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Trauma and Trichotillomania: A Tenuous Relationship

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Highlights

- Research has indicated a connection between trauma and Trichotillomania.
- Eighty-five adults with Trichotillomania provided self-report data.
- Those with self-reported traumatic events had greater global hair pulling severity.
- Trauma correlated with depression, experiential avoidance, and quality of life.
- Depression mediated the relationship between traumatic events and hair pulling.

Abstract

Some have argued that hair pulling in [trichotillomania](#) (TTM) is triggered by traumatic events, but reliable evidence linking trauma to TTM is limited. However, research has shown that hair pulling is associated with emotion regulation, suggesting a connection between negative affect and TTM. We investigated the associations between trauma, negative affect, and hair pulling in a cross-sectional sample of treatment seeking adults with TTM ($N=85$). In the current study, participants' self-reported traumatic experiences were assessed during a structured clinical interview, and participants completed several measures of hair pulling severity, global TTM severity, depression, anxiety, experiential avoidance, and quality of life. Those who experienced trauma had more depressive symptoms, increased experiential avoidance, and greater global TTM severity. Although the presence of a trauma history was not related to the severity of hair pulling symptoms in the past week, depressive symptoms mediated the relationship between traumatic experiences and global TTM severity. These findings cast doubt on the notion that TTM is directly linked to trauma, but suggest that trauma leads to negative affect that individuals cope with through hair pulling. Implications for the conceptualization and treatment of TTM are discussed.

Keywords

Post-traumatic stress disorder; Hair pulling; Emotion regulation; Depression; Coping

1. Introduction

[Trichotillomania](#) (TTM) is characterized by recurrent hair pulling resulting in psychosocial impairment ([American Psychiatric Association, 2013](#)). The onset and worsening of hair pulling symptoms are often precipitated by stressful or traumatic life events, as research indicates that 86% of persons report instances of violence occurring just prior to the onset of TTM ([Boughn & Holdom, 2003](#)). In addition, studies have found that persons with TTM report relatively high rates of lifetime traumatic experiences (76-91%) ([Boughn and Holdom, 2003](#), [Gershuny et al., 2006](#)), have higher scores than healthy individuals on self-report scales measuring lifetime trauma severity ([Lochner et al., 2002](#), [Özten et al., 2015](#)), and show abnormally high rates of lifetime posttraumatic stress disorder (PTSD) (e.g., 15.3%; [Houghton et al., 2016](#)).

An etiological link between trauma and TTM has been described within [psychodynamic](#) models of TTM, which propose that hair pulling is a manifestation of unconscious dynamic processes,

including unresolved [sexual conflicts](#), disordered attachment, and [dissociation](#) from traumatic memories ([Flores, 2004](#), [Greenberg and Sarner, 1965](#), [Nakell, 2015](#)). However, only anecdotal evidence exists for the notion that hair pulling is related to either unconscious processes, such as repression of traumatic memories, or attachment problems.

Moreover, a causal link between trauma and TTM is questionable for a number of reasons. First, despite the fact that rates of trauma and PTSD appear high in TTM samples (76-91%; [Boughn & Holdom, 2003](#); [Gershuny et al., 2006](#)), rates of trauma prevalence vary significantly in community samples depending on assessment criteria (21.4-89.6%; [Breslau, Davis, Andreski, & Peterson, 1991](#); [Kessler et al., 1995](#), [Perkonig et al., 2000](#)). Evidence also indicates that rates of trauma and PTSD are elevated in many psychiatric disorders, not just TTM ([Kessler et al., 1995](#), [Perkonig et al., 2000](#)). Second, childhood trauma has not been found to predict the development of TTM ([Lochner et al., 2002](#)); rather, only in *retrospective* reports do women with TTM report that traumatic events occurred concurrently with the onset of TTM symptoms ([Boughn & Holdom, 2003](#)). Thus, a causal relationship between trauma, trauma-related phenomena, and TTM has not been adequately demonstrated.

In contrast to the lack of evidence suggesting that trauma causes hair pulling, a growing body of research indicates that hair pulling serves to modulate aversive internal events, including but not limited to those brought on by trauma. Persons with TTM report that they experience reductions in boredom, anxiety, and tension through hair pulling ([Diefenbach et al., 2002](#), [Diefenbach et al., 2008](#)), and several studies have linked hair pulling to maladaptive emotion regulation strategies ([Begotka et al., 2004](#), [Houghton et al., 2014](#), [Norberg et al., 2007](#), [Roberts et al., 2015](#), [Roberts et al., 2013](#), [Shusterman et al., 2009](#)). Consistent with this, a significant number of people exposed to trauma develop depression and anxiety symptoms ([Heim and Nemeroff, 2001](#), [Shalev et al., 1998](#)) and use maladaptive [coping strategies](#) such as avoidance of trauma-related stimuli and [substance abuse](#) ([Littleton et al., 2007](#), [Ullman et al., 2013](#)).

