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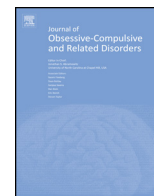
Body focused repetitive behavior disorders and perceived stress: Clinical and cognitive associations

Jon E. Grant [a,*], Eric Leppink [a], Samuel Chamberlain [b,c]

[a] Department of Psychiatry & Behavioral Neuroscience, University of Chicago, Pritzker School of Medicine, Chicago, IL 60637, United States
[b] Department of Psychiatry, University of Cambridge, UK
[c] Cambridge and Peterborough NHS Foundation Trust (CPFT), UK

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ABSTRACT

Background: Hair pulling disorder (trichotillomania) and skin picking disorder are related psychiatric disorders that can be conceptualized as body-focused repetitive behavior disorders (BFRBs). Stress may play a role in the etiology and maintenance of BFRBs, yet the impact of stress on distinct aspects of BRFBs has yet to be clearly delineated.
Methods: 140 participants with BFRBs were recruited and undertook clinical and neurocognitive evaluation. They were grouped according to mild, moderate, or severe levels of perceived stress.
Results: Higher levels of perceived stress during the past month were associated with greater disease severity (Clinical Global Impression, and time spent undertaking the habit per day), greater disability (Sheehan Disability Scale), worse quality of life, and elevated rates of psychiatric comorbidity. Cognitive function (set-shifting and response inhibition) appeared to have no association with stress level.
Conclusions: These results indicate that levels of perceived stress have a strong association with the clinical presentation of BRFBs, even in the absence of confounding differences in demographic features. The lack of association between stress and cognitive dysfunction may support the utility of these selected cognitive measures (set-shifting and response inhibition) as vulnerability (or trait) markers, rather than being directly related to symptom severity or current stress.

1. Introduction

Trichotillomania (hair pulling disorder) is an often debilitating psychiatric condition characterized by recurrent pulling out of one's own hair, leading to hair loss and marked functional impairment (Christenson, Mackenzie, & Mitchell, 1991; Woods et al., 2006). Skin picking (Excoriation) disorder, also referred to as dermatillomania, is characterized by the repetitive and compulsive picking of skin which causes tissue damage (Grant et al., 2012). Trichotillomania and skin-picking appear to have substantial clinical and possibly even neurobiological similarities, and based on available evidence, have been described as body-focused repetitive behavior disorders (BFRBs) (Grant & Stein, 2014). Although both have been discussed in the medical literature for over a century (Chamberlain, Odlaug, Boulougouris, Fineberg, & Grant, 2009; Odlaug & Grant, 2012), and have recently been grouped together in DSM-5 (APA, 2013),

trichotillomania and skin picking have received scant research attention to date.

Although both trichotillomania and skin picking may seem like simple behaviors, research has demonstrated that BFRBs are complex, highly individualistic disorders (Mansueto & Rogers, 2012). The clinical utility of identifying potential subtypes of BFRBs, therefore, has been examined in the literature, including focused vs. automatic behaviors (Christenson & Mansueto, 1999), early vs. late age at onset (du Toit, van Kradenburg, Niehaus, & Stein, 2001; Lochner, Seedat, & Stein, 2010; Odlaug & Grant, 2007), and comorbidity patterns (Snorrason, Belleau, & Woods, 2012). Understanding of the neuropsychological and emotional factors driving BFRBs, and how these factors differ between individuals, may be important in order to identify potentially clinically useful subtypes, improve neurobiological models, and optimize treatment.

