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Race/Ethnicity and Treatment Outcome in a Randomized Controlled Trial for Trichotillomania (Hair-Pulling Disorder)

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Abstract

Objective: Treatment outcome was compared among non-Hispanic White and racial/ethnic minority participants with trichotillomania (TTM), or hair-pulling disorder.

Method: Symptom severity, quality of life, and TTM-related disability were compared in a behavior therapy trial with a stepped care approach: web-based self-help and then individual behavior therapy. The sample comprised 72% ($n = 38$) non-Hispanic White participants and 28% ($n = 15$) minority participants.

Results: The ethnic groups responded differently to treatment, with fewer minority participants showing improvement during web-based self-help. Response rates were equivalent between ethnic groups during the in-person behavior therapy. These results should be interpreted with caution because of the small sample size of minorities in the study and consequent inability to analyze results for each racial/ethnic group individually.

Conclusions: Future studies should focus on the investigation of factors that may enable or hinder racial and ethnic minority participants to benefit from online and/or self-help behavior therapy for TTM.

Keywords

treatment outcome; racial/ethnic minorities; trichotillomania; hair-pulling disorder; obsessive-compulsive related disorders

Treatment Studies for Obsessive-Compulsive Related Disorders

Treatment studies for obsessive-compulsive-related disorders (OCDs) have shown therapy to be efficacious. Cognitive-behavioral therapy is effective for OCD, with exposure-based treatments in particular having the most support (e.g., Foa, 2010). In trichotillomania (TTM; hair-pulling disorder), a meta-analysis of randomized trials found a large effect on symptom severity in behavior therapy conditions (pooled standardized mean difference = 1.41), while selective serotonin reuptake inhibitors had lower effect sizes (pooled effect size = 0.41; McGuire et al., 2014). Habit reversal training (HRT) is a type of behavioral therapy developed by Azrin, Nunn, and Frantz (1980). In the last decade, there has been a movement to explore the efficacy of different augmentations of HRT (e.g., dialectical behavior therapy-

enhanced HRT by Keuthen et al., 2012, and acceptance and commitment therapy-enhanced HRT by Woods, Wetterneck, & Flessner, 2006) for TTM. It is not yet clear whether one variant is better than another because of the confounding of length and behavior therapy subtype across studies (McGuire et al., 2014), but it is clear that as a class, these treatments do work.

Although there has been significant progress in the development of effective treatments for OCRDs, few studies have focused on the treatment of ethnic minorities with OCRDs. For example, in 21 randomized controlled trials (total $N = 2,221$) for OCD that were conducted in the United States and Canada between 1995 and 2008 and provided data on race/ethnicity, 92% of participants were White (Williams & Powers, 2010). Only 5%–6% of the participants identified as racial/ethnic minority members (1% African American, 1% Hispanic, 2% Asian, and 2% other). By comparison, 72% of the U.S. population and 77% of the Canadian population is White (U.S. Census Bureau, 2010; Statistics Canada, 2011).

Many theories have been posited as to why the mental health treatment of ethnic minorities is underresearched. For example, in African Americans, some believe this underrepresentation could be due to misdiagnosis and mistreatment, mistrust of research, and a lack of African American researchers (e.g., Neal & Turner, 1991). A recent study of barriers to African Americans' participation in anxiety disorders research showed that participants dealt with obstacles such as wanting to confide only in close relationships, believing there may be hidden purposes of the research studies, and issues surrounding confidentiality (Williams, Beckmann-Mendez, & Turkheimer, 2013).

Underrepresentation of ethnic minority members in clinical trials could also stem from barriers to treatment. Although African Americans, for example, appear to suffer from OCD at the same rate as the entire population (e.g., Himle et al., 2008; Kessler et al., 2005), there appears to be a significant disparity in the number of people who receive treatment. Among the entire population of those with severe OCD, 93% receive some type of treatment (Ruscio, Stein, Chiu, & Kessler, 2010), yet only 60% of African Americans receive treatment (Himle et al., 2008). Potential barriers to treatment for African Americans with OCD were identified in an Internet survey, including concerns about discrimination, fears of therapy, stigma and shame, cost of treatment, and a belief that clinicians will not be effective in helping (Williams, Domanico, Marques, LeBlanc, & Turkheimer, 2012).