Thus, hair pulling in TTM might function, in part, as a maladaptive coping strategy for the negative affective experiences caused by trauma. Indeed, one study found that PTSD symptoms were negatively correlated with TTM symptoms ([Gershuny et al., 2006](#)), suggesting that hair pulling modulated trauma-related problems. This notion is supported by research on [obsessive-compulsive disorder](#) (OCD), a condition similar in many ways to TTM ([Phillips et al., 2010](#)), which found that depression mediated the relationship between OCD symptoms and PTSD symptoms ([Merrill, Gershuny, Baer, & Jenike, 2011](#)). Another possibility is that traumatic experiences and PTSD lead to increased anxiety (i.e., fear of contextual stimuli associated with traumatic events), which is then modulated by hair pulling. As such, various negative [sequelae](#) caused by trauma could be related to TTM.

The present study used a sample of adults seeking treatment for TTM. The study had three aims. First, we examined the rate of trauma experiences of the sample. It was hypothesized that the sample would show trauma rates consistent with trauma rates found in previous samples with TTM. We also examined whether trauma experience in this sample was associated with symptom severity. We expected that those who had experienced trauma would have higher hair pulling severity, greater depression and/or anxiety, poorer life quality,

and poorer emotion regulation strategies than those who had not experienced trauma. Additionally, we aimed to explore whether depressive and/or anxiety symptoms might act as the mechanism through which trauma affects TTM, which was tested through a mediation model. Given the lack of consistent findings of an association between trauma and TTM symptomology specifically, but also the findings of an association between negative affect and TTM, we predicted that we would find this indirect effect.

2. Methods

2.1. Participants

Participants in the current study were recruited for the purposes of a clinical trial of psychotherapy for TTM. Recruitment occurred through newspaper ads, flyers, website advertisements via the [Trichotillomania Learning Center](#), and clinical referrals to a university based TTM specialty clinic. Inclusion criteria for the clinical trial included (a) current [DSM-IV](#) diagnosis of TTM, (b) score ≥ 12 on the Massachusetts General Hospital Hairpulling Scale, (c) score ≥ 85 on the Wechsler Test of Adult Reading (to eliminate the confound of [intellectual disability](#) from the clinical trial), (d) age 18–69 years, and (e) fluency in English. Exclusion criteria included (a) concurrent psychotherapy for any psychiatric condition and (b) a positive diagnosis of [bipolar disorder](#), [psychotic disorder](#), substance dependence (other than nicotine), or a primary mood or anxiety disorder with suicidal ideation. The exclusion of participants with some comorbid psychiatric conditions was conducted in order to maintain internal validity and ethical standards within the clinical trial. See [Houghton et al. \(2016\)](#) for a detailed description of the recruitment and screening process. In addition, because of safety concerns, those who ingested hair were required to see a physician before participating. Eighty-five participants (91.8% female; mean age=35.39) met all inclusion/exclusion criteria and received the baseline assessment battery. In terms of ethnic diversity, 1.2% identified as Hispanic or Latino, and 82.4% were White, 12.9% were African American, 1.2% Asian, and 3.5% multiple ethnicities or other.

2.2. Measures

Several standardized measures were used to obtain information on comorbid diagnoses, trauma history, TTM severity, and other indices of psychosocial functioning.

The *Structured Clinical Interview for DSM-IV Patient Version* (SCID-P; [First, Spitzer, Gibbon, & Williams, 1996](#)) was used to assess for the current and lifetime prevalence of other psychiatric disorders. The interview provides the rater with screening questions about symptoms of DSM-IV disorders and provides a scoring algorithm for DSM-IV diagnosis. With regard to trauma, participants are asked during the SCID-P to list traumatic experiences that have occurred in their lives before being screened for the presence of PTSD. Those who reported a traumatic event were coded accordingly in the current study (whether or not they met criteria for PTSD).

