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

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<td>Wiley - Manuscript type:</td>
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<td>Keywords:</td>
<td>psychotherapy outcome, trichotillomania, diversity</td>
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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 (step 1. web-based self-help; step 2. individual behavior therapy). The sample was comprised of 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 due to 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.
Introduction

Treatment Studies for Obsessive-Compulsive Related Disorders

Treatment studies for obsessive-compulsive related disorders (OCRDs) have shown therapy to be efficacious. In obsessive-compulsive disorder, cognitive-behavioral therapy has been found to be effective for OCD, with exposure-based treatments in particular having the most support (e.g., Foa, 2010). In trichotillomania (TTM), a meta-analysis of randomized trials found a large effect on symptom severity in behavior therapy conditions (pooled standardized mean difference = 1.41), while SSRIs had lower effect sizes (pooled ES = 0.41) (McGuire et al., 2014). Habit reversal training (HRT), is a type of behavioral therapy developed by Azrin and colleagues (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 et al., 2006b) for TTM. It is not clear yet whether one variant is better than another due to 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 obsessive-compulsive disorder (OCD) that were conducted in the U.S. and Canada between 1995 and 2008 and provided data on race/ethnicity, 92% of participants were Caucasian (Williams & Powers, 2010). Only 5-6% of the participants identified as racial/ethnic minority members (1% African-American, 1% Hispanic, 2% Asian, 2% Other). By comparison, 72% of the U.S. population and 77% of the Canadian population is Caucasian (U.S. Census Bureau, 2010; Statistics Canada, 2011). Many
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theories have been posited as to why mental health treatment of ethnic minorities is under-researched. 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 only wanting to confide in close relationships, believing there may be hidden purposes of the research studies, and issues surrounding confidentiality (Williams, Beckmann-Mendez, Turkheimer, 2013).

Under-representation 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 Caucasians. Some examples of non-traditional help settings that African Americans have tended to seek out are Black churches, beauty shops, barbershops, and elders in their communities (Neighbors et al, 1994; Neighbors & Jackson, 1996). Asian Americans have also been noted to seek treatment less
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often than the majority population as well, 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).

Trichotillomania 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 and colleagues (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.

These authors 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, Ward-Brown, Mitchell, and Krownapple (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 non mental 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 Caucasians, 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 CBT have not been published for most obsessive-compulsive and related disorders (body dysmorphic disorder, excoriation (skin-picking) disorder, hoarding disorder, trichotillomania (hair-pulling disorder)). 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 American and Caribbean Americans.

In TTM research, research done specifically with Asian Americans and Native Americans appears be 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 the authors’ knowledge, there have not been any treatment studies for TTM published 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 Caucasians 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 Caucasian and minority participants. However, this response was generated from one item and was not immediately administered post-treatment. It concerned treatment that participants could have had at any point during their lifetimes, and therefore is difficult to interpret.

Current Study

Regardless of whether under-representation in treatment trials reflects a lack of focus on the topic, barriers to seeking treatment with mental health professionals (in research or
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otherwise), or both, it has the unfortunate consequence of leaving us unaware of whether the
behavioral treatments work as well for minorities as for the Caucasians on 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 in order to gain information that can
help inform clinicians’ decision-making, rather than solely relying on data from clinical trials
done with non-Hispanic whites. 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 response of whites and of
racial/ethnic minorities in a stepped care trial (step 1: web-based self-help, step 2: habit reversal
therapy) for adults with TTM.

Methods

Design Overview

Details about the procedure for the study are available in **MASKED FOR REVIEW**.
All recruitment and study procedures were approved by the **MASKED FOR REVIEW**
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 consists of assessment, intervention, and maintenance models. During the assessment module, participants self-monitor their TTM-related behaviors, sensations, feelings, and thoughts. During the intervention module, they use three recommended interventions weekly and after meeting their goals for four weeks they progress to maintenance module, in which they continue to self-monitor and use interventions as needed. Further detail about StopPulling.com is available in **MASKED FOR REVIEW** as well as in Mouton-Odum et al., 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)) five weeks after starting both the waitlist and step 1. None of the participants met reliable deterioration during the waitlist, although one participant did meet this criterion during step 1 and was offered to enter step 2 treatment immediately, which the participant accepted.

