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A Latent Profile Analysis of Age of Onset in Trichotillomania

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Abstract

Background: Trichotillomania (TTM) onset may occur across the lifespan; however, adolescent onset is most frequently reported. Several studies have explored clinical differences between TTM age of onset groups with mixed results. We investigated empirically defined age of onset groups in adults with TTM and clinical differences between groups.

Methods: Participants were 1604 adult respondents to an internet survey, who endorsed DSM-IV-TR TTM criteria. Latent profile analysis was performed to identify TTM age of onset subgroups, which were then compared on demographic and clinical features.

Results: The most optimal model was a two-class solution comprised of a large group with average TTM onset during adolescence (n = 1539; 95.9% of the sample; Mean age of onset =

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12.4 years) and a small group with average onset in middle adulthood (n = 65; 4.1% of the sample; Mean age of onset = 35.6 years). The late-onset group differed from the early-onset group on several clinical variables (e.g., less likely to report co-occurring body-focused repetitive behaviors).

Conclusions: Findings suggest the presence of at least two distinct TTM age of onset subgroups: an early-onset group with onset during adolescence and a late-onset group with onset in middle adulthood. Future research is needed to further validate these subgroups and explore their clinical utility.

Keywords

Trichotillomania; Hair-Pulling Disorder; age of onset

Introduction

Trichotillomania (TTM; Hair-Pulling Disorder) involves repetitive hair pulling, resulting in hair loss, that persists despite attempts to stop or reduce it and that results in distress and/or impairment.[1] Researchers have hypothesized the presence of several TTM subtypes.[2,3] For example, studies have shown clinical differences among individuals with TTM based on the degree to which hair pulling is focused (i.e., performed with awareness and to regulate aversive emotional or sensory experiences) versus automatic (i.e., performed without or with delayed awareness.[4] Researchers have also proposed that TTM may be meaningfully subtyped according to age of onset.[2, 5–8]

TTM typically emerges during adolescence (i.e., 12 years), with symptoms following a chronic waxing and waning course.[10] However, for a number of individuals, TTM may begin prior to or following adolescence.[2, 6, 10] These observations have led to questions about age of onset as a potential distinguishing factor among individuals with TTM. Several researchers have speculated that very-early-onset TTM (e.g., hair pulling that emerges in infancy or early childhood) is clinically distinct from TTM presenting during late childhood/early adolescence.[6–10] For example, studies suggest very-early-onset pulling may serve self-soothing functions, co-occur with other self-soothing behaviors (e.g., thumb sucking, hair twirling), display a more equal sex ratio, and follow a remitting course.[10] Furthermore, researchers have suggested that later-onset hair pulling beginning in adulthood may develop secondary to other psychiatric conditions and benefit from treatment of potential underlying symptoms.[5]

Studies have also examined clinical differences between various TTM age of onset subgroups, with cutoffs established based on mean-split or known phenomenology surrounding average TTM age of onset. Along these lines, researchers have divided adult samples by (1) pre- and post-pubertal age of TTM onset[3, 11] and (2) very-early-onset (i.e., before 6 years), early-onset (i.e., 6 to 17 years) and late-onset (i.e., 18 years and older) subgroups[2] Dividing samples by pre- and post-pubertal pulling onset showed that, compared to post-pubertal pulling, pre-pubertal onset subgroups present with slightly greater functional impairment with respect to hobbies/interests,[2] lower clinician-rated global TTM severity, lower self-reported hair pulling severity, and reduced time spent engaged in daily

pulling.[11] Division of adult participants into very-early-onset, early-onset and late-onset pulling subgroups resulted in few differences, except with respect to hair pulling site.[2] Taken together, these studies have revealed mixed findings.