Both trichotillomania and skin picking disorder are characterized by either a failure to inhibit certain behaviors or a failure to interrupt the behavior once it is started. Response inhibition, which refers to the ability to suppress responses that would ordinarily be undertaken, has therefore been seen as a suitable measure to investigate the cognitive and neural substrates of these disorders. Response inhibition is commonly measured using two types of task: Go/no-go tasks, and Stop-signal tasks. Although both types of task require the

* Correspondence to: Department of Psychiatry & Behavioral Neuroscience, University of Chicago, Pritzker School of Medicine, 5841S. Maryland Avenue, #MC-3077, Chicago, IL 60637, United States. #Tel.: +1 773 834 1325; fax: +1 773 834 6761.
E-mail address: jongrant@uchicago.edu (J.E. Grant).

subject to stop a response (such as inhibiting the urge to press a button), the latter type of task entails the suppression of an already triggered response and therefore may be behaviorally more sensitive. Research on response inhibition for BFRBs, however, is limited and conflicting. Using the Stop-signal task from the Cambridge Neuropsychological Test Automated Battery (CANTAB), two studies found that trichotillomania patients exhibited impaired inhibitory control compared to healthy controls (Chamberlain, Fineberg, Blackwell, Robbins,& Sahakian, 2006; Odlaug, Chamberlain, Harvanko, & Grant, 2012), while a third found that people with skin picking disorder were impaired vs. controls, but that people with trichotillomania occupied an intermediate position such as that their performance did not differ significantly from either other group (Grant, Odlaug, & Chamberlain, 2011). In a separate study, this time using a Go/no-go task, patients with trichotillomania tended to perform either 'fast and inaccurate' or 'slow and accurate', and earlier age of trichotillomania onset was significantly associated with worse inhibitory control (Bohne, Savage, Deckersbach, Keuthen, & Wilhelm, 2008).

Similarly, the rigid, repetitive behaviors observed in trichotillomania and skin picking disorder could arguably reflect problems with adapting behavior, i.e. with cognitive flexibility. Studies of cognitive flexibility have demonstrated mixed findings in BFRBs depending upon the type of task used. For example, using the CANTAB version of the Intradimensional/Extradimensional Shift Task, developed from the Wisconsin Card Sorting Test, three studies have found that individuals with trichotillomania and skin picking did not evidence deficits in cognitive flexibility (Chamberlain et al., 2006; Odlaug, Chamberlain, & Grant, 2010; Grant et al., 2011). A study examining response flexibility using the Object Alternation Task, which measures different aspects of flexibility, however suggests that individuals with trichotillomania may have difficulties with low-level response flexibility (Bohne, Keuthen, Tuschen-Caffier, & Willhelm, 2005).

The inconsistencies in these cognitive tasks might suggest that instead of being only trait markers they have state dependent features. This may explain why performance on these tasks can in some circumstances be modified by pharmacological treatment (Grant, Odlaug, Schreiber, & Kim, 2014). If this is true, then one could surmise that current (past 30-day) stress may affect the cognitive presentation of these disorders. This could in turn help to account for the heterogeneity seen across studies as they did not assess current levels of stress.

In fact, the occurrence of significant comorbid anxiety or stress symptoms in individuals with BFRBs, and the potential role of stress variables as cues, reinforcers, and maintaining variables for these disorders, has been repeatedly noted (Stein et al., 2008; Flessner et al., 2008). In samples of children with BFRBs, there is a long history of research associating psychosocial stress with the development of BFRBs (Oranje, Peereboom-Wynia, & De Raeymaecker, 1986; Lochner et al., 2002) and finding that pulling or picking may serve many individuals as a means of anxiety or stress reduction (Singareddy, Moin, Spurlock, Merritt-Davis, & Uhde, 2003; Christenson & Mansueto, 1999). Recent surveys suggest that approximately 15–30% of individuals with skin picking report that they pick due to stress or pick more when under greater stress (Tucker, Woods, Flessner, Franklin, & Franklin, 2011; Calikusu, Kucukgoncu, Tecer, & Bestepe, 2012) and that approximately 54% people pull their hair as a means of coping with stress (Woods et al., 2006). In addition, hair pulling has been suggested to be a means of regulating nervous system arousal (Penzel, 2003) and in fact some research has demonstrated that hair pulling results in decreased anxiety immediately after the pulling (Diefenbach, Mouton-Odum, & Stanley, 2002). Understanding BFRBs, at least partly as means of coping with unpleasant emotional triggers, has led to the incorporation of elements of dialectical behavior therapy and deep

muscle relaxation in the more traditional cognitive behavioral therapy approach (Rothbaum, 1992; Keuthen et al., 2010).