After step 1, all participants were assessed (post-step 1 assessment) and then decided whether to receive step 2 treatment (eight 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 manual\(^1\) focused on the four components of HRT cited by Bloch et al. (2007): 1) self-monitoring of hair pulling-related behaviors; 2) awareness training, to increase awareness of the behaviors and situations that lead to hair pulling; 3) stimulus control, aimed at disrupting pulling behaviors; and 4) competing response training, which is the implementation of behaviors that are physically incompatible with pulling hair. Further detail about this manual is available in **MASKED FOR REVIEW**. All participants were assessed eight weeks later (post-step 2 assessment).

\(^1\) Full manual can be obtained from **AUTHOR MASKED FOR REVIEW**.
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Participants

Sixty adults (57 female, 3 male) with TTM participated in the study. Twenty five percent 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 consisted of: regular access to the internet; ≥18 years old; and DSM-IV 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, the step 1 intervention. Concurrent psychotherapy focusing on TTM or psychotropic medication for TTM that was not stable ≥4 weeks prior to study enrollment were additional exclusion criteria.

Participants who were included in the study analyses had completed at a minimum, the post-step 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), 14% (n = 1) minority. The final sample was comprised of 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); 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
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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, post-step 1, and post-step 2. Assessments were conducted by graduate students who had been trained by the principal investigator. A random sample of the clinician interviews (20%) 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)* 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 or 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)* is a semi-structured interview with 3-point ratings modeled after the SCID. It was used to assess DSM-IV criteria for TTM. Among the random sample (20%) of these interviews that was coded by a second rater, agreement was 92%, kappa = .77.

*Psychiatric Institute Trichotillomania Scale (PITS; Winchel et al., 1992)* is a six-item, semi-structured interview that assesses TTM symptom severity and impairment. Higher scores reflect greater severity. In a study by Diefenbach and colleagues (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, the sum of only items 1–5 was evaluated for reliability.

*Trichotillomania Course and Treatment Interview (**MASKED AUTHORS** unpublished measure)* is a structured interview created by the authors of this study 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 semi-structured interview used to establish Axis I diagnoses in our sample. In the 20% sample 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)* 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)* is a self-report of impairment in work/school, social life, and home/family life. This measure’s scores range from 0 to 30. The SDS has high retest reliability, internal consistency, and convergent validity with clinician-rated global assessment of functioning (Arbuckle et al., 2009). The SDS also correlates positively with TTM symptom severity (Woods, Flessner, et al., 2006a).

**Treatment satisfaction.** *Client Satisfaction Questionnaire (CSQ-8; Larsen, Attkisson, Hargreaves & Nyguen, 1979)* is an eight-item self-report measure of satisfaction with health
services, with higher scores reflecting greater satisfaction with treatment. 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 guidelines by Jacobson and Truax (1991) and was a decrease of $\geq 6$ points on the MGH-HPS. Sixty percent of the participants ($n = 32$) achieved reliable change during post-step 1 or post-step 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 post-treatment cut-off score of 9 or below on the MGH-HPS, and **reliable change.** Forty percent ($n = 21$) of participants 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 sessions of five randomly selected participants were watched by two raters who had high reliability (kappa = .78).

**Statistical Analyses.** All analyses were conducted using The Statistical Package for the Social Sciences (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 consisted of 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 by the time of post-step 2. Race/ethnicity predicted reliable change on the MGH-HPS before (OR: 5.60, 95% 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 post-step 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%) than of minority participants (27%) made a clinically significant response by the time of post-step 2.

The discrepancies between minority and NHW participants between baseline and post-treatment (post-step 1 or post-step 2) did not exist when the outcome variables were based on
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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 post-step 1 before (\(\beta = .63, p = .59\)) or after controlling for demographics (\(\beta = 1.26, p = .29\)). The same was true from post-step 1 to post-step 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 post-step 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 over the ten-week period of Step 1 (NHW: \(Mdn = 17.0\) 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: \(M = 7.8, SD = .7\); minority: \(M = 7.9, SD = .4\)).

In an effort to identify treatment seeking de-confounded from research seeking among the participants, the choice to enter the in-person therapy was examined by controlling for post-step
1 symptom severity. Race did not predict the choice to enter in-person therapy, whereas higher post-step 1 MGH-HPS scores did significantly predict the likelihood of making this choice (OR: 1.21, 95% CI: 1.03, 1.43; \( p = .02 \)).