One proposed method of clarifying these mixed findings is to instead characterize individuals with TTM based on age of onset groups identified via a data-driven statistical approach – latent profile analysis (LPA) – which reveals hidden or underlying profiles with separate normal distributions in continuous variables.[12] LPA has revealed age of onset subgroups that diverge on sex,[13–17] marital status,[13,15] familiality,[13,15,16,18,19] symptom severity,[16,18] psychosocial functioning[13,19] and subtype,[13,15,9] co-occurring disorders and symptoms,[13,14,16–18,21] and developmental history[13,17] in an array of psychiatric conditions, including generalized anxiety disorder[14], panic disorder,[17] bipolar disorder,[18] schizophrenia,[13,15] obsessive-compulsive disorder,[16] and pathological skin picking.[19] Across these studies, LPA has largely shown greater disorder burden and/or familiality in earlier age of onset groups.[13–19] The current study utilized LPA to identify TTM age of onset subgroups and examine subgroup differences in demographic and clinical features. Building on prior work, we utilized a sample of adults previously analyzed in Flessner and colleagues' investigation of age of onset.[2] Based on research suggesting differences in clinical features and course between very-early-onset, adolescent-onset, and adult-onset pulling,[5] we expected that results of LPA would yield three age of onset subgroups, with greatest illness burden in the adolescent-onset group.

Methods

Participants were recruited through a link posted on the website of a national patient advocacy organization (the Trichotillomania Learning Center, now called the TLC Foundation for Body-Focused Repetitive Behaviors; BFRBs). Interested individuals read an institutional review board-approved study information sheet describing the study purpose and informing participants that the minimum age of entry was 18 years and older. Submission of the survey was used to indicate consent. The survey was active from April 2005 to May 2005, and no form of compensation was awarded to participants for completing the survey.[2,21]

Of the 2,558 survey responses received, 106 duplicate responses were excluded and 755 additional responses were excluded due to failure to endorse DSM-IV-TR criteria for TTM.[20] DSM-IV-TR TTM criteria were assessed through (1) a yes response to either "*Do you currently pull out your hair which results in noticeable hair loss (if it isn't covered or hidden)?"* or *"Do you currently pull out your hair resulting in noticeable thinning of the hair?"*; (2) a rating of at least "a little of the time (11–29%)" for either *"Do you experience an increased sense of physical tension or an "urge" immediately before pulling your hair or when you try to resist pulling?"* or *"Do you pull to relieve an uncomfortable bodily sensation (i.e., itching, burning, headache, etc.)?"*; (3) a rating of at least "a little of the time (11–29%)" for *"Do you experience a sense of pleasure/gratification/relief after pulling your hair?"* or *"Do you pull to relieve an uncomfortable bodily sensation (i.e., itching, burning, headache, etc.)?"*; (4) a rating of "never/almost never (0–10%)" for *"How often do you pull your hair because you believe small bugs/insects are crawling on your skin or in response to*

voices others may not be able to hear (e.g., deceased relatives, beings from another planet, etc.)?"; and (5) an impairment rating of 3 (mild to moderate) or higher on a 1-to-9 Likert scale for any of the following questions, which asked about the past 12 months: *"How much did your hair pulling interfere with your…[home management, like cleaning shopping, and taking care of the house/apartment?; social life?; ability to form and maintain close relationships with other people?; ability to work?; academic life?]"*

This yielded a sample of 1697 adults, of which only those (n = 1604) who completed a hair pulling age of onset item (i.e., *"Think of the very first time in your life when you pulled your hair on most days for at least two weeks or longer. Can you remember the exact age? If yes, how old or about how old were you?"*) were considered participants of the present study. The present sample was comprised mostly of females (n = 1498, 93.7%), had an average chronological age of 30.75 years of age (SD = 10.11), and was predominantly Caucasian (n = 1400, 92.9%). Slightly more than half (n = 869, 54.4%) were single/never married. On average, participants held about 4 years of higher education following high school (M = 3.80, SD = 2.69).