Several authors (e.g., Neighbors & Jackson, 1996) have noted that regardless of socioeconomic status, African Americans were less likely to seek help for mental health issues from traditional mental health providers than are Whites. Some examples of nontraditional help settings that African Americans have tended to seek out are Black churches, beauty shops, barbershops, and elders in their communities (Neighbors, Caldwell, Thompson, & Jackson, 1994; Neighbors & Jackson, 1996). Asian Americans have also been noted to seek treatment less often than the majority population, although U.S.-born Asian Americans have higher rates of treatment seeking than their immigrant counterparts (e.g., Abe-Kim et al., 2007).

When ethnic minority members seek mental health treatment, many discrepancies have been observed in the quality of treatment they have received when compared with Whites, such as being less likely to receive empirically supported treatments (U.S. Department of Health and Human Services, 2001). Ethnic minority members have also been more likely to prematurely discontinue treatment (Organista, Munoz, & Gonzalez, 1994).

TTM Treatment Studies for Racial/Ethnic Minorities

As of 2007, only 0.5% of all participants included in TTM studies had identified as African American (Mansueto, Thomas, & Brice, 2007). Neal-Barnett, Ward-Brown, Mitchell, and Krownapple (2000) argued that the lack of African Americans in TTM research is accounted for by African Americans' help-seeking behavior. Neal-Barnett and Crowther (2000) noted that African Americans have been found to seek help with issues such as bereavement and relationships, but not anxiety, perhaps because it is not seen as problematic enough to need professional help. Neal-Barnett and Crowther also discussed why African Americans might be less likely to seek help for TTM specifically. They cited a study of hair care professionals done by Neal-Barnett et al. (2000), which found that African Americans sought assistance for TTM from their hair care professionals, providing support for the theory that African Americans do seek help from nonmental health professionals for mental health issues. Mansueto and colleagues (2007) suggested that the low levels of treatment utilization for TTM could also be attributed to cosmetic consequences of hair pulling possibly being easier to cope with for African Americans than Whites, as there are a wider variety of hairstyles, which could be used to disguise the hair loss.

Outcome studies focusing on the response of minorities to cognitive-behavioral therapy have not been published for most OCRDs (body dysmorphic disorder, excoriation [skin picking] disorder, hoarding disorder, TTM). Studies of OCD treatment response among minorities have found exposure and response prevention to be effective (Friedman et al., 2003; Hatch, Friedman, & Paradis, 1996; Williams, Chambless, & Steketee, 1998) but have been limited to African Americans and Caribbean Americans.

TTM research conducted specifically with Asian Americans and Native Americans is limited to case studies and first-person accounts. Larger scale studies have been conducted with African Americans and Hispanics/Latinos (e.g., Neal-Barnett et al., 2010; Neal-Barnett, Statom, & Stadulis, 2011) but have not been part of a clinical trial. To our knowledge, there have not been any published treatment studies for TTM that compared outcome between White and non-White participants in a clinical trial. Neal-Barnett and colleagues (2010) conducted an Internet study that examined ethnic differences in treatment for TTM in which Whites were found to be more likely to seek treatment (medication, behavior therapy, hypnosis, psychotherapy, and support groups) for TTM than were African Americans and Hispanics/Latinos. Additionally, no significant difference was found between self-rated treatment improvement between the White and minority participants. However, this treatment improvement rating was determined from one item and was not immediately administered posttreatment; it concerned treatment that participants could have had at any point during their lifetimes and is therefore difficult to interpret.

Current Study

Regardless of whether underrepresentation in treatment trials reflects a lack of focus on the topic or barriers to seeking treatment with mental health professionals (in research or otherwise), or both, it has the unfortunate consequence of leaving us unaware of whether the behavioral treatments work as well for minorities as they do for Whites, for whom they have (mostly) been developed and tested, or if these treatments need to be adapted. The literature is lacking empirical evidence of treatment response of minorities to behavior therapy. It is important to assess minorities' outcomes in clinical trials to gain information that can help inform clinicians' decision making, rather than relying solely on data from clinical trials conducted with non-Hispanic Whites (NHWs).

It is possible that the current cognitive-behavioral treatments for TTM work best for Whites, and that modifications should be made for other ethnic groups. For instance, Neal-Barnett et al. (2010) suggested that culture-based interventions for TTM might be needed, which take into consideration the psychological aspects of being a minority, such as cultural messages about hair and mental health, race-related stress, discrimination, identity, and acculturation. To begin to address this issue, we compared treatment responses of Whites and of racial/ethnic minorities in a stepped care trial (web-based self-help in step 1 and habit reversal therapy in step 2) for adults with TTM.

