

Predicting Treatment-Outcome in Trichotillomania:
Are Self-Control Cognitions Predictors for Relapse after
Treatment?

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Abstract

Trichotillomania (TTM) is a mental disorder characterized by compulsive hair pulling in patients. Treatment with cognitive-behavioral therapy can be considered to be effective on short-term, but relapse percentages are high. The present study examines the role of self-control cognitions in predicting relapse after treatment. Self-control cognitions are defined as negative beliefs about the possibility to resist the urge of hair-pulling. It is hypothesized that self-control cognitions predict TTM symptoms after treatment. To test the hypothesis, the MGHS, SURF and SCCQ were administered before patient received a standard manual-based treatment and after treatment (immediately after, 3 months after treatment ended and 6 months after treatment ended). Results showed effectiveness of given treatment, but no predictive value of self-control cognitions. Limitations and indications for further research are discussed.

Trichotillomania (TTM) is a mental disorder which is included in the group of Obsessive-compulsive and related disorders in the DSM-5. TTM consists of repetitive hair-pulling resulting in hair-loss and significant distress or impairment in social settings. (American Psychiatric Association, 2013). The most common body part for hair-pulling is the scalp, but other parts of the body can also be involved, such as beard, eyebrows, arms or legs. The prevalence of trichotillomania is about 2%, while females are affected much more often. About 90% of adults seeking treatment for TTM is female (Stemberger, Stein & Mansueto, 2003).

TTM can cause significant impairments in functioning. Due to the repetitive movements neck pain and other musculoskeletal injuries can emerge (American Psychiatric Association, 2013). TTM also has various consequences for psychosocial functioning. Patients often report a lowered self-esteem, guilt and shame about their hair pulling. In addition, other negative affective reactions emerge frequently, such as feelings of loneliness, unattractiveness or feelings of being strange. Because of this, patients also experience limitations in social functioning, including for instance avoidance of social interactions, relationship problems due to arguments and limited sexual desire and attempts to hide the signs of hair pulling to others. Attempts to conceal bald spots often are time consuming, also influencing the patient's quality of life. Furthermore, occupational functioning can be impaired through lacking concentration and work productivity (Diefenbach, Tolin, Hannan, Crocetto & Worhunsky, 2005; Snorrasson, Berlin & Lee, 2005).

Due to the high level of impairment shown by TTM patients, deeper understanding of the disorder is needed in order to provide effective mental healthcare. TTM is associated with various negative consequences for the patient (Diefenbach et al., 2005; Snorrasson et

al.,2005) but is also rewarding for the individual on the short term. TTM patients reported more decrease in tension and negative emotions such as sadness than nonclinical samples when engaging in pulling behavior (Diefenbach, Tolin, Meunir & Worhunsky, 2008). In general, TTM can be seen as a maladaptive manner to cope with negative emotions. Individuals engaging in hair pulling seem to have more difficulty with emotional control than healthy controls. When reporting difficulty in regulating particular emotions, it is more likely that those trigger hairpulling (Shusterman, Feld, Baer & Keuthen, 2009). Actual pulling behavior develops by the principles of classical and operant conditioning. The urge to pull hair emerges through a stimulus-response reaction (classical conditioning) and the rewarding effects of the pulling behavior, as previously mentioned by Shusterman et al. (2009) are due to operant conditioning (Keijsers, Van Minnen & Hoogduin, 2006). Summarized, TTM can be seen as a maladaptive learning process due to the principles of operant and classical conditioning.

Until now, much research has been conducted to investigate the effects of various treatment forms, pharmacological ones as well as psychological ones. Pharmacological treatment with antidepressants such as the SSRI fluoxetine has been proven to have little effect on TTM symptoms (Van Minnen, Hoogduin, Keijsers, Hellenbrand & Hendriks, 2003). Also, the tricyclic antidepressant clomipramine has been found not to be an effective treatment (Ninan, Rothbaum, Marsteller, Knight & Eccard, 2000). Cognitive Behavioral Therapy (CBT) is the empirically best-supported psychological intervention for TTM (Rehm, Moulding & Nedeljkovic, 2015). CBT usually contains self-control procedures including self-monitoring, awareness training, stimulus control interventions and stimulus-response intervention or competing response intervention. CBT based on self-control procedures has been found to be the most effective treatment for trichotillomania (Bloch et al., 2007). Self-Control procedures are based on the principles of classical and operant conditioning and focus on extinction of the conditioned responses. Due to these findings it can be concluded that CBT is still the first choice in treatment of TTM symptoms. Unfortunately, symptom reduction does not always seem to last in the long term.

Van Minnen, Keijsers, Martijn and Hoogduin (2005) reported significant improvement in patients who had received a six-sessions CBT, but after two years half of the patients had relapsed. Effect sizes for treatment declined up to 70% (Keijsers, Van Minnen, Hoogduin, Klaassen, Hendriks & Tanis-Jacobs, 2006; Maas, Keijsers, Canglioni, van der Veld, Tanis-Jacobs & Van Minