



## The validity of DSM-IV-TR criteria B and C of hair-pulling disorder (trichotillomania): Evidence from a clinical study

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### ABSTRACT

In both DSM-IV-TR and the ICD-10, hair-pulling disorder (trichotillomania, or TTM) is described as hair-pulling, with a rising urge or tension prior to pulling or when attempting to resist, and pleasure, relief or gratification during or after pulling. However, it has been questioned whether all patients with hair-pulling experience these other phenomena, and whether they occur with all pulling episodes. The objective of this study was to examine the DSM-IV-TR requirement of criteria B and C for a diagnosis of TTM in a sample of people with hair-pulling. A multi-site sample of adults with hair-pulling who met both DSM-IV-TR diagnostic criteria B and C ( $n = 82$ , 89.13%) were compared to those who failed to satisfy both B and C ( $n = 10$ , 10.87%) on a number of clinical variables. There were no differences in hair-pulling severity, levels of comorbid depressive and anxiety symptoms, number of comorbid body-focused repetitive behaviors, or impairment between those patients who did and did not meet criteria B and C. Our study does not provide convincing support for the inclusion of the current diagnostic criteria B and C for TTM in DSM-5.

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### 1. Introduction

Hair-pulling disorder (trichotillomania, or TTM) is increasingly recognized as a serious condition, given its relatively high prevalence (Duke et al., 2010), significant comorbidity with psychiatric disorders such as depression, obsessive–compulsive disorder and Tourette's syndrome, and associated impairment (Woods et al., 2006). The medical complications of TTM are relatively uncommon but can be serious; these include gastrointestinal obstruction and even death (Muller, 1987; O'Sullivan et al., 1996; Bouwer and Stein, 1998).

In 1987, TTM was included in the Diagnostic and Statistical Manual of Mental Disorders 3rd edition (revised version, or DSM-III-R) (American Psychiatric Association, 1987) as an impulse control disorder not elsewhere classified. TTM remained in this category in DSM-IV and DSM-IV-TR but the diagnostic criteria included a revised version of criterion B (i.e. the experience of tension prior to hair-pulling or when

attempting to resist the behavior) and E (clinically significant distress and/or impairment) (American Psychiatric Association, 1994; American Psychiatric Association, 2000) (Appendix 1). In the 10th edition of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) (World Health Organization, 1992), TTM was included in the section on disorders of adult personality and behavior, where it was classified as one of the habit and impulse disorders (Appendix 2).

Research on TTM has increased significantly in the last 20 years. It has been argued recently (Stein et al., 2010) that it is timely to assess whether the reliability, validity, and clinical utility of current diagnostic criteria for TTM can be improved, and whether the categorization of TTM as an impulse control disorder is optimal. In particular, the validity and utility of criteria B and C of DSM-IV-TR (i.e. rising tension prior to or when attempting to resist pulling, and pleasure, relief or gratification during or subsequent to pulling) have been questioned. These criteria were originally intended to be consistent with TTM's grouping in the Impulse Control Disorders category. Troubling, however, is the research suggesting that approximately 20% of patients with clinically meaningful hair-pulling do not report either an increasing sense of tension or a sense of pleasure/gratification/relief related to hair-pulling (Christenson and Mansueto, 1999; du Toit et al., 2001). In the more recent

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Trichotillomania Impact Project-Adults (TIP-A), an internet survey of 2268 persons with self-reported hair-pulling (Woods et al., 2006), it was found that the symptoms of tension before pulling or accompanying efforts to resist, and subsequent pleasure/relief/gratification, were quite common in people with hair-pulling. However, these internal experiences were not reported by *all individuals* with impairment-producing hair-pulling and, when they were present, did not necessarily occur prior to and/or after *all pulling episodes*.

Very few studies have compared individuals meeting full criteria for DSM-IV TTM and those not meeting B and C. In a preliminary study at the MRC Unit on Anxiety and Stress Disorders (South Africa) including 47 participants with hair-pulling, few significant differences between those who met criteria B and C and those without these symptoms were found (du Toit et al., 2001). In a recent follow-up study, Lochner et al. found that 27.5% of 80 participants with chronic hair-pulling did not meet either criteria B or C (Lochner et al., 2010). A few differences were noted between participants meeting both criteria B and C and those not meeting these criteria, but none seemed clinically significant. There also were no significant differences between the two groups in terms of age, gender, age of onset, duration and severity of hair-pulling.

Similarly, the TIP-A study (which did not analyze differences in hair-pulling sites and behaviors related to hair-pulling) found that subjects who met criteria B and C (endorsing both symptoms at least “a little of the time”;  $n = 1616$ ) vs. those not meeting both B and C ( $n = 92$ ) did not differ in hair-pulling severity, levels of depression and anxiety and impairment (Woods et al., unpublished data; Stein et al., 2010). Thus, while present at some level in most people with hair pulling, TIP-A data suggest criteria B and C are not indicative of increased pulling severity, impairment or psychological symptoms of depression and anxiety. Given the above findings, inclusion of B and C as required diagnostic criteria for the disorder can be questioned.

The large TIP-A study, however, suffers the limitations associated with an internet survey, the most prominent of which is the lack of face-to-face diagnostic ascertainment. In the present study, we aimed to overcome these limitations. We used some of the questionnaires from the TIP-A study and conducted a similar analysis but used a combined sample of patients with hair-pulling from South Africa and the USA that had in-person clinical assessments. We compared patients meeting TTM criteria B and C, and those who did not satisfy both B and C, on a number of relevant clinical variables, including hair-pulling severity, levels of depression, anxiety and stress, number of comorbid body-focused repetitive behaviors and functional impairment.

## 2. Methods

This project was a joint venture between researchers from the Massachusetts General Hospital/Harvard Medical School, Boston (USA) and the MRC Unit on Anxiety & Stress Disorders, University of Stellenbosch (South Africa). The study was approved by the Institutional Review Boards of the participating sites and conducted in accordance with the guidelines of the Declaration of Helsinki (Edinburgh 2000) on the ethical conduct of research studies in humans. All patients gave written informed consent for research participation.

### 2.1. Participants

Patients interviewed at the MRC Unit on Anxiety and Stress Disorders were recruited by physician referral, media advertisements and the Mental Health Information Centre of South Africa. Interviews were done by a clinical psychologist or other mental health practitioner (i.e. a psychiatric nurse, general medical practitioner, or psychiatrist) with expertise in the field. All participants reported hair-pulling and fulfilled at least criteria A, D and E of DSM-IV and DSM-IV-TR for TTM on the Structured Clinical Interview for Axis I Disorders–Patient version (SCID-I/P) (First et al., 1998) (MRC Unit).

Patients interviewed at Massachusetts General Hospital were recruited for a genetics research project by clinician referral, flyers, and the Trichotillomania Learning Center. Interviews were conducted by study staff who were trained to an acceptable reliability criterion level on all clinician-administered interviews/scales. All participants reported hair-pulling and fulfilled at least criteria A, D, and E of DSM-IV/DSM-IV-TR for TTM. Individuals diagnosed with mental retardation, autism spectrum disorders, or psychotic disorders were excluded.

### 2.2. Interview measures

For our study analyses, we used data obtained from questions on the Trichotillomania Impact Survey (TIS; Woods et al., 2006); i.e. more specifically, whether patients experienced an increased physical tension or an “urge” immediately before pulling or when attempting to resist pulling and whether they experienced a sense of pleasure/gratification/relief after pulling.

The Trichotillomania Diagnostic Interview-Revised (TDI-R) is an updated version of the TDI (Rothbaum and Ninan, 1994), a clinician-based, semi-structured interview modeled after the SCID. The TDI consists of 3-point ratings of responses to items assessing the DSM-III R diagnostic criteria for TTM and the TDI-R includes revisions to ensure conformity with DSM-IV-TR updated criteria for TTM. The TDI-R was utilized to determine if study participants satisfied full DSM-IV-TR diagnostic criteria for TTM.