Methods

Design Overview

Details about the procedure for the study are available in Rogers et al., 2014. All recruitment and study procedures were approved by the American University Institutional Review Board. Participant enrollment began in September 2010 and the final follow-up assessment occurred in November 2012. After a baseline assessment to determine eligibility, eligible participants were randomized to the immediate treatment ($n = 30$) and waitlist conditions ($n = 30$).

Participants in the immediate treatment condition started with the step 1 intervention (10 weeks of free access to StopPulling.com, an interactive website featuring self-help behavior therapy). StopPulling.com comprises the assessment, intervention, and maintenance models. Participants self-monitored their TTM-related behaviors, sensations, feelings, and thoughts during the assessment module. During the intervention module, they used three recommended interventions weekly. And after meeting their goals for 4 weeks, they progressed to the maintenance module, in which they continued to self-monitor and use interventions as needed. Further detail about StopPulling.com is available in Rogers et al., 2014 as well as in Mouton-Odum, Keuthen, Wagener, and Stanley (2006).

Participants in the waitlist condition started step 1 after 10 weeks. For safety monitoring, participants in both conditions were evaluated for reliable deterioration (6-point increase on Massachusetts General Hospital Hair-Pulling Scale [MGH-HPS]; Keuthen et al., 1995) 5 weeks after starting both the waitlist and step 1. None of the participants met reliable

deterioration during the wait list, although one participant did meet this criterion during step 1 and was offered to enter the step 2 treatment immediately, which the participant accepted.

After step 1, all participants were assessed (poststep 1 assessment) and then they decided whether to receive step 2 treatment (8 weeks of individual in-person habit reversal training with trained and supervised doctoral students in a university outpatient clinic, following a modified version of the manual by Stanley & Mouton, 1996). This manual¹ focused on the four components of HRT cited by Bloch et al. (2007): (a) self-monitoring of hair-pulling-related behaviors; (b) awareness training, to increase awareness of the behaviors and situations that lead to hair pulling; (c) stimulus control, aimed at disrupting pulling behaviors; and (d) competing response training, which is the implementation of behaviors that are physically incompatible with pulling hair. Further detail about this manual is available in Rogers et al., 2014. All participants were assessed 8 weeks later (poststep 2 assessment).

Participants

A total of 60 adults (57 female, 3 male) with TTM participated in the study, of which 25% were members of minority groups. See Table 1 for demographic and clinical characteristics of the participants. Recruitment was done through newspaper advertisements, websites, and clinician referrals. Inclusion criteria included regular access to the Internet, 18 years old, and the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV; American Psychiatric Association, 2000) criteria for TTM (though criteria B and C were not required because previous findings did not support the incremental validity of these criteria for TTM diagnoses; Conelea et al., 2012). Exclusion criteria included current suicidality, major depression, psychosis, severe anxiety, or substance abuse. These criteria were chosen to augment external validity by matching the exclusion criteria used by [StopPulling.com](https://www.stoppulling.com), the step 1 intervention. Concurrent psychotherapy focusing on TTM or psychotropic medication for TTM that was not stable 4 weeks before study enrollment were additional exclusion criteria.

Participants who were included in the study analyses had completed, at a minimum, the poststep 1 assessment after having received the step 1 intervention. This criterion excluded 12% (n = 7) of participants from the analyses, who were unable to be contacted or who had dropped out of the study; 86% (n = 6) were non-Hispanic White (NHW) and 14% (n = 1) minority. The final sample comprised 72% (n = 38) NHW and 28% (n = 15) minority participants (African American, n = 9); Asian (n = 2); Middle Eastern (n = 2), Native Hawaiian (n = 1); and Hispanic/Latino (n = 1). Of the 15 minority participants, 8 were randomized to the immediate condition and 7 were randomized to the waitlist condition. Of the NHW participants, 18 were randomized to the immediate condition and 20 were randomized to the waitlist condition. The minorities group was too small to permit meaningful inferential testing, but to at least explore the issue of whether subgroup heterogeneity affected the results, we examined the data for the largest single minority group (African American) separately.

