS relates to self-reported alexithymia, to sex, to actual performance on a perception of affect test (Lane et al. 1996), to cerebral blood flow in the anterior cingulate cortex during the processing of emotional stimuli (Lane et al. 1998), and to people's awareness of their own mood states (Ciarrochi et al. 2003).

The TAS-20 is a 20 item, self-report measure which asks subjects to rate their answers on a 5-point Likert scale (strongly disagree (1) to strongly agree (5); $\alpha = 0.81$). The 20 items assess the extent people have difficulty in identifying feelings, difficulty in describing feelings, and externally-oriented thinking. Cutoff scores have been established permitting the categorization of respondents into alexithymic ($\geq$61), intermediate (52–60), and nonalexithymic ($\leq$51) groups (Parker et al. 1998). There is considerable evidence for the

validity of the TAS-20 (Taylor 2000), including research which shows that the TAS-20 relates to an observer rated measure of alexithymia (Bagby et al. 1994).

The PANAS (Watson and Clark 1994) is a reliable and validated measure of positive affect (PA; $\alpha = 0.85$) and negative affect (NA; $\alpha = 0.86$) and consists of 20 words that describe different feelings and emotions, such as ''distressed,'' ''nervous,'' ''hostile,'' ''alert'', and ''excited.'' Subjects indicated the extent that they were feeling each of the emotions during the last 3 weeks. The measure of *crystallized intelligence* (Stankov 1998; $\alpha = 0.68$) consisted of 18 vocabulary items, and the measure of *fluid intelligence* (Stankov 1998; $\alpha = 0.71$) required participants to choose which pattern would best complete each of a series of 11 patterns.

Results

Self-reported alexithymia

An analysis of variance (ANOVA) revealed that within the drug treatment sample men did not differ from women on the TAS-20, $M_{\text{women}} = 62.69$, SD = 12.9 and $M_{\text{men}} = 58.035$, SD = 12.02, $F(1, 39) = 1.28$, $p > 0.1$. Fifty percent (20) of the total group were classified as alexithymic, 22.5% (9) were classified as intermediate, and 27.5% (11) were classified as nonalexithymic. The observed rate of alexithymia was considerably higher than a number of normative groups (Taylor 2000), including samples of normal adults (4.5–18%), all Z's > 5.27, p's < 0.001, and samples of comparison groups of psychiatric patients (12.5–33%), all Z's > 2.80, p's < 0.01.

Alexithymic performance

A General Linear Model (GLM) Univariate ANOVA was used to examine whether the TAS-20 groups (Alexithymic, Intermediate, Nonalexithymic) and gender related to LEAS scores within the drug treatment sample. The analysis indicated that there was no significant relationship between the TAS-20 and the LEAS, $M_{\text{alexith.}} = 59.41$, SE = 2.55, $M_{\text{interm.}} = 60.97$, SE = 3.85, $M_{\text{nonalex.}} = 60.75$, SE = 3.45, $F(2, 36) = 0.08$, $p = 0.92$. Concerning gender, women ($M = 64.96$, SE = 3.33) scored higher than men ($M = 55.8$, SE = 2.15), $F(1, 36) = 5.7$, $p = 0.02$, as has been found in past research (Barrett et al. 2000).

We next evaluated whether the LEAS scores observed for our drug treatment sample were different from those of a large community sample (Barrett et al. 2000). One sample t-tests revealed that the average LEAS score for women was not significantly higher than the average scores of the community sample of adult women ($M = 64.5$, SD = 10.09, $t(11) = 0.04$, $p = 0.97$). Men's mean LEAS scores also did not differ from the community sample of men, ($M = 58.92$, SD = 11.81, $t(27) = -1.5$, $p = 0.15$).

We next compared the drug treatment sample to our college sample. A GLM ANOVA revealed that the drug treatment sample, $M = 58.30$, SE = 1.64, scored significantly lower than the college sample, $M = 67.35$, SE = 1.1, $F(1, 127) = 21.06$, MSE = 107.48, $p < 0.001$. We examined whether this difference held even after controlling for key differences in age, IQ, and gender between our two groups. Age was converted to ranks in order to eliminate extreme skewness. A GLM Analysis of Covariance revealed that there was no significant difference between the groups, $M_{\text{abuse}} = 63.77$, SE = 1.61, $M_{\text{college}} = 64.89$, SE = 0.99, $F(1, 123) = 0.29$, MSE = 72.73, $p = 0.59$, after covarying for the significant effects of

gender, $b = -4.56$, SE $= 1.71$, $t(123) = -4.6$, $p < 0.01$, fluid intelligence, $b = 0.9$, SE $= 0.38$, $t(123) = 2.36$, $p = 0.02$, crystallized intelligence, $b = 1.56$, SE $= 0.29$, $t(123) = 5.31$, $p < 0.001$, and age, $b = -0.08$, SE $= 0.03$, $t(123) = -2.85$, $p < 0.01$. Thus, being younger, female, and more intelligent was associated with scoring higher on the LEAS, and there were no differences between our groups after controlling for these variables.