TTM severity was assessed using the *Massachusetts General Hospital Hair Pulling Scale* (MGH-HPS; [Keuthen et al., 1995](#); [O'Sullivan et al., 1995](#)), the *Clinical Global Impressions – Severity Scale* (CGI-S; [Guy, 1976](#)), and the *National Institute of Mental Health Trichotillomania*

Severity Scale (NIMH-TSS; [Swedo et al., 1989](#)). The CGI-S incorporates multiple facets of disorder severity (i.e., average pulling frequency, distress and impairment, need for social support) and yields an overall index of TTM severity, whereas the NIMH-TSS and MGH-HPS are sensitive to urges to pulling, pulling severity, and distress over pulling during the previous week.

The [Beck Anxiety Inventory](#) (BAI; [Beck, Epstein, Brown, & Steer, 1988](#)) and the [Beck Depression Inventory](#) (BDI; [Beck, 1972](#)) were used to assess symptoms of anxiety and depression, respectively. Both methods have been widely used and have been shown to have excellent reliability and validity ([Beck et al., 1988a](#), [Beck et al., 1988b](#), [Fydrich et al., 1992](#)).

The *Quality of Life Inventory* (QOLI; [Frisch, Cornell, Villanueva, & Retzlaff, 1992](#)) was used to assess quality of life. The QOLI is a 32-item self-report [measure of life quality](#) in 16 areas. The measure has adequate reliability and validity ([Frisch et al., 1992](#)).

2.3. Procedure

Two hundred and seventy-four persons contacted the TTM specialty clinic and were provided information about the study. If interested, callers were briefly screened for inclusion/exclusion criteria. Persons appearing to be eligible through the phone screen were scheduled for an in-person clinic screening, at which consent was obtained and inclusion/exclusion criteria were formally checked. Ninety-one individuals were selected to participate in the baseline protocol, but six participants did not meet inclusion criteria or failed to re-establish contact with the researchers, leaving a final sample size of 85. All measures were administered during the baseline or pre-treatment battery.

3. Results

3.1. Trauma experiences of sample

[Table 1](#) shows the frequencies of different types of self-reported traumatic experiences. Over half of the participants reported having experienced a traumatic event, with the most frequent being sexual assault, witnessing violence, and physical assault. Most individuals only experienced one traumatic event (38.8%; $n=33$), but 9.4% ($n=8$) experienced two traumatic events, 3.5% ($n=3$) experienced three traumatic events, and one person (1.2%) experienced four traumatic events.

Table 1. Rates of traumatic experiences by type.

Sexual Assault	18.8%
Witnessing violence	11.8%
Physical Assault	10.6%
Accidental injury	7.1%
Mugging/Robbery	4.7%

Military Combat	2.4%
Natural Disaster	1.2%
Other Emotional Trauma (e.g., miscarriages, abortions, murdered relative)	16.5%
Any Trauma	52.9%

3.2. Association between trauma and symptoms of depression, anxiety, experiential avoidance, and TTM

Descriptive and test statistics for all measures between traumatized and non-traumatized groups are presented in [Table 2](#). The presence of trauma was associated with greater global TTM severity as measured by the CGI-S, higher BDI scores, marginally greater experiential avoidance as indicated by the AAQ ($t(81)=1.96, p=.054$), and poorer quality of life as measured by the QOLI than those who had not experienced trauma. Hair pulling severity as measured by the MGH-HPS and NIMH-TSS was not significantly associated with traumatic experiences, nor were BAI scores higher in those who had experienced trauma.

Table 2. Differences in depression, anxiety, and hair pulling severity between traumatized and non-traumatized persons.

Measure	Traumatized group mean (SD)	Non-Traumatized group mean (SD)	<i>t</i>	<i>p</i>-value
Beck Depression Inventory	15.70 (9.94)	10.13 (9.50)	-2.59	0.01
Beck Anxiety Inventory	13.61 (9.96)	10.51 (11.75)	-0.10	0.92
Acceptance and Action Questionnaire – II	44.37 (9.70)	51.28 (10.93)	3.03	0.003
Quality of Life Inventory	38.71 (11.15)	47.43 (10.28)	3.60	0.001
Massachusetts General Hospital Hair Pulling Scale	17.40 (4.37)	16.40 (4.71)	-1.02	0.31
National Institutes of Mental Health Trichotillomania Severity Scale	14.69 (3.79)	14.03 (3.48)	-0.83	0.41
Clinical Global Impressions – Severity Scale (Global TTM Severity)	4.42 (0.58)	4.15 (0.48)	-2.33	0.02