Measures

Clinician and self-rated measures were administered at baseline, poststep 1, and poststep 2. Graduate students who had been trained by the principal investigator conducted the assessments. A random sample (20%) of the clinician interviews was rated by a second coder, who was masked to assessment time point and treatment condition.

TTM Symptom History, Severity, and Impairment

Massachusetts General Hospital Hairpulling Scale (MGH-HPS; Keuthen et al., 1995).—The MGH-HPS is a seven-item self-report measure of hair-pulling severity during the preceding week. Higher scores indicate greater severity. It has demonstrated strong internal consistency (.74 for our sample at baseline) and test-retest reliability, with acceptable convergent and discriminant reliability. It has also shown sensitivity to change during treatment (Keuthen et al., 1995; O’Sullivan et al., 1995).

Trichotillomania Diagnostic Interview-Revised (TDI-R; Rothbaum & Ninan, 1994).—The TDI-R is a semistructured interview with three-point ratings modeled after the Structured Clinical Interview for the Mental and Diagnostic Statistical Manual of Mental Disorders Fourth Edition (SCID for DSM-IV) and was used to assess DSM-IV criteria for TTM. Among the random sample (20%) of these interviews that were coded by a second rater, agreement was 92%, kappa = .77.

Psychiatric Institute Trichotillomania Scale (PITS; Winche et al., 1992).—The PITS is a six-item semi-structured interview that assesses TTM symptom severity and impairment. Higher scores reflect greater severity. In a study by Diefenbach, Tolin, Crocetto, Maltby, and Hannan (2005), it was found to have low internal consistency yet strong convergent validity with both self-report and other interviewer-rated TTM measures. Our sample also showed low internal consistency on this measure at baseline ($\alpha = .37$). In the random sample (20%) of these interviews in our study coded by a second rater, there was a high correlation between interviewer and video-coder ($r = .95$). Note that item 6 could not be coded from video recordings. Thus, only the sum of items 1–5 was evaluated for reliability.

Trichotillomania Course and Treatment Interview (Haaga et al., unpublished measure).—We created this structured interview to assess the participant’s course of TTM symptoms and treatment history.

Comorbid Symptoms

Structured Clinical Interview for DSM-IV-TR Axis I Disorders-Patient Edition (SCID-I/P; First, Gibbon, Spitzer, & Williams, 2002).—The SCID-I/P is a semistructured interview used to establish Axis I diagnoses in our sample. In the sample (20%) of these interviews that were rated by a second coder, 100% of the diagnoses were agreed upon.

Psychosocial Impairment

World Health Organization Quality of Life-Brief Version (WHOQOL-BREF; WHOQOL Group, 1998).—The WHOQOL-BREF is a 26-item self-report measure of

quality of life in the past 2 weeks. In this study, the average score (ranging from 4 to 20) across four domains was used (physical health, psychological health, social relationships, and environment). The WHOQOL-BREF has demonstrated good discriminant validity, content validity, internal consistency, and retest reliability (WHOQOL Group, 1998).

Sheehan Disability Scale (SDS; Sheehan, 1983).—The SDS is a self-report of impairment in work/school, social life, and home/family life, and the scores range from 0 to 30. The SDS has high retest reliability, internal consistency, and convergent validity with the clinician rated global assessment of functioning (Arbuckle et al., 2009). The SDS also correlates positively with TTM symptom severity (Woods et al., 2006).

Treatment Satisfaction

Client Satisfaction Questionnaire (CSQ-8; Larsen, Attkisson, Hargreaves, & Nynguyen, 1979).—The CSQ-8 is an eight-item self-report measure of satisfaction with health services, with higher scores reflecting greater satisfaction with treatment, and the scores range from 8 to 32.

Criteria for Treatment Response

This study used multiple criteria to measure treatment response as the primary outcome measures: *reliable change*, *clinical significance*, and *remission*. Reliable change was measured using Jacobson and Truax's (1991) guidelines and there was a decrease of 6 points on the MGHHS. Of the participants, 60% ($n = 32$) achieved reliable change during poststep 1 or poststep 2. Clinical significance was also measured according to guidelines by Jacobson and Truax (1991) and required both recovery of normal-range functioning, which was a posttreatment cut-off score of 9 or below on the MGH-HPS, and reliable change. Of the participants, 40% ($n = 21$) met clinical significance. Remission was measured by the lack of meeting TTM diagnostic criteria, per the study criteria, which was attained by 45% ($n = 24$) of participants.