In addition, three other measures with acceptable psychometric properties were used to assess severity of hair-pulling (i.e. the Massachusetts General Hospital Hair-pulling Scale (MGH-HPS) (Keuthen et al., 1995)), severity of depression and anxiety symptoms (i.e. the Depression Anxiety Stress Scale-21-Item version (DASS-21) (Lovibond and Lovibond, 1995)), and impairment (i.e. the Sheehan Disability Scale (SDS) (Sheehan et al., 1996)), respectively.

The MGH-HPS is a seven-item patient-rated scale used as the primary measure of hair-pulling symptom severity. MGH-HPS items focus on respondents' ratings of the frequency and intensity of their urges to pull, their ability to control these urges, the frequency of actual hair-pulling, the frequency of attempts to resist pulling, their ability to control their pulling, and their level of associated distress. The MGH-HPS demonstrates good internal consistency (Keuthen et al., 1995), excellent test-retest reliability, strong convergent and divergent validity and sensitivity to change in hair-pulling symptoms (O'Sullivan et al., 1995).

The DASS-21 is a 21-item scale designed to measure symptoms of depression, anxiety, and stress in clinical and non-clinical populations. The measure provides separate scores for the empirically derived factors. Each of the three factors consists of seven items measured on a 4-point Likert scale ranging from 0 (“did not apply to me at all”) to 3 (“applied to me very much, or most of the time”). Scores on each subscale are calculated by summing the scores on the seven items and multiplying this by two; thus, each scale has a minimum score of 0 and a maximum score of 42, with higher scores indicative of more frequent symptoms in a given domain. Each subscale has demonstrated good psychometric properties (Brown et al., 1997).

The SDS is a three-item self-report scale assessing current impairment in work activities, social life and leisure activities, and family life and home responsibilities due to emotional symptoms (Sheehan et al., 1996). On the SDS, individuals rate the degree to which their symptoms have impaired each area of life on a scale from 0 to 10 (0 = not at all, 1–3 = mildly, 4–6 = moderately, 7–9 = markedly, 10 = very severely), and the three item ratings are added together to create a total disability score (range = 0–30). The SDS demonstrates good internal consistency (alpha coefficients ranging from 0.56 to 0.86 in untreated and treated patients with panic disorder (Leon et al., 1992) and social phobia (Olfson et al., 1996)).

The number of comorbid body-focused repetitive behaviors (BFRBs) were measured based on one of the TIS questions which assesses whether the individual engaged in skin-picking, nose-picking, nail-biting, lip-/cheek-biting or any other damaging BFRBs. The number of BFRBs each individual endorsed was entered into the analyses, and not the specific BFRB. For example, if an individual endorsed skin-picking and nail-biting, the figure ‘2’ would have been entered as the BFRB data point for that individual.

### 2.3. Data analyses

Patients endorsing criteria B and C (i.e. those endorsing both symptoms at least “a little of the time” according to the TIS questions) were compared to those not endorsing both B and C, using chi-square for categorical variables (e.g. gender), and student t-tests and Mann-Whitney U tests for continuous variables (e.g. severity scores). Z scores were used to identify possible outliers on interview measures. Analyses were run for each variable, both with and without outliers (if applicable). The presence/absence of outliers, and the respective scores were reported for each measure. *P*-values less than 0.05 were considered to be significant.

## 3. Results

### 3.1. Demographics

The total sample consisted of 28 South African and 64 sex- and age-matched American hair-pullers. The demographic characteristics of participants are summarized in Table 1.

Ninety-two ( $n = 92$ ) participants completed the TIS questions addressing whether they experienced an increased physical tension or an “urge” immediately before pulling or when attempting to resist pulling (B) and whether they experienced a sense of pleasure/gratification/relief after pulling (C). There were 86 (93.48%) individuals who reported increased physical tension or an “urge” immediately

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