



Factor analysis of the Milwaukee Inventory for Subtypes of Trichotillomania-Adult Version



Jennifer R. Alexander^a, David C. Houghton^a, Michael P. Twohig^b, Martin E. Franklin^c,
Stephen M. Saunders^d, Angela M. Neal-Barnett^e, Scott N. Compton^f,
Douglas W. Woods^{a,d,*}

^a Department of Psychology, Texas A&M University, 4235 TAMU, College Station, TX 77840, USA

^b Department of Psychology, Utah State University, 2810 Old Main Hill, Logan, UT 84322, USA

^c Department of Psychiatry, University of Pennsylvania School of Medicine, 3535 Market St., Philadelphia, PA 19104, USA

^d Department of Psychology, Marquette University, 604 N. 16th St., Milwaukee, WI 53233, USA

^e Department of Psychology, Kent State University, 600 Hilltop Drive, Kent, OH 44242, USA

^f Department of Psychiatry and Behavioral Sciences, Duke University School of Medicine, 2213 Elba St., Durham, NC 27705, USA

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ABSTRACT

The Milwaukee Inventory for Subtypes of Trichotillomania-Adult Version (MIST-A; Flessner et al., 2008) measures the degree to which hair pulling in Trichotillomania (TTM) can be described as “automatic” (i.e., done without awareness and unrelated to affective states) and/or “focused” (i.e., done with awareness and to regulate affective states). Despite preliminary evidence in support of the psychometric properties of the MIST-A, emerging research suggests the original factor structure may not optimally capture TTM phenomenology. Using data from a treatment-seeking TTM sample, the current study examined the factor structure of the MIST-A via exploratory factor analysis. The resulting two factor solution suggested the MIST-A consists of a 5-item “awareness of pulling” factor that measures the degree to which pulling is done with awareness and an 8-item “internal-regulated pulling” factor that measures the degree to which pulling is done to regulate internal stimuli (e.g., emotions, cognitions, and urges). Correlational analyses provided preliminary evidence for the validity of these derived factors. Findings from this study challenge the notions of “automatic” and “focused” pulling styles and suggest that researchers should continue to explore TTM subtypes.

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1. Introduction

The development and refinement of psychometrically validated rating scales are vital practices in the pursuit of evidence-based assessment. The Milwaukee Inventory for Subtypes of Trichotillomania-Adult Version (MIST-A) is the only psychometrically validated instrument that assesses pulling styles in adults with Trichotillomania (TTM; also referred to as Hair Pulling Disorder; Flessner et al., 2008), a disorder characterized by repetitive hair

pulling that causes hair loss or thinning and persists despite repeated attempts to stop (American Psychiatric Association [APA], 2013). Based on common conceptualizations of TTM pulling styles, the MIST-A assesses two styles: “focused” (i.e., pulling that is done with awareness and to regulate cognitive/affective states) and “automatic” (i.e., pulling that is performed outside of awareness and that is unrelated to cognitive/affective states; Begotka, Woods, & Wetterneck, 2004; Duke, Keeley, Geffken et al., 2010; Flessner et al., 2008; Woods et al., 2006). However, recent advances in the understanding of hair pulling variability indicate that the MIST-A factor structure, as well as the focused/automatic conceptualization on which the MIST-A is based, may not accurately describe hair pulling in TTM (e.g., Diefenbach, Mouton-Odum, & Stanley, 2002; Duke, Keeley, & Ricketts, 2010; Duke, Keeley, Geffken et al., 2010; Shusterman, Feld, Baer, & Keuthen, 2009). As accurate identification and assessment of TTM pulling styles may lead to important conceptual and treatment advances (Flessner et al., 2008; Franklin, Zangrabe, & Benavides, 2012; Harrison & Franklin,

* Corresponding author at: Department of Psychology, Marquette University, 1324 W. Wisconsin Ave., Milwaukee, WI 53233, USA.

E-mail addresses: j.alexander@tam.u.edu (J.R. Alexander), davidhoughton@tam.u.edu (D.C. Houghton), michael.twohig@usu.edu (M.P. Twohig), marty@mail.med.d.upenn.edu (M.E. Franklin), stephen.saunders@marquette.edu (S.M. Saunders), aneal@kent.edu (A.M. Neal-Barnett), scompton@duke.edu (S.N. Compton), douglas.woods@marquette.edu (D.W. Woods).

2012), the factor structure of the MIST-A merits further consideration.

Flessner et al. (2008) first examined the factor structure of an initial 24-item MIST-A using data collected from an internet survey completed by 1697 adults with self-reported TTM. Exploratory factor analysis of a subsample ($N = 848$) supported a 15-item measure with a two-factor solution. Factor 1, the “focused” pulling subscale, consisted of 10 items and accounted for 17.1% of the observed variance. Factor 2, the “automatic” pulling subscale, consisted of 5 items and accounted for 13% of the variance. Using the remaining survey respondents ($N = 849$), confirmatory factor analysis, internal consistency analysis, and convergent validity analyses further corroborated this two-factor solution. Despite the preliminary evidence in favor of the MIST-A factor structure, the study had several limitations as noted by Flessner et al. (2008). First, data were collected via an internet-based survey, calling into question the generalizability of the results to persons with confirmed TTM diagnoses. Moreover, the percentage of variance accounted for by the “focused” and “automatic” factors in the Flessner study (30.1%) was relatively low (Henson & Roberts, 2006), implying that additional factors may exist. In addition to these limitations, a recent attempt to replicate the factor structure of the MIST-A concluded that the MIST-A consisted of an “Intention” factor and an “Emotion” factor rather than an “automatic” factor and a “focused” factor (Keuthen et al., 2015). Such results suggest the MIST-A structure should be reexamined.