Treatment Adherence

Adherence to step 1 (StopPulling.com) was measured as the number of days participants entered data on the website, ranging from 0 to 70 days. Therapist adherence to the HRT protocol was scored on a 57-item checklist, and two raters who had high reliability ($\kappa = .78$) watched sessions of five randomly selected participants.

Statistical Analyses

All analyses were conducted using SPSS (version 19). Fisher's exact test was used to compare categorical variables between ethnic groups. Independent sample t -test was used to compare continuous variables, using Levene's test for equality of variance to determine the appropriate statistic. Logistic and linear regressions were performed to determine whether demographic and clinical variables predicted outcome. All tests of significance were two-tailed. Demographic covariates that were controlled for comprised age, gender, educational attainment, and employment status. All statistical assumptions were met.

Results

Differential Treatment Response Between Ethnic Groups

There was a discrepancy in treatment response rates between ethnic groups, with only 33% ($n = 5$) of the minority participants meeting *reliable change* criteria compared to 74% ($n = 28$) of the NHW participants meeting reliable change criteria at the time of poststep 2. Race/ethnicity predicted reliable change on the MGH-HPS before (odds ratio [OR] = 5.60, 95% confidence interval [CI] [1.54, 20.42]; $p < .01$) and after controlling for age, gender, educational attainment, and employment status ($OR = 4.96$, 95% CI [1.26, 19.57]; $p = .02$).

This differential response occurred mainly from baseline to poststep 1 in self-reported *TTM severity*. Race/ethnicity predicted step 1 change in the MGH-HPS before controlling for demographics ($\beta = 3.81$, $p = .01$) and afterwards ($\beta = 3.94$, $p = .02$; see Table 2). In contrast, race/ethnicity did not predict change in the MGH-HPS from post-step 1 to post-step 2 either before ($\beta = .00$, $p = .98$) or after demographic variables were controlled ($\beta = -.48$, $p = .80$).

When evaluating these groups using *clinical significance* criteria, race/ethnicity was not significantly predictive of response before ($OR = 2.48$, 95% CI [.67, 9.17]; $p = .18$) or after controlling for demographics ($OR = 2.21$, 95% CI [.54, 9.00]; $p = .27$). Although race/ethnicity was not significantly related to clinically significant response, it is worth noting for future research that a substantially higher proportion of NHW participants (47%) made a clinically significant response at the time of poststep 2 than did minority participants (27%).

The discrepancies between minority and NHW participants between baseline and posttreatment (poststep 1 or poststep 2) did not exist when the outcome variables were based on clinician-rated measures. Race/ethnicity did not predict meeting *remission* criteria before controlling for demographics ($OR = 1.24$, 95% CI [.35, 4.43]; $p = .75$) or afterwards ($OR = 1.31$, 95% CI [.32, 5.36]; $p = .71$). The proportion of participants meeting remission in the ethnic groups was similar, with 46% ($n = 6$) of minority participants remitting, and 51% ($n = 18$) of NHW participants remitting. When using the PITS to measure interviewer-rated TTM symptom severity, race did not significantly predict the change in severity from baseline to poststep 1 before ($\beta = .63$, $p = .59$) or after controlling for demographics ($\beta = 1.26$, $p = .29$). The same was true from poststep 1 to poststep 2, before ($\beta = .84$, $p = .54$) and after controlling for demographics ($\beta = -.13$, $p = .92$).

Self-reported quality of life (WHOQOL) and TTM-related disability (SDS) were also measured as outcome variables between baseline and poststep 1, the time of the discrepancy in treatment response. Race/ethnicity was not found to predict the change in the SDS before ($\beta = -.18$, $p = .90$) or after controlling for demographics ($\beta = .06$, $p = .97$). When evaluating the change in the WHOQOL, race/ethnicity was not predictive of change before controlling for demographics ($\beta = -.11$, $p = .80$), or afterwards ($\beta = -.13$, $p = .77$).

Treatment Utilization and Adherence

There were no significant or substantial differences between NHW and minority participants in frequency of use of [StopPulling.com](https://www.stoppulling.com) over the 10-week step 1 period (NHW: median [Mdn] = 17.0 days, minority: $Mdn = 17.0$ days, which means each group logged on slightly

less than twice per week), the choice to enter in-person therapy in Step 2 (NHW: 76%, minority: 67%), or number of in-person therapy sessions attended by those who did enter (NHW: $M = 7.8$, standard deviation [SD] = .7; minority: mean [M] = 7.9, $SD = .4$).