3.3. Mediation analysis

Anxiety was not explored as a possible mediator between trauma and hair pulling because it had a non-significant association with trauma. To determine whether depression might mediate the relationship between trauma and hair pulling, Baron and Kenny's mediation test was

employed ([Baron & Kenny, 1986](#)), and Sobel's test was used to confirm the magnitude of the indirect effect ([Sobel, 1987](#)). The relationship between trauma and global hair pulling severity (as measured by the CGI-S) was fully mediated by depression. As illustrated in [Fig. 1](#), the regression coefficient between trauma and hair pulling became non-significant when controlling for depression. In addition, trauma predicted depression and hair pulling, and depression was a significant predictor of hair pulling while controlling for trauma, meeting the other conditions for mediation ([Baron & Kenny, 1986](#)). The Sobel's test was also significant ($Z=2.01, p<0.05$).

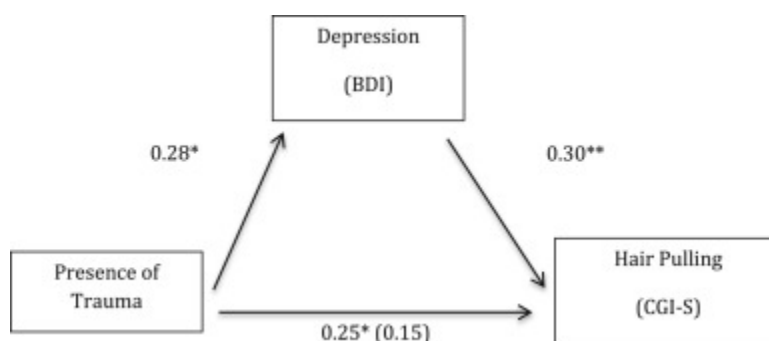


Fig. 1. Standardized regression coefficients for the relationship between trauma and hair pulling (as measured by the CGI-S) as fully mediated by depression. The standardized regression coefficients between trauma and hair pulling while controlling for depression are shown in parentheses. (* $P<.05$, ** $P<.01$).

4. Discussion

The current study sought to explore the association between traumatic experiences and TTM. Contrary to some theories of TTM [etiology](#), a link between trauma and TTM was supported tenuously by the current study. Indeed, the prevalence of traumatic experiences reported in this sample was substantially lower than in previous TTM studies (76–91%; [Boughn & Holdom, 2003](#); [Gershuny et al., 2006](#)). Although persons who had experienced trauma reported increased global hair pulling severity (as measured by the CGI-S), they showed no increases in acute TTM severity (as measured by the MGH-HPS and NIMH-TSS). The content of the MGH-HPS and NIMH-TSS involve the frequency, intensity, and control over urges to pull and pulling behavior as well as pulling-related distress in the past week. Alternatively, the CGI-S is a global rating of disorder severity that involves average pulling frequency, degree of hair loss, impairment, and need for [social support](#). Thus, results suggest that trauma is not directly related to actual hair pulling, but rather it is related to greater overall symptom presentation and TTM-related impairment.

Furthermore, the relationship between trauma and global TTM severity was mediated by depressive symptoms. This suggests that those with TTM who are exposed to trauma experience negative affect, which subsequently leads to greater global TTM severity. These data combined with the findings that those who had experienced any traumatic event had increased depression, marginally greater experiential avoidance, and lower quality of life,

supports the notion that TTM serves as an emotional regulatory activity for depressive symptoms brought on by trauma.

Contrary to our predictions, anxiety was not associated with trauma history in TTM, meaning that hair pulling does not appear to regulate anxiety brought on by trauma. This result could be explained by several reasons. Significant evidence demonstrates that TTM is related to anxiety ([Christenson, Mackenzie, & Mitchell, 1991](#); [Christenson & Mansueto, 1999](#); [Diefenbach et al. 2002](#); [Hajcak, Franklin, Simons, & Keuthen, 2006](#); [Mansueto, Stemberger, Thomas, & Golomb, 1997](#); [Roberts et al., 2013](#); [Stanley, Borden, Bell, & Wagner, 1994](#)), meaning that anxiety might be associated ubiquitously with hair pulling. The most significant anxiety-related symptoms associated with TTM appear to be stress, tension, guilt, and perfectionism ([Diefenbach et al. 2002](#); [Roberts et al., 2013](#); [Roberts, O'Connor, Aardema, Belanger, & Courchesne, 2016](#)). PTSD is associated with the following anxiety-related symptoms: hyperarousal (i.e., [hypervigilance](#) and exaggerated startle), avoidance of trauma-related stimuli, and distorted cognitions about the traumatic event and the world (i.e., "I am to blame for what happened to me", "No one can be trusted") (APA, 2013). Other than behavioral avoidance patterns, which were elevated in our sample of traumatized TTM participants, there appears to be little distinction between anxiety symptoms that are common to TTM and those brought on by trauma. If so, BAI scores should not be expected to differ between persons with TTM who have and have not experienced trauma.