Measures

Trichotillomania Impact Survey

The Trichotillomania Impact Survey was designed by Woods and colleagues[21] to assess hair pulling phenomenology, impairment, and treatment history. As part of this survey, participants rated items on hair pulling related tension and relief (i.e., *"Do you experience an increased sense of physical tension or an "urge" immediately before pulling your hair or when you try to resist pulling?"* and *"Do you experience a sense of pleasure/gratification/relief after pulling your hair?"*). Participants rated these items on a 5-point Likert scale using the following anchors: *"All of the time (90–100%)," "Most of the time (71–89%)," "Some of the time (30–70%)," "A little of the time (11–29%)," and "Never/almost never (0–10%)."* Participants also rated their hair pulling course (i.e., *"What is the longest continuous number of days, weeks (or) months, (or years) in a row when you did not pull your hair?"*). Responses to this item were standardized into years. The survey also included items on physical causes of hair pulling rated with yes/no responses (i.e., *"Hair-pulling sometimes occurs as a result of physical causes such as physical illness or injury or the use of prescription medication, drugs, or alcohol.", "Do you think your hair pulling ever occurred as a result of such physical causes?"* and *"Do you think pulling was always the result of physical causes?"*). These items were collapsed into a single variable with three options: pulling never related to physical causes, pulling sometimes related to physical causes, and pulling always related to physical causes. Examples of possible physical causes of pulling included exhaustion, menstrual cycle, pregnancy/postpartum, heart disease, thyroid disease, cancer, overweight, infections, dermatological condition, prescription medication, and various drug and alcohol classes. Participants rated the following questions on co-occurring BFRBs with a yes/no response: *"Recurrent picking at skin or scabs resulting in physical damage (e.g., noticeable scarring, sores, reinjury of scabs, inflammation, etc.)?"*, *"Recurrent picking at nose resulting in damage (e.g., frequent nosebleeds, painful scabbing, a hole in the nasal passageway)?"*, *"Recurrent biting of nails resulting in damage (e.g.,*

infection of the nailbeds, or tissue around nails?)", *"Recurrent biting of lips or cheeks resulting in damage (e.g., scarring, oral bleeding)?"*

Participants also rated items regarding treatment history, including *"How old were you when you first sought treatment for hair pulling?"* and *"Compared with how your hair pulling was before your started treatment, your hair pulling now is:" "very much improved", "much improved", "minimally improved", "unchanged", "minimally worse", "much worse", or "very much worse."* The internet-based survey also included the validated rating scales described below.

Massachusetts General Hospital Hairpulling Scale

The Massachusetts General Hospital Hairpulling Scale (MGH-HS)[22] is a 7-item self-report instrument used to assess hair pulling severity (i.e., urges to pull hair, engagement in hair pulling, and consequences of hair pulling). Items are rated on a 0 to 4 point scale with total scores ranging from 0 to 28, and higher scores indicating greater symptom severity. The measure has demonstrated good internal consistency and test-retest reliability as well as acceptable convergent and divergent validity when correlated with other measures of psychological functioning.[22,23]

Milwaukee Inventory for Subtypes of Trichotillomania-Adult version

The Milwaukee Inventory for Subtypes of Trichotillomania-Adult version (MIST-A)[24] is a 15-item self-report measure assessing the extent to which adults engage in focused (i.e., pulling performed to reduce or regulate aversive or negative emotional states such as anxiety, stress, urges, etc.) and automatic hair pulling (i.e., pulling performed outside of one's awareness or with delayed awareness, typically occurring during passive activities). Specifically, 10 items examine focused hair pulling (MIST-A Focused) and 5 items examine automatic hair pulling (MIST-A Automatic). Items are rated on a 0 to 9 point Likert scale. The MIST-A provides separate total scores for focused (scale ranges from 0 to 90) and automatic (scale ranges from 0 to 45) hair pulling, with higher scores suggesting an increased focused or automatic hair pulling style, respectively. The scales demonstrate acceptable internal consistency and good construct and discriminant validity.[24]

Sheehan Disability Scale

The Sheehan Disability Scale (SDS)[25] is a 3-item self-report instrument that examines impairment in work/school, social life, and family life. Items are rated on a 0 to 10 point scale, with higher scores indicating increased impairment. The SDS has demonstrated good internal consistency and test-retest reliability as well as acceptable concurrent validity.[26,27]

Depression Anxiety Stress Scale-21

The Depression Anxiety Stress Scale-21 (DASS-21)[28] is a 21-item self-report scale that measures the severity of anxiety, stress, and depressive symptoms with three separate subscales (DASS-Anxiety, DASS-Stress, and DASS-Depression). Each subscale includes seven items, with higher scores indicative of greater symptom severity. The DASS-21 has demonstrated acceptable internal consistency and concurrent validity.[28,29]