Alexithymia and affective state

Within the drug treatment sample, high-negative and low-positive affective states were related to self-reported alexithymia on the TAS-20, $r = 0.35$, $r = -0.39$, p's < 0.05, respectively. However, there was no significant relationship between negative and positive affective state and the LEAS, $r = 0.13$, $p = 0.45$, $r = -0.03$, $p = 0.85$, respectively. The mean negative affect of this group, $M = 30.58$, SE $= 8.60$, was considerably higher than that of a university normative sample (Watson et al. 1988), $M = 19.5$, SD $= 7.0$, $t = 7.89$, $p < 0.001$, whereas the mean positive affect ($M = 32.97$, SD $= 7.76$) was not significantly different from that of the university sample ($M = 32.0$, SD $= 7.0$), $t = 0.77$, $p = 0.44$.

Discussion

Substance abusers were more likely than normal adults and psychiatric outpatients to say they had trouble identifying and describing their emotions (on the TAS-20), but showed no actual deficits in identifying and describing emotions (on the LEAS). Substance abusers performed as well on the LEAS as a college student sample, after controlling for age, gender, and IQ, and performed as well as a community adult sample. The observed differences between drug treatment and control groups on the self-report measure were highly statistically reliable, whereas the observed differences on the performance measure did not approach statistical significance. There are at least two potential explanations for this disassociation between self-report and performance.

The negative mood explanation: Negative mood was associated with self-reported alexithymia, which is consistent with what has been found in a normal sample (Haviland et al. 1994). Haviland et al. (1994) have suggested that negative emotional states (i.e., anxiety) may lead to increased alexithymia. Given that our drug treatment sample was experiencing much more negative affect than others, it is possible that the primary reason substance abusers are more alexithymic is because of this increased negative affect. Inconsistent with this view, psychiatric groups that might be expected to experience substantial negative affect (e.g., obsessive compulsive and simple phobia patients) do not report particularly high levels of alexithymia (about 13%; Taylor 2000). Future research should measure self-reported alexithymia and negative mood in both a substance abuse and control group, and then examine whether differences in alexithymia still exist after controlling for the effects of mood.

The inaccurate belief/low-motivation explanation: Substance abusers' self-reports were unrelated to their actual performance, which is inconsistent with a study of normal adults (Lane et al. 1996). This finding suggests that substance abusers' beliefs may be inaccurate. Even so, such beliefs may have a crucial impact on behavior. If people believe that they are not able to deal effectively with their emotions, they may be less motivated to do so. Less motivation may, in turn, lead to more alexithymic behavior. For this explanation

to account for the disassociation between self-report and performance alexithymia, we would have to assume that something about the LEAS task motivated substance abuse participants to perform adequately (relative to our comparison groups). Such motivational factors may include the well-structured nature of the task, or the presence of a researcher.

It is worth speculating on the applied implications of our findings. Substance users do not appear to lack general knowledge about emotions or emotional labels as indicated by average scores on the LEAS. The LEAS focuses on scenarios that are unlikely to be directly relevant to a person's life. In contrast, a deficit on the self-report alexithymia scale, as was observed in our drug treatment sample, indicates a struggle to identify emotions in everyday life. Thus, it may be most effective for interventions to focus on helping users to clarify their feelings in the context of their life, rather than providing users with general information about emotions.

Limitations and future directions

The present research focused on participants that were likely to have been abstinent for at least 10 days. Future research is needed to examine the link between alexithymia and active drug usage. For example, does alexithymia increase when people are using substances? Does it increase when people are withdrawing from a substance? Developmental research with normal populations suggests that alexithymia is an antecedent, rather than a consequence of emotional turmoil (Ciarrochi et al. 2008). Further research is needed to examine if alexithymia is also an antecedent to substance abuse, or a consequence of substance use and related emotional turmoil.

Research is also needed to assess the extent our findings generalize to individuals in other treatment programs for substance abuse. The present research points the way towards a more refined understanding of the relationship between alexithymia and substance use. Additional research is needed to understand why substance abusers show deficits on self-report, but not performance, measures of emotional identification and description. Such research could have an important impact on how substance dependency is treated and prevented. If alexithymia and associated dependency problems are due to negative mood, then substance abusers need to be taught how to manage and reduce negative mood. If, in contrast, the problem is due to inaccurate beliefs and low motivation, then the beliefs need to be changed and motivation increased.

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