In an effort to identify treatment seeking deconfounded from research seeking among the participants, the choice to enter the in-person therapy was examined by controlling for poststep 1 symptom severity. Race did not predict the choice to enter in-person therapy, whereas higher poststep 1 MGH-HPS scores did significantly predict the likelihood of making this choice ($OR = 1.21$, 95% CI [1.03, 1.43]; $p = .02$). This suggests that the possibility of reluctance to enter research studies by minority participants was not an issue in this study.

Satisfaction With Services

As shown in Table 2, the minority participants indicated they were less satisfied with the services they had received than were the NHW participants at poststep 1, as measured by the CSQ. These differences were not significant, though the effect sizes were quite large at both poststep 1 (minority: $M = 23.6$, $SD = 5.6$, NHW: $M = 25.7$, $SD = 4.4$; $t(48) = 1.35$, $p = .18$, $d = -.72$), and poststep 2 (minority: $M = 26.2$, $SD = 6.2$, NHW: $M = 29.4$, $SD = 3.4$; $t(15) = 1.81$, $p = .09$, $d = -.94$). Levene's test indicated unequal variances for the CSQ at poststep 2 ($F = 9.07$, $p = .004$), thus degrees of freedom were adjusted from 46 to 14.83.

Discussion

This study involved a comparison of treatment responses of NHWs and racial/ethnic minorities, during both web-based self-help and in-person habit reversal therapy, to begin to learn about whether cultural adaptations might be helpful for minorities with TTM. The ethnic groups in this study responded differently to the treatment; fewer minority participants reliably improved compared to NHW participants. This differential response was most clear after the online self-help behavior therapy program, as the NHW participants experienced greater self-reported symptom reduction than the minority participants, while changes in self-reported quality of life and TTM-related disability did not differ. However, treatment response rates were found to be more equivalent after the in-person behavior therapy.

Unfortunately, we did not have enough members of each minority group to permit more fine-grained inferential statistical analyses. For what it is worth, descriptively, there was a hint that reliable change during step 1 may have been even more limited among other minority groups ($1/6 = 17\%$) than among the largest single group, African Americans ($4/9 = 44\%$). Future research with larger samples would be needed to evaluate whether treatment response in TTM varies across specific racial and ethnic minority populations.

It is possible that the reason for the differential response between ethnic groups was the method of assessment, as the minority participants self-reported worse outcomes than the NHW participants, yet the clinician-rated outcomes did not differ. One explanation for this is that previous studies on anxiety disorders treatment has shown that African Americans, for example, have self-reported relatively lower levels of treatment response, although their

ratings on clinician and physiological measures were consistent (Williams et al., 1998; Carter, Sbrocco, Gore, Marin, & Lewis, 2003).

Another possible explanation is that all of the evaluators in our study were NHWs, and several studies have found that an ethnic mismatch of study participants and evaluators can affect participants' reports of their symptomatology. For instance, Williams and Turkheimer (2008) found that African Americans reported more concerns about their washing behaviors when the evaluator was Black than when the evaluator was White. Additionally, Malgady and Costantino (1998) observed that clinical judgments of symptom severity were improved when Hispanic patients were matched in ethnicity and language to clinicians, regardless of whether or not the patients were bilingual.

The stepped-care approach to this study was beneficial because it allowed us to see how minority members with TTM responded to two different treatment modalities. Although the Internet as a medium for service delivery has traditionally been discussed as a treatment barrier for ethnic minorities (e.g., Lorence, Park, & Fox, 2006), this does not appear to have been the case in this particular study because education levels and access to Internet were equal between NHW and minority participants in this study sample. The participants were informed that part of the study would involve online self-help and they were required to have regular access to the Internet to participate in the study. Additionally, the minority and NHW participants did not differ in their levels of education and the significant finding that self-reported treatment response was better among the NHW participants than minority participants after the online self-help had controlled for education.

Limitations

Results in this study should be interpreted with caution because of the small sample size of minorities in the study and consequent inability to analyze results for each racial/ethnic group individually, which limits generalizability. Another limitation is that initial response was the focus of this study and not long-term maintenance of response, which is often a concern in treatment of TTM (e.g., Keijsers et al., 2006). This study's strengths comprised the use of multiple assessment methods, which proved important because there were differences in outcome depending on the type of measure used, and multiple steps of treatment, which was useful to learn the specifics about what part of the treatment led to a discrepancy in treatment response between minority and NHW participants.