Analytic Plan

Mplus (Version 7.4)[30] was used to perform LPA on the hair pulling age of onset variable to identify the optimal number of age of onset classes. First, a two-class solution was tested followed by successively increasing numbers of classes. The best-fit solution was evaluated using the following standard metrics: Akaike Information Criterion (AIC),[31] Bayesian Information Criteria (BIC),[32] sample-size adjusted BIC (ABIC),[33] entropy, and bootstrapped parametric likelihood ratio test (BLRT).[34] Consistent with prior procedures for our similar analysis in pathological skin picking,[19] model selection was also based on the size of the smallest class in each solution, as a smallest class size of ≤ 5% of the total sample size may indicate overfitting of the model and reduced generalizability of the model to other samples.[35,36] SPSS 24 was used to perform independent samples t-tests and chi-squared tests of independence to compare the optimal age of onset groups on demographic and clinical characteristics. Due to clinical variables displaying a non-normal distribution, per the Shapiro-Wilk Test, the Mann-Whitney U Test was performed to evaluate group differences on continuous clinical variables.

Results

Latent Profile Analysis of Hair Pulling Age of Onset

Findings from the LPA are displayed in Table 1. The two-class model included a very large class (n = 1539, 95.9% of the sample) with a mean age of onset of 12.36 years (SD = 4.42) and a very small class (n = 65, 4.1% of the sample) with a mean age of onset of 35.55 years (SD = 7.55). This same distribution was found in the subsequent models, such that each had a large class with average middle-childhood onset and progressively smaller other classes (i.e., classes with various mean age onsets spanning adulthood and an early-childhood onset class noted only in the six-class solution). However, as the models increased in number of classes, the smallest class proportion progressively decreased. Although the smallest class proportion in the 2-class model was below the convention of 5% of the total sample size, this small class still included a considerable number of participants (n = 65). In addition, the BLRT supported the 2-class model over the 1-class model. Therefore, the 2-class model was selected as the optimal model.

Demographic Characteristics

Relative to the early-onset group, participants in the late-onset group were older, less likely to be single and more likely to be married or divorced. There were no significant group differences in sex ratio, ethnicity/race or education level. See Table 2 for demographic differences and test statistics.

Clinical Characteristics

Differences in clinical characteristics are displayed in Table 3. There were no significant differences in dimensional measures of hair pulling severity (MGH-HS Total); overall disability (SDS); depression, anxiety or stress severity (DASS-21 scales); or the degree to which hair pulling is performed automatically or in a focused manner (MIST-A). There were no significant differences between the percentage of time the early-onset and late-onset

groups experienced tension or urges prior to pulling. However, the late-onset group reported experiencing pleasure/gratification/relief after pulling more often than the early-onset group. The late-onset group also reported shorter illness duration but not a greater number of continuous pulling-free years.

With respect to pulling distribution, the late-onset group endorsed eyelash pulling at a significantly lower rate but reported pulling from a greater number of body sites. Further, a greater proportion of the late-onset group endorsed that hair pulling was always a result of physical causes. There were no significant differences in the rates of individual co-occurring BFRBs (i.e., skin picking, nail biting, cheek/lip biting, nose picking). However, the early-onset group reported a higher total number of current co-occurring BFRBs relative to the late-onset group and a greater likelihood of having at least one concurrent BFRB. With respect to treatment history, the late-onset group reported an older chronological age when seeking initial treatment for hair pulling. The early-onset group reported a greater relative delay in treatment seeking. There were no significant group differences in perceptions of treatment outcome.

Discussion

The present study is the first to investigate empirically classified TTM age of onset groups. LPA yielded two age of onset subgroups: a very large group with average TTM onset in adolescence and a very small group with average TTM onset in middle adulthood. This two-class solution is consistent with findings in our LPA of age of onset in PSP.[19] However, contrary to our hypothesis and prior clinical accounts, LPA did not reveal a very-early-onset subgroup. Research has suggested that TTM beginning in early childhood may be distinct from later onset TTM, with a remitting course and a more balanced sex ratio.[9] In the present LPA investigation, a very-early-onset subgroup only emerged in the six-class solution, which exhibited suboptimal model fit across multiple indices. Reasons for this are unclear. However, it is possible that a very-early-onset group did not emerge in the present sample as previous work has suggested very-early-onset pulling follows a remitting course, limiting our identification of adults endorsing onset during this early developmental period. Hence, our sample may not have been young enough to capture this subgroup. Alternatively, due to limited reliability of retrospective self-report regarding early childhood, it is possible that more participants actually displayed very-early-onset pulling than reported.

