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Personality profiles in substance use disorders: Do they differ in clinical symptomatology, personality disorders and coping?

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ABSTRACT

We explored whether it is possible to establish subgroups of patients with a substance use disorder (SUD) based on differences in Behavioral Activation System Reactivity (BAS), Behavioral Inhibition System Reactivity (BIS) and Effortful control (EC). Further, we investigated if the identified subgroups differ on clinical symptoms, personality disorders and coping styles.

Computerized self-report questionnaires were administered to 712 adult patients admitted to a specialized inpatient treatment program for SUDs. Based on cluster analysis we found three clusters: a "Resilient", an "Anxious" and a "Reward Sensitive" cluster. The Anxious cluster showed the highest scores on each of the clinical symptoms, the Resilient cluster consistently displayed the lowest scores, and the Reward-Sensitive cluster generally scored in-between.

1. Introduction

Substance use disorders (SUDs) are highly prevalent psychiatric disorders with often a poor treatment outcome in terms of high drop-out rates and relapses. In the aetiology of SUDs, differences in personality and temperamental factors might be of particular importance (Bijttebier, Beck, Claes, & Vandereycken, 2009) as research highlights the role of impulsivity, especially in the initiation and continuation of SUDs (Dawe & Loxton, 2004; Dom, de Wilde, Hulstijn, & Sabbe, 2007; Stevens et al., 2014). Developing strategies to identify subgroups of patients with SUDs, based upon personality dimensions, could result in more personalized approaches to treatment instead of the commonly used standard treatment programs.

Within this framework, Gray's Reinforcement Sensitivity Theory (Corr & McNaughton, 2012; Gray, 1982; Gray & McNaughton, 2000) can be seen as a suitable conceptual model for operationalizing temperamental factors (in terms of behavioral approach system (BAS) and behavioral inhibition system (BIS) sensitivity) and top-down control in terms of effortful control. The BIS is sensitive to stimuli of punishment, non-reward, and novelty (Corr & McNaughton, 2012). Higher BIS sensitivity results in a higher proneness to anxiety (Carver & White, 1994). The BAS (Corr & McNaughton, 2012) is activated by signals of reward or non-punishment. In terms of individual differences in personality, higher BAS sensitivity is reflected in a higher proneness to engage in approach behavior and to experience positive feelings (Carver & White, 1994; Claes, Vertommen, Smits, & Bijttebier, 2009). Although several studies have reported significantly positive associations between BIS/BAS sensitivity and substance use/abuse, no clear-cut relations can be found between BIS/BAS levels and SUDs.

BAS sensitivity is especially correlated positively with several types of substance abuse (alcohol abuse both in clinical and non-clinical samples (e.g. Franken & Muris, 2006; Grau & Ortet, 1999; Hundt, Kimbrel, Mitchell, & Nelson-Gray, 2008; Johnson, Turner, & Iwata, 2003; Jorm et al., 1999; Kimbrell, Nelson-Gray, & Mitchell, 2007; Knyazev, 2004; Loxton & Dawe, 2007; Loxton, Nguyen, Casey, & Dawe, 2008; O'Connor, Stewart, & Watt, 2009; Pardo & Molinueva, 2007), illicit drug abuse (Franken & Muris, 2006; Hundt et al., 2008; Kimbrell et al., 2007), and tobacco use (O'Connor et al., 2009). BAS sensitivity has emerged as a significant predictor of reactivity to alcohol cues (Kambouropoulos & Staiger, 2001, 2004), cue-elicited craving (Franken, 2002) and positive alcohol expectancies (PAEs) (Wardell, 2012).

The role of BIS sensitivity in SUDs, however, is less clear. Most studies report a negative correlation between BIS sensitivity and alcohol abuse (Franken & Muris, 2006; Kimbrell et al., 2007; Pardo & Molinueva, 2007), illicit drug abuse (Hundt et al., 2008; Kimbrell et al., 2007), and both

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alcohol and drug use (Genovese & Wallace, 2007), or find no association (Jorm et al., 1999; Knyazev, 2004; Loxton et al., 2008; Loxton & Dawe, 2007; O'Connor et al., 2009). However, a few studies showed an association between high BIS and negative urge for alcohol, withdrawal relief craving and high negative affectivity (Heinz et al., 2003; Kambouropoulos & Staiger, 2004; Taylor, Reeves, James, & Bobbadilla, 2006). This may point to negative reinforcement drinking in high BIS individuals, that is, drinking to cope with anxiety and negative affect (Kushner, Sher, Wood, & Wood, 1994; Wardell, 2012). It has to be pointed out that studies exploring the relation between BIS/BAS, thus far, have mostly been performed in non-clinical populations (students). Furthermore, the findings for BIS, especially, are inconsistent.

In addition to BIS/BAS reactivity, the dimension of "effortful control" has recently received much attention in the aetiology of psychopathology. Effortful Control (EC), defined as the ability to regulate temperamental reactivity, is considered to be an important component of top-down regulation (Rothbart, 1989) and clinical research suggests that EC may play an important role in protecting against psychopathology (Rothbart & Sheese, 2007). Several studies examined the role of EC in SUDs in which low EC was related to SUD at all stages of addiction (Cheetham, Allen, Yücel, & Lubman, 2010; Peeters, Oldehinkel, & Vollebergh, 2017). High EC was linked to less substance use (Nigg, Glass, & Wong, 2004) and a lower drinking frequency (Wong & Rowland, 2013). Whereas previous studies have explored the role of either BIS/BAS sensitivity or EC in SUDs separately, the current study combines measures of reactive temperament, particularly Gray's RST, with an investigation of the effortful processes that can modulate reactive tendencies in order to describe different subgroups of adult patients with SUDs. To our knowledge, such a combination has only been reported on in an adolescent sample (Willem et al., 2011; Willem, Bijttebier, & Claes, 2010).

