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Cognitive distortions in anorexia nervosa and borderline personality disorder

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ABSTRACT

Thought-shape fusion (TSF) is a cognitive distortion associated with eating disorders (ED). A similar distortion, thought-abandonment fusion (TAbF), is assumed to occur in borderline personality disorder (BPD). In this study the specificity of TSF in participants with anorexia nervosa (AN) and TAbF in participants with BPD was examined. 63 patients completed questionnaires assessing the manifestation of trait-TAbF and trait-TSF, as well as relevant psychopathology. Nonparametric conditional inference trees were used to test for cognitive disorder-specificity. Participants with AN exhibited higher trait-TSF-scores than those with BPD, when participants with BPD and a co-occurring AN were removed. Trait-TSF in participants with AN seemed to be disorder-specific. Participants with BPD and a co-occurring AN had the highest TAbF-scores. The specificity hypothesis could only be partially confirmed for trait-TAbF: while participants with BPD and a co-occurring AN tended to have the highest trait-TAbF scores, high mean values could also be found in participants with AN. The results indicate that TAbF is not specific to BPD, but may also play a role in AN. Both distortions seem to play a role in the maintenance of the respective disorders.

1. Introduction

Cognitive distortions are the erroneous perception or distortion of information in a systematic way which reflect underlying inaccurate beliefs regarding a person, the world and the future (Beck et al., 1979). Cognitive distortions are important factors that contribute to the acquisition and perpetuation of mental disorders, including depression (Beck, 1976), obsessive-compulsive disorder (Shafran et al., 1996; O'Leary et al., 2009), eating disorders (ED, Coelho et al., 2008; Rawal et al., 2010) and borderline personality disorder (BPD; Geiger et al., 2014; Saikaj et al., 2010). Despite differences between these disorders, similar cognitive conditions could contribute to their co-occurrence.

In Fairburn et al.'s (2003) transdiagnostic theory of ED, anorexia nervosa (AN), bulimia nervosa (BN) and the atypical ED share the same distinctive psychopathology and are understood as cognitive problems. In accordance with this model, these ED share the same underlying set of dysfunctional self-worth beliefs and can be grouped together (Fairburn et al., 2003; Shafran and Robinson, 2004; Dudek et al., 2014). One cognitive distortion that pertains to core symptoms of ED is thought-shape fusion (TSF; Shafran et al., 1999, Coelho et al., 2012), which is the conviction that thinking about eating high-calorie food increases the probability of gaining weight. TSF exists on the trait-level (Coelho et al., 2010; Coelho et al., 2015) and can be measured on the Trait-TSF-Scale (Shafran et al., 1999). Individuals with ED have significantly higher trait-TSF values than non-ED individuals (Coelho et al., 2012), whereas ED-severity is positively correlated with the trait-TSF level (Shafran and Robinson, 2004). While TSF is associated with the ED psychopathology, neither significant differences could be found between the TSF-scores of the aforementioned ED subgroups (Jáuregui-Lobera et al., 2012), nor is TSF specific to ED, as it can also be induced in healthy participants (Jáuregui-Lobera et al., 2011; Coelho et al., 2015; Wyssen et al., 2016a).

In BPD, a similar phenomenon regarding the fear of abandonment is suspected and defined as the first BPD criterion in DSM-5 (American Psychiatric Association, 2013): imagined abandonment becomes confused with real abandonment in this yet unexamined cognitive distortion. Cognitive behavioral approaches theorize that dysfunctional underlying assumptions or early maladaptive schemata regarding

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abandonment and loss occur in persons with BPD and promote disorder-related symptoms and behaviors (Young et al., 2003; Baer et al., 2012). BPD patients suffer from the aforementioned cognitive triad (Beck et al., 1979), as well as the expectation of being abandoned (Butler et al., 2002; Arntz et al., 2004). Having experienced real-life abandonment in the past, persons with BPD might overgeneralize these experiences, which in turn affects social functioning (Gutz et al., 2016). Fertuck and Stanley (2006) postulate that the tendency to ascribe negative emotions and intentions to others increases the sensitivity of BPD patients with respect to social stimuli. Thus, both the explicit and implicit negative appraisal of social stimuli can lead the person to perceive rejection or separation. Combined with impaired impulse control, this can lead to dysfunctional, self-destructive behaviors such as self-injury.

While the content of TSF plays a significant, yet not disorder-specific role for ED, TAbF could refer to disorder-specific symptomatology. Like TSF, TAbF also comprises the overvaluation of intrusive thoughts, and the conviction that they have a potential influence on real events. To the best of our knowledge, there are no results regarding the specificity of TAbF and TSF in BPD. While the extreme need for control is an essential characteristic of AN (Fairburn et al., 1999), BPD is especially characterized by impulsivity (Peters et al., 2013). In this study, the manifestation of trait-TSF and trait-TAbF is tested in participants. We hypothesized that participants with AN would exhibit higher levels of trait-TSF than participants with BPD, and that participants with BPD would exhibit higher trait-TAbF-levels than participants with AN.