Our hypothesis is that hair pulling and skin picking behaviors reflect a complex clinical and cognitive interaction with stress, and that understanding this relationship to stress may inform us about the heterogeneity within the BFRBs. Hair pulling and skin picking may help someone cope with stress and then ironically the behavior results in negative intra- and interpersonal distress such as having to avoid social situations, sexual intimacy or other activities (Stemberger, Thomas, Mansueto, & Carter, 2000). Distress can also result from the individual's inability to control the behavior resulting in lowered self-esteem (Casati, Toner, & Yu, 2000). Although the design of our study was not created to determine causality, we sought to investigate similarities and differences in the clinical and cognitive profiles of adults with BFRBs as a function of the level of stress reported. Perceived stress reflects the unpredictable and uncontrollable aspects of stress perception influenced by daily frustrations, traumas, and alterations in coping abilities. Based on the extant literature, we hypothesized that individuals with high levels of perceived stress would exhibit greater severity of BFRBs and, on a cognitive level, would display greater impairment of response inhibition.

2. Methods

2.1. Subjects

Data from a total of 140 participants taking part in neurocognitive, neuroimaging, or pharmacotherapy trials for the treatment of skin picking or trichotillomania were pooled together for the purposes of this study. Inclusion criteria included male and female outpatients between the ages of 18 and 65 years with a primary diagnosis of either trichotillomania or skin picking disorder. Exclusion criteria included current psychotic disorders, bipolar disorder, or past six-month history of substance use disorders, and an inability to understand study procedures and provide written informed consent. All measures of assessment were taken at baseline prior to the implementation of any treatments. Data were collected from September 2006 through July 2014.

Participants taking medication underwent all assessments prior to any changes in medication. All participants taking medication had been on a stable dose of the medication for at least three months prior to the assessments. Thirty-eight of the 140 participants were taking medication but the percentage of participants taking medication in each of the three stress groups (see below) was not statistically different.

2.2. Assessments

Current and lifetime psychiatric comorbidity was assessed by a board-certified psychiatrist using the Structured Clinical Interview for DSM-IV (SCID) disorders (First, Spitzer, Gibbon, & Williams, 1995) and valid and reliable SCID-compatible modules for impulse control disorders (Grant, 2008).

All participants completed the following items at the baseline assessment:

2.2.1. Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983)

The PSS is a valid and reliable, 10-item, self-report scale which assesses the degree to which individuals find their lives, over the past month, to be unpredictable, uncontrollable, and stressful. Each question is answered on a five-point Likert scale (ranging from 'never' to 'very often'). Higher total scores indicate greater levels of life stress and range from 0 to 40. The PSS measures one's perception of any and all individually defined stressful experiences. The PSS has demonstrated excellent construct validation with overall mental health, depression, social anxiety, tolerant-inactive coping, and number of traumatic life events (Cohen et al., 1983; Lee et al., 2011; Mitchell, Crane, & Kim, 2008, Park et al., 2009; Roberti, Harrington, & Storch, 2011).

2.2.2. Clinical Global Impression-Severity (CGI) (Guy, 1976)

The CGI is a valid and reliable, 7-item scale used to assess symptom severity. It uses a Likert-scored scale with 1='not ill at all' to 7='among the most extremely ill.' The scale was used to assess only the severity of the BFRB symptoms.

2.2.3. Sheehan Disability Scale (SDS) (Sheehan, 1983)

The SDS is a valid and reliable, three-item, self-report scale assessing psychosocial functioning in three areas of life: work, social or leisure activities, and home and family life. Scores on the SDS range from 0 to 30.