Given the differential response to the steps of treatment in this study between the minority and NHW participants, future studies could focus on how to improve treatment for minority members seeking treatment for TTM. The minority participants in this study were found to be less satisfied with the treatment, which further emphasizes that adaptations to the existing treatments need to be made. Larger scale studies of treatment outcome among ethnic minorities need to be conducted with the ultimate aim of exploring whether the incorporation of cross-cultural factors is needed in the treatment of TTM. For instance, different adaptations may be necessary for different minority groups, but Neal-Barnett and colleagues (2010) proposed that factors such as cultural messages about hair and racial stress, discrimination, and identity should be further examined and if warranted, ultimately

included in interventions. These types of adaptations have the potential to improve the treatment efficacy gap depicted in our results.

Conclusion

These findings suggest a differential response to online self-help for TTM by race/ethnicity. To our knowledge, this is the first study that examines response rates between majority and minority populations in a treatment trial for TTM. The standard cognitive-behavioral treatments for TTM (including the self-help program in this study) were primarily developed and tested on White participants, and the failure of an automated online self-help program like StopPulling.com to make adaptations based on cultural factors could have contributed to the observed difference between ethnic groups' responses. Future studies should focus on the investigation of factors that may enable or hinder racial and ethnic minority participants to benefit from online and/or self-help behavior therapy for TTM.

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Table 1

Demographic and Clinical Characteristics at Baseline (n = 53)

	NHW	Minority
Gender (% female)	91%	100%
Age	34.0 (11.9)	32.3 (9.8)
Age of TTM onset	11.4 (3.9)	11.6 (5.9)
Symptom duration (years)	23.3 (13.8)	19.7 (12.5)
Education (%)		
High school	18%	7%
College	42%	47%
Graduate school	40%	47%
Employment (%)		
Employed full-time	71%	40%
Employed part-time	5%	7%
Unemployed	0%	27%
Full-time student	11%	27%
At-home parent or other caregiver	13%	0%
Prior experience with HRT (%)	16%	13%

Note. NHW = non-Hispanic White; TTM = trichotillomania; HRT = habit reversal training. Standard deviations appear in parentheses next to means.

Table 2

TTM Severity, Impairment, Quality of Life, and Treatment Satisfaction

	Baseline		Poststep 1		Poststep 2	
	NHW	Minority	NHW	Minority	NHW	Minority
MGH-HPS	17.5 (3.2)	15.4 (4.7)	15.2 (4.1)	17.0 (6.1)	10.2 (5.4)	11.1 (5.6)
PITS	23.8 (4.2)	23.8 (5.9)	20.8 (5.3)	21.4 (6.6)	15.3 (6.5)	16.7 (6.9)
WHOQOL ^{a,b,c}	16.0 (1.5)	14.9 (2.1)	16.1 (1.7)	14.9 (2.4)	16.9 (1.6)	15.0 (2.5)
SDS	7.5 (6.6)	10.2 (6.2)	6.5 (6.7)	8.9 (6.1)	5.4 (6.6)	8.6 (7.7)
CMOTS ^b	16.4 (5.1)	18.3 (5.9) ^b	15.1 (5.7)	18.4 (3.8)	15.2 (6.0)	18.2 (4.9)
CSQ	—	—	25.7 (4.4)	23.6 (5.6)	29.4 (3.4)	26.2 (6.2)

Note. NHW = non-Hispanic White; MGH-HPS = Massachusetts General Hospital Hairpulling Scale; PITS = Psychiatric Institute Trichotillomania Scale; WHOQOL = World Health Organization Quality of Life; SDS = Sheehan Disability Scale; CMOTS = Client Motivation for Therapy — Intrinsic Motivation subscale; CSQ = Client Satisfaction Questionnaire.

N's range from 35 to 38 for NHW and 13 to 15 for Minority samples due to occasional missing data. Standard deviations appear in parentheses next to means.

^a*p* .05 (baseline).

^b*p* .05 (poststep 1).

^c*p* .05 (poststep 2).

**p* < .05 for independent samples *t*-tests comparing group differences.

¹Full manual can be obtained from David A. F. Haaga.