Advances in the conceptualization of TTM also call into question the utility of the MIST-A factor structure. Despite the putative dichotomy between “focused” and “automatic” pulling, most individuals with TTM report engaging in both styles (du Toit, van Kradenburg, Niehaus, & Stein, 2001; Lochner, Seedat, & Stein, 2010) and have difficulty ascertaining whether pulling in a given episode should be labeled as “focused” or “automatic” (Woods & Twohig, 2008). Such findings suggest that the “focused” and “automatic” styles may be neither discrete nor exhaustive. One reason that the “focused”/“automatic” dichotomy may not hold is the fact that the “automatic” and “focused” constructs conflate awareness of pulling with its capacity to regulate internal experiences. Indeed, research suggests that pulling done both with and without awareness varies in its ability to regulate internal states (Diefenbach et al., 2002; Duke, Keeley, Geffken et al., 2010; Duke, Keeley, Ricketts et al., 2010; Keuthen, Bohne, Himle, & Woods, 2005; Panza, Pittenger, & Bloch, 2013; Shusterman et al., 2009), suggesting that awareness and regulation capacity may actually be independent dimensional characteristics of hair pulling. As such, TTM pulling may be (a) done with awareness and to regulate internal states (consistent with the “focused” style), (b) done without awareness and unrelated to regulation of internal states (consistent with the “automatic” style), (c) done with awareness and unrelated to regulation of internal states, and (d) done without awareness and to regulate internal states. Unfortunately, however, the MIST-A’s factor structure may not capture this possibility.

In light of these observations and the importance of the accurate identification of TTM pulling styles for treatment development, we examined the factor structure of the MIST-A in a treatment-seeking TTM sample. We conducted an exploratory factor analysis on the MIST-A and examined the relationship between the derived MIST-A factors and validity indices (e.g., participant characteristics, anxiety, depression, and disorder severity).

2. Method

2.1. Sample

Participants were recruited as part of a randomized, controlled

Table 1
Participant demographics.

Variables	n (%)
Gender	
Female	84 (92.3%)
Male	7 (7.7%)
Race	
White	76 (83.5%)
Black	11 (12.1%)
Asian	1 (1.1%)
Other	3 (3.3%)
Ethnicity	
Non-Hispanic or Latino	90 (98.9%)
Hispanic or Latino	1 (1.1%)
Lifetime Comorbidity	
Obsessive-Compulsive Disorder	7 (7.7%)
Anxiety Disorder	49 (53.8%)
Depressive Disorder	28 (30.8%)
Bipolar Disorder	1 (1.1%)
Eating Disorder	5 (5.5%)
Substance Disorder	22 (24.2%)
Trauma/Adjustment Disorder	16 (17.6%)
M (SD)	
Age	35.04 (12.68)
MGH-HS	16.99 (4.65)
NIMH-TSS	14.53 (3.66)
BAI	12.60 (10.75)
BDI-II	13.33 (10.16)
AAQ-TTM	31.72 (10.97)
WTAR-IQ	104.19 (10.06)

Note. MGH-HS = Massachusetts General Hospital Hairpulling Scale; NIMH-TSS = National Institute of Mental Health Trichotillomania Severity Scale; BAI = Beck Anxiety Inventory; BDI-II = Beck Depression Inventory-II; AAQ-TTM = Acceptance and Action Questionnaire-Trichotillomania; WTAR-IQ = Wechsler Test of Adult Reading.

trial of psychotherapy for TTM. Recruitment was accomplished via standard clinic referrals, advertisements in local physicians’ offices, bus and radio advertisements, targeted mailing using Trichotillomania Learning Center (TLC) mailing lists, and advertisements on the TLC website (www.trich.org). Interested persons contacted a TTM specialty clinic and were phone screened before undergoing a more extensive in-person assessment.

Inclusion criteria included: (a) ages 18–65, (b) fluent in English, (c) ≥ 85 on the Wechsler Test of Adult Reading (WTAR-IQ; The Psychological Corporation, 2001), (d) current DSM-IV TTM diagnosis, (e) ≥ 12 on the Massachusetts General Hospital Hairpulling Scale (MGH-HS; Keuthen et al., 1995), and (f) ability to maintain outpatient status. Exclusion criteria included: (a) current DSM-IV diagnosis of bipolar disorder, a psychotic disorder, pervasive developmental disorder, mental retardation, or substance dependence (except for nicotine dependence), or (b) current suicide risk.

One-hundred seventeen individuals were screened for the clinical trial; 91 completed the baseline visit and participated in the current study. Eighty percent of the participants had at least one comorbid diagnosis. See Table 1 for additional participant demographic information.

Several researchers suggest that a participant to item ratio of at least 5:1 indicates the sample is adequate for factor analysis (Cattell, 1978; Gorsuch, 1974; Stevens, 1996). As the participant to item ratio in the current sample was 6:1, it was inferred that the sample would be sufficient for factor analysis.

2.2. Measures

The *Milwaukee Inventory of Subtypes of Trichotillomania- Adult Version* (MIST-A; Flessner et al., 2008) is a 15-item self-report measure that assesses the degree to which individuals engage in a

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