With respect to clinical differences between early- and late-onset groups, despite a lack of significant differences on continuous clinical measures, clinical differences were noted on several survey items. For example, although no differences were found in the number of continuous pulling-free years, the late-onset group reported a significantly shorter duration of illness, which is to be expected given the shorter timeframe passing between hair pulling onset and chronological age at the time of the survey among the late-onset group. The late-onset group also reported a higher total number of pulling sites. Cross-sectional findings have revealed pulling sites increase with chronological age,[37] thus the higher chronological age of the late-onset group may partially explain this finding. Additionally, the older onset group was more likely to report that pulling seemed to be a result of physical causes at some point during the course of TTM. This finding is consistent with what was found for late-

onset skin picking in a similar investigation[19] and may suggest late-onset pulling is more likely to be secondary to physical problems relative to early-onset pulling, as previously suggested.[5] Although pulling accounted for by physical causes, such as medical conditions (e.g., dermatological or substance-related) and psychiatric conditions (e.g., body dysmorphic disorder) is exclusionary for a diagnosis of TTM, the survey item encompassed an array of conditions extending beyond the aforementioned medical and psychiatric conditions. Further, it is likely that participants interpreted the item phrasing "occurred as a result of physical causes" as a history of pulling exacerbated by physical conditions. With regard to experiences surrounding hair pulling episodes, there were no significant differences between early-onset and late-onset groups on tension or urge prior to pulling. However, the late-onset group reported experiencing pleasure/gratification/relief after pulling more often. Reasons for this are unclear. The emotion regulation model of BFRBs emphasizes that pulling is maintained through relief of unpleasant affective states.[38] One might surmise that higher rates of endorsement of depressive and anxious disorders in late-onset TTM, found in late-onset pathological skin picking,[19] may play a role; however, in the current survey, anxiety and depression were assessed only dimensionally, with no significant differences found between groups. Further, prior research showed the presence of comorbid anxiety and mood disorders did not significantly differentiate adults with TTM with respect to affective correlates of pulling (e.g., relief).[39] Thus, future replication is needed to parse this finding.

The early-onset group had an increased likelihood of endorsing eyelash pulling relative to the late-onset group. This may be partially attributed to the developmental transition to adolescence, during which girls begin to use cosmetic products (i.e., mascara, eyeliner), which may draw their focus to their eyelashes. The early-onset group also reported a higher number of co-occurring BFRBs and greater likelihood of having at least one co-occurring BFRB. This greater association with co-occurring BFRBs has been similarly observed in early-onset PSP.[19] Other significant differences were noted, with the late-onset group reporting an older chronological age when initially seeking hair pulling treatment and shorter relative delay in treatment seeking. These differences may be related to the older chronological age in the late-onset group.

The study has a number of limitations. First, diagnosis was not confirmed by a health professional. Second, the survey questions were not psychometrically validated. However, they were developed and reviewed by experts in TTM in addition to an expert in epidemiology and survey methodology.[21] Additionally, reliability of self-report may vary as participants' recall of age of onset and history is likely influenced by both their developmental stage at the time of initial onset and the length of time passing between initial onset and chronological age at the time of the survey. Further, the smallest class proportion in the 2-class model was 4.1%, which is less than the 5% suggested to prevent overfitting of the data. However, as the overall sample was large, there were still 65 participants in this class. Alternatively, the study may be limited by a response bias, whereby those with older onset pulling were less likely to have participated in the survey, which may have limited our ability to detect individuals with late-onset TTM and thereby underrepresent the prevalence of this group.

Conclusions

In summary, findings yielded two empirically-defined subgroups: an early-onset group with average pulling onset during adolescence and a late-onset group with average onset in middle adulthood. Although a very-early onset pulling subgroup did not emerge here, it may still be present in the larger population, as very-early onset pulling may persist into childhood but perhaps less often into adulthood. Future research should repeat this analysis in youth to examine whether a very-early-onset pulling group emerges in samples of a younger chronological age. There were some clinical differences between early and late-onset groups, suggesting these groups may be clinically distinct, although effect sizes were small. Of note, the early-onset group displayed higher rates of co-occurring BFRBs, and the late-onset group displayed increased physical causes of pulling. These findings are generally consistent with clinical characteristics of early-onset and late-onset PSP.[19] This may suggest that individuals with late-onset TTM and PSP share unique clinical characteristics or etiological pathways that differ from those with early-onset TTM and PSP. Findings may also imply that late-onset TTM cases are less typical in nature (e.g., more physical causes) relative to early onset cases.