Results of the current study run counter to the notion that traumatic experiences are the behavioral manifestations of unconscious dynamic conflicts related to trauma. Only half of our sample reported a meaningful traumatic event, meaning trauma is not a universal precursor to pulling. Moreover, in a recent paper arguing that patients gain control over their pulling once they uncover the repressed traumatic experience that instigated pulling ([Nakell, 2015](#)), it is suggested that those suffering from TTM are either unaware of their traumatic histories or they are aware of the event but have repressed the negative emotions tied to the event. In the current study, those who did not self-report traumatic events in their past had less severe TTM, which stands in contrast to the notion that repression of trauma would lead to more severe TTM. Our results are more consistent with the notion that pathological hair pulling is exacerbated in those with a traumatic history; not that hair pulling is a manifestation of the sublimation of such trauma.

Trauma often leads to depressive symptoms ([Shalev et al., 1998](#)), and hair pulling often serves as a maladaptive emotion regulation strategy ([Roberts et al., 2013](#)). As such, those with TTM who have been traumatized are more likely to experience greater negative affect, leading to an exacerbation of TTM. This tenuous relationship might explain why some clinicians believe that exploring trauma histories is an effective treatment for TTM (e.g., [Nakell, 2015](#)). For example, it is conceivable that the emotion regulation difficulties seen in individuals with TTM make it difficult for them to process negative emotions tied to past traumas, but after exploring these topics in a therapeutic environment, patients exhibit some degree of improvement. This process could be facilitated through common therapeutic factors (e.g., positive regard, empathy), emotional [catharsis](#), imaginal exposure, cognitive re-structuring, and other processes that have positive effects on mood and perhaps even TTM symptoms. Thus, therapeutic attention to trauma might actually involve processes that overlap with TTM

treatments that target emotion regulation, such as cognitive-behavior therapy ([Ninan, Rothbaum, Marsteller, Knight, & Eccard, 2000](#)), [dialectical behavior therapy](#) ([Keuthen et al., 2012](#)), and acceptance and commitment therapy ([Woods, Wetterneck, & Flessner, 2006](#)). Nevertheless, the [effect sizes](#) and durability of trauma-focused TTM interventions have not been tested in a methodologically adequate clinical trial, whereas TTM treatments that focus on emotion regulation have demonstrated efficacy in well designed studies ([McGuire et al., 2014](#)).

The primary limitation to this study is that the lack of a dimensional assessment of trauma severity. This would have allowed for a more precise qualification for how much participants were affected by their traumatic experiences. When participants self-report traumatic events, it can be difficult to determine the degree to which these experiences are truly “traumatic”. The definition of trauma might vary significantly between individuals, leading to over- and under-reporting of traumatic experiences in this format. In addition, the cross-sectional nature of this study is a limitation. To answer questions related to whether traumatic experiences lead to future exacerbation of TTM severity, longitudinal research should be conducted.

5. Conclusion

In contrast to previous assertions, the link between trauma and hair pulling appears to be, at best, tenuous. However, these results suggest that hair pulling can function as a maladaptive coping mechanism for negative affect, which can be brought on by various negative life events. Future researchers might learn more about this process through more thoughtful attention to different types of negative life events (e.g., bereavement, illness, incarceration) and more nuanced types of negative affect (i.e., not limited to depressive symptoms). In addition, perhaps future research might take a trans-diagnostic perspective and uncover similar relationships in persons with other maladaptive behaviors that bear semblance to hair pulling, such as pathological skin picking.

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Contributors

All authors designed the study and provided supervision. Analysis and interpretation of the data was conducted by Houghton, Mathew, Woods, and Compton. Woods was responsible for data acquisition. Houghton and Mathew drafted the manuscript, and all other authors provided critical revision for important intellectual content. Statistical analyses were conducted by Houghton and Compton. Funds for the study were obtained by Woods, Franklin, Twohig, Saunders, Compton, and Neal-Barnett.

Conflict of Interest

The authors report no conflicts of interest related to this study.

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