**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 post-step 1, as measured by the CSQ. These differences were not significant, though the effect sizes were quite large. (minority: \( M = 23.6, SD = 5.6 \), NHW: \( M = 25.7, SD = 4.4 \); \( t(48) = 1.35, p = .18, d = -.72 \)), and post-step 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 post-step 2 (\( F = 9.07, p = .004 \)), so degrees of freedom were adjusted from 46 to 14.83.

**Discussion**

This study involved a comparison of treatment response for non-Hispanic whites 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 were found to reliably improve than non-Hispanic white 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 outcome 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 non-Hispanic whites, 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 as 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
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study would involve online self-help and they were required to have regular access to the internet in order 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.

Results in this study should be interpreted with caution due to 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 trichotillomania (e.g., Keijers et al., 2006). This study’s strengths consisted of 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 specifics about what part of 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 adaptation have the potential to improve the treatment efficacy gap depicted in our results.

Conclusions

These findings suggest a differential response to online self-help for TTM by race/ethnicity. This is the first study the authors are aware of to examine 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 Caucasian 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.
Acknowledgements

This research was supported by National Institute of Mental Health Grant 1R15MH086852-01. NIMH had no role in the study design, collection, analysis or interpretation of the data, writing the manuscript, or the decision to submit the paper for publication. The authors wish to thank **MASKED**, who consulted on the stepped care project as a whole.
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References


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doi:10.1016/j.janxdis.2010.03.014


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Table 1

Demographic and Clinical Characteristics at Baseline (n = 53)

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<tr>
<td>Age</td>
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<td>23.3 (13.8)</td>
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<td>Prior experience with HRT (%)</td>
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</tbody>
</table>

Note. NHW = Non-Hispanic white. MGH-HPS = Massachusetts General Hospital Hairpulling Scale, HRT = Habit reversal training. Standard deviations appear in parentheses next to means.
### TTM Severity, Impairment, Quality of Life, and Treatment Satisfaction

<table>
<thead>
<tr>
<th></th>
<th>Baseline NHW</th>
<th>Baseline Minority</th>
<th>Post-Step 1 NHW</th>
<th>Post-Step 1 Minority</th>
<th>Post-Step 2 NHW</th>
<th>Post-Step 2 Minority</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGH-HPS</td>
<td>17.5 (3.2)</td>
<td>15.4 (4.7)</td>
<td>15.2 (4.1)</td>
<td>17.0 (6.1)</td>
<td>10.2 (5.4)</td>
<td>11.1 (5.6)</td>
</tr>
<tr>
<td>PITS</td>
<td>23.8 (4.2)</td>
<td>23.8 (5.9)</td>
<td>20.8 (5.3)</td>
<td>21.4 (6.6)</td>
<td>15.3 (6.5)</td>
<td>16.7 (6.9)</td>
</tr>
<tr>
<td>WHOQOL</td>
<td>16.0 (1.5)</td>
<td>14.9 (2.1)</td>
<td>16.1 (1.7)</td>
<td>14.9 (2.4)</td>
<td>16.9 (1.6)</td>
<td>15.0 (2.5)</td>
</tr>
<tr>
<td>SDS</td>
<td>7.5 (6.6)</td>
<td>10.2 (6.2)</td>
<td>6.5 (6.7)</td>
<td>8.9 (6.1)</td>
<td>5.4 (6.6)</td>
<td>8.6 (7.7)</td>
</tr>
<tr>
<td>CMOTS</td>
<td>16.4 (5.1)</td>
<td>18.3 (5.9)</td>
<td>15.1 (5.7)</td>
<td>18.4 (3.8)</td>
<td>15.2 (6.0)</td>
<td>18.2 (4.9)</td>
</tr>
<tr>
<td>CSQ</td>
<td>---</td>
<td>---</td>
<td>25.7 (4.4)</td>
<td>23.6 (5.6)</td>
<td>29.4 (3.4)</td>
<td>26.2 (6.2)</td>
</tr>
</tbody>
</table>

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

*p<.05 for independent samples t-tests comparing group differences, a*p ≤ .05 (baseline), b*p ≤ .05 (post-step 1), c*p ≤ .05 (post-step 2)*