Findings have implications for assessment, and suggest screening for co-occurring BFRBs may be particularly relevant for individuals with early-onset TTM. Findings may also have implications for treatment. For instance, our findings suggest greater emphasis should be placed on management of co-occurring physical problems for individuals with late-onset TTM during treatment. Broadly, thorough screening and re-evaluation of internal (e.g., physical sensations, thoughts and emotions) and external (e.g., activities and settings) triggers for hair pulling, in addition to consequences or events that follow hair pulling (e.g., reduction in aversive emotions or physical sensations, increase in pleasure or gratification) for hair pulling is a key aspect of behavioral treatment for BFRBs.[40] Future research is needed to validate these subgroups. Once validated, these age of onset subgroups may help researchers to characterize individuals with TTM with respect to phenotypic, neurocognitive, neural, and genetic features, and assess for potential differences in response to various interventions.

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Table 1

Summary of findings from latent profile analyses of age of Trichotillomania (Hair Pulling Disorder) onset (n=1604)

Number of classes	Bayesian Information Criterion (BIC)	BIC (sample size adjusted)	Akaike Information Criterion	Entropy	Smallest Class Proportion	Bootstrap Likelihood Ratio Test		Mean Age of Onset (years) of Each Class
						χ^2 (df = 3)	p	
1	-	-	-	-	-	-	-	-
2	**9987.904**	**9975.197**	**9966.383**	**0.981**	**.041**	**−5749.186**	**<.001**	**12.38; 35.60**
3	9892.843	9873.783	9860.562	0.954	.014	−5700.238	<.001	11.99; 26.32; 43.32
4	9981.860	9856.446	9838.819	0.907	.012	−5692.479	<.001	11.62; 21.18; 32.24; 45.57
5	9985.841	9854.073	9832.039	0.912	.001	−5688.351	<.001	11.56; 20.73; 31.36; 43.25; 55.85
6	9896.527	9858.405	9831.964	0.787	.001	−5680.477	0.5	7.54; 12.08; 20.58; 31.30; 43.32; 55.90

Note. Best fitting model is bolded.

Table 2

Demographic characteristics associated with early- and late-onset Trichotillomania (Hair Pulling Disorder)

	Age of onset ≤ 26 *n* = 1539	**Age of Onset > 26 *n* = 65**	**Statistic**	***df***	***p*-value**	**Effect Size**
Age of onset HPD Mean (SD)	**12.36 (4.42)**	**35.55 (7.55)**	**−24.61**[1]	**65.87**	**<.001**	**3.75** [1]
Chronological Age Mean (SD)	**30.30 (9.89)**	**41.55 (9.12)**	**−9.02**[1]	**1602**	**<.001**	**1.18** [1]
Sex *n* (%)						
Female	1437 (93.7)	61 (93.8)	NA[3]	NA	>.99	.001[2]
Male	97 (6.3)	4 (6.2)	-	-	-	
Ethnicity *n* (%)						
Caucasian	1343 (87.5)	57 (87.7)	<.001[2]	1	>.99	−.001[2]
Ethnic Minority	192 (12.5)	8 (12.3)	-	-	-	
Marital Status *n* (%)						
Single/Never Married	**854 (55.7)**	**15 (23.4)**	**24.51** [2]	**1**	**<.001**	**−.13**[2]
Married	**549 (35.8)**	**33 (51.6)**	**5.92** [2]	**1**	**.02**	**.06** [2]
Separated	3 (0.20)	0 (0.00)	NA[3]	NA	>.99	−.01[2]
Divorced	**121 (7.90)**	**16 (25.0)**	**20.80** [2]	**1**	**<.001**	**.12** [2]
Widowed	6 (0.40)	0 (0.00)	NA[3]	NA	>.99	−.01[2]
Years Education since High School	3.77 (2.63)	4.59 (3.71)	−1.74[1]	64.71	.09	.25[1]

Note. Statistic:

[1]Independent Samples t-test (2-sided);

[2]Chi-squared Test (2-sided);

[3]Fisher's Exact Test (2-sided);

Significant findings are bolded.