2. Materials and methods

2.1. Participants

We surveyed the data of 102 adults who consecutively underwent outpatient or inpatient psychotherapeutic treatment between March and July 2013. Participants were recruited at two German clinics for psychosomatic illnesses, and at a university psychotherapy-outpatient department. Inclusion criteria included status as an AN or BPD patient. Screening for either diagnosis was conducted by trained medical specialists and psychological psychotherapists who employed the *Structured Clinical Interview for DSM-IV* (SKID-I; Wittchen et al., 1997). Three participants were excluded due to more than 20% missing values. The remaining sample consisted of 72 participants. As the number of men ($n = 9$) was not sufficient for the examination of sex differences and no significant differences were found when analyzing the sample with or without them, they were removed. For the sake of completeness, the only significant gender result found is described in the result section and a descriptive analyses of the male sample is included (Supplement 1). From the final 63 persons, 31 were diagnosed with AN and 32 with BPD.

2.2. Procedure

This study was approved by the ethics committee at the Technical University of Brunswick. All participants received a packet of materials containing a written information sheet reassuring them of their anonymity, an informed consent statement, and a set of questionnaires. Participation was voluntary. The hypotheses were analyzed in a cross-sectional between-subjects design with two groups, in which the participants independently filled out the questionnaires.

2.3. Measures

Sociodemographic data, general cognitive distortion tendency, and disorder-specific psychopathology were recorded using the following self-assessment questionnaires.

2.3.1. Thought-Shape Fusion Scale (Trait-TSF-Scale, German translation; Munsch and Wyssen, 2012)

The revised version of this scale (Shafran and Robinson, 2004) consists of 36 items with a five-tier scale (from 0 = *not at all,* to 4 = *completely*) for recording the general tendency to be affected by distorted cognitions related to food. The last two items have an open-answer format and are not included in the analysis. The scale is subdivided into the sections TSF-concept and TSF-interpretation. A total score can be formed and high scores indicate a high TSF manifestation. In this study, a validated German translation of the scale equivalent to the English original was employed (Munsch and Wyssen, 2012). The internal consistency values of the original scale was $\alpha = 0.96–0.98$ (Shafran et al., 1999; Coelho et al., 2012).

2.3.2. Thought-Abandonment Fusion Scale (Trait-TAbF-Scale)

This scale consists of eighteen items that were generated analogically to the Trait-TSF-Scale especially for this study. These items refer to the general TAbF-tendency, can be rated on the aforementioned scale and added to build a total score (Supplement 2). The item-to-total correlations are mostly greater than 0.50 and can thus be rated as high (Field, 2009). The internal consistency value of the 17 items, with the removal of item 15, was good (item-to-total-correlations: $0.40 - 0.80$). In a pre-test version, we found good psychometric properties.

2.3.3. Impulsivity and Emotion Dysregulation Scale for Borderline Personality Disorder (IES-27; Kröger and Kosfelder, 2011)

This instrument captures impulsive behavior and experience in the context of BPD. The 27 items of the scale register the frequency of certain behaviors over the last month on a five-tier scale (*0 = not at all,* to *4 = several times a day*). An aggregate value is built by adding each item value (between 0 and 108). Cronbach's α was good to excellent ($0.89 \leq \alpha \leq 0.94$).

2.3.4. Questionnaire on Thoughts and Feelings (FGG-37; Renneberg and Seehausen, 2010)

The FGG-37 is a homogenous, one-dimensional instrument used for capturing BPD-specific core assumptions and action-guiding cognitions, whose extent is described by the mean average of 37 items that are rated on a five-tier Likert scale (*1 = I completely disagree,* to *5 = I completely agree*). Cronbach's α was also excellent ($0.93 \leq \alpha \leq 0.97$).

2.3.5. Symptom Index of the Eating Disorder Inventory-2 (EDI-2; Garner, 1991; German version, Paul and Thiel, 2005)

This self-assessment questionnaire with eleven subscales registers the manifestation of ED-specific psychopathological characteristics. In our study, a symptom-index (EDI-SI) was constructed using only the first three scales. Scale one (*Drive for thinness*) registers the preoccupation with diets, the cognitive fixation on and fear of gaining weight. Scale two (*Bulimia*) captures the tendency to preoccupy oneself on the cognitive and behavioral level with food craving attacks. Scale three (*Body dissatisfaction*) registers dissatisfaction with one's physical form. All items are rated on a six-tier scale. The internal consistency values of the scales in a sample of patients with AN and BN was reported as good ($\alpha \geq 0.88$).

In the present study, internal consistency values were found to be good to excellent and comparable to those reported in previous studies, with Cronbach's $\alpha = 0.98$ for the Trait-TSF-Scale, $\alpha = 0.94$ for the Trait-TAbF-Scale, $\alpha = 0.93$ for the IES-27, $\alpha = 0.96$ for the FGG-37 and $\alpha = 0.95$ for the EDI-SI and subscales.

2.4. Statistical analyses

To compare categorical and dimensional data, we used $\chi 2$- and *t*-statistics, respectively. Nonparametric conditional inference trees (CTrees; Strobl et al., 2009), based on the principle of recursive partitioning, were applied to analyze associations between group affiliation