This study aimed to expand the existing literature on BIS/BAS, EC and SUDs. Within a large, clinical sample of Caucasian patients, we explored whether it is possible to establish subgroups of patients based on temperamental factors. We expected to find two clusters of personality profiles: an impulsive/disinhibited group with high reward-sensitivity (high BAS, low BIS) and an anxious/inhibited group (low BAS, high BIS). In both groups we expected to find rather low levels of effortful control, as it is assumed that a high level of self-control (EC) is a protective factor in developing psychopathology (Nigg, 2006; Rothbart & Sheese, 2007). We also explored if the clusters we identified differed in clinical symptomatology, personality disorders and coping styles. As some research suggest a relationship between type of substance use and temperamental/personality factors (e.g. the traits "novelty seeking or sensation seeking" are associated with experimentation and abuse of several substances), whereas indicators of poor self-regulation correspond to the gradient of substance use categories (Conway, Kane, Ball, Poling, & Rounsaville, 2003), we also explored whether there are differences in terms of substance used in the clusters.

2. Methods

2.1. Participants and procedure

The study included 712 consecutive admitted adult Caucasian patients on a specialized, inpatient treatment program for SUDs. Twelve patients were excluded on the basis of multivariate outliers prior to conducting cluster analysis, resulting in a final sample of 700 patients (68.1% males and 31.9% females). Diagnosis of SUD (dependence or abuse) based on DSM-IV-TR criteria (APA, 2000) was made by experienced psychiatrists (ES HP. The mean age of the participants was 45.7 years (SD = 11.25). The computerized self-report questionnaires were administered during the second week of admission (after detoxification) on the addiction ward. All patients signed an informed consent paper and the research was approved by the ethics committee of the hospital.

2.2. Instruments

2.2.1. Behavioral inhibition and activation system scales

The Behavioral Inhibition/Behavioral Activation System Scales (BIS/BAS; Carver & White, 1994) is a self-report questionnaire that consists of 24 items which are rated on a 4-point Likert scale (ranging from 1 = *I totally agree* to 4 = *I totally disagree*). It measures the reactivity of two motivational systems. The BIS responds to cues associated with punishment and non-reward while the BAS reflects sensitivity to reward.

The BIS and BAS total scales demonstrated acceptable internal consistency coefficients in the present sample ($\alpha = 0.76$ and 0.85 respectively).

2.2.2. Effortful control scale

The 19-item Effortful Control (EC) Scale of the Adult Temperament Questionnaire Short-Form (Rothbart, Ahadi, & Evans, 2000) was used to measure self-regulatory capacity. Participants rated their general capacity to exert behavioral and attentional control on a 7-point Likert scale. The EC total score demonstrated acceptable internal consistency in the present sample ($\alpha = 0.80$).

2.2.3. Symptom-checklist-90-revised

The Symptom checklist-90-Revised (SCL-90-R, Arindell & Ettema, 2003, Dutch version), is a questionnaire that assesses severity of psychological symptoms of depression (DEP), anxiety (ANX), agoraphobia (AGO), somatization (SOM), insufficiency of thought and behaviour (IN), hostility (HOS), sleeping problems (SLE), distrust and interpersonal sensitivity (DIS). Patients are asked to rate the 90 items on a five-point Likert scale. The internal consistency, test-retest reliability and convergent validity of this measure in adult psychiatric outpatients is supported by previous research (Arindell, Boonsma, Ettema, & Stewart, 2004).

In the present study the Cronbach's alphas are the following: DEP = 0.93, ANX = 0.91, AGO = 0.85, SOM = 0.84, IN = 0.91, HOS = 0.77, SLE = 0.80, DIS = 0.87, representing acceptable internal consistency.

2.2.4. Assessment of DSM-IV personality disorders

The Assessment of DSM-IV Personality Disorders (ADP-IV, Schotte & De Doncker, 1996), a 94-item Dutch self-report questionnaire, assesses the PDs criteria of the 10 personality disorders, described in the DSM-IV-TR (American Psychiatric Association, 2000). Items on the ADP-IV are first rated on the typicality of the trait to the respondent (1 = *totally not*, 7 = *totally true*). For items that are rated as applicable at a moderate or higher level (trait score > 5), the participant also has to rate the distress for the participant or his/her environment on a 3-point Distress scale (1 = *totally not*, 3 = *almost always*).

The dimensional scale scores demonstrated marginally acceptable to acceptable internal consistency coefficients in the present sample (ranging from $\alpha = 0.68$ to $\alpha = 0.87$).

2.2.5. Utrecht coping list

The Utrecht Coping List (UCL, Schreurs, van de Willige, Brosschot, Telligen, & Graus, 1993), a self-report questionnaire with 47 items, assesses how people usually react when confronted with stressful situations. The UCL has been found to have satisfactory psychometric properties in a Dutch population.

There are 7 scales to distinguish different coping styles namely active coping (ACT), avoidant coping (AVOI), passive coping (PAS), seeking social support (SOC), reassuring thoughts (REA), expression of emotions (EXP), palliative coping (PAL). The participants must rate their answers on a 4 point Likert scale.

In the present sample the Cronbach's alphas are the following: ACT = 0.86, AVOI = 0.73, PAS = 0.80, SOC = 0.86, REA = 0.64, EXP = 0.62, PAL = 0.68.

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