Effect Size:

[1]Cohen's d;

[2]Phi Coefficient

Table 3

Clinical characteristics associated with early- and late-onset Trichotillomania (Hair Pulling Disorder)

	Age of Onset ≤ 26 *n* = 1539	**Age of Onset > 26 *n* = 65**	**Statistic**	***df***	***p*-value**	**Effect Size**
MGH-HS *Median*	17.00	17.00	−0.58[1]		.56	−.02[1]
DASS-Depression *Median*	14.00	12.00	−0.38[1]		.70	−.01[1]
DASS-Anxiety *Median*	8.00	8.00	−0.78[1]		.44	−.02[1]
DASS-Stress *Median*	20.00	22.00	−0.44[1]		.66	−.01[1]
MIST-A Automatic *Median*	26.00	25.00	−0.99[1]		.32	−.03[1]
MIST-A Focused *Median*	45.00	45.00	−0.23[1]		.82	−.01[1]
Sheehan Disability Scale *Median*	9.00	8.00	−0.24[1]		.81	−.01[1]
Tension or urge before pulling *Median*	2.00	2.00	−0.80[1]		.43	−.02[1]
Pleasure/gratification/relief after pulling *Median*	**2.00**	**2.00**	**−3.12**[1]		**.002**	**−.08**[1]
Duration of Illness *Median*	**16.00**	**4.00**	**−9.18**[1]		**<.001**	**−.23**[1]
Longest continuous number of years elapsed with no pulling *Median*	0.17	0.17	−0.42[1]		.67	−.01[1]
Scalp pulling	1123 (79.4)	51 (85.0)	0.79[2]	1	.38	−.03[2]
Eyelash pulling	**815 (60.4)**	**19 (39.6)**	**7.52**[2]	**1**	**.01**	**.08**[2]
Eyebrow pulling	883 (65.3)	27 (55.1)	1.72[2]	1	.19	.04[2]
Number of pulling sites *Median*	**8.00**	**9.50**	**−2.69**[1]		**.01**	**.09**[1]
Pulling related to physical causes	**-**	**-**	**6.74**[2]	**2**	**.03**	**.11**[3]
Never	228 (41.8)	8 (30.8)	0.84[2]	1	.36	−.05[2]
Ever	233 (42.8)	9 (34.6)	0.38[2]	1	.54	−.03[2]
Always	**84 (15.4)**	**9 (34.6)**	**NA**[3]	**1**	**.02**	**.11**[2]
Recurrent skin picking	772 (51.6)	27 (43.5)	1.25[2]	1	.26	−.03[2]
Recurrent nose picking	182 (12.4%)	8 (13.1)	<.001[2]	1	>.99	.004[2]
Recurrent nail biting	452 (30.5%)	16 (26.2)	.331[2]	1	.57	−.02[2]
Recurrent cheek/lip biting	387 (26.3)	10 (16.7)	2.29[2]	1	.13	−.04[2]
Total number of BFRBs *Median*	**1.00**	**1.00**	**−2.28**[1]		**.02**	**.06**[1]
At least 1 BFRB	**1083 (71.3)**	**38 (58.5)**	**4.33**[2]	**1**	**.04**	**.06**[2]
Age at initial treatment seeking *Median* *	**19.00**	**35.00**	**−8.00**[1]		**<.001**	**.26**[1]
Treatment seeking delay *Median* *	**5.50**	**1.00**	**−4.54**[1]		**<.001**	**.15**[1]
Treatment outcome rating CGI *Median**	4.00	4.00	−1.30[1]		.19	.04[1]

Note. Statistic: Statistic:

[1] Mann-Whitney U test (Z-score; 2-sided);

[2] Chi square test (2-sided);

[3] Fisher's Exact Test (2-sided).

Significant findings are bolded.

[*=] Only among those who sought treatment (early onset, n=922, late onset, n=41).

Effect Size:

[1] Pearson's r Correlation Coefficient;

[2] Phi Coefficient;

[3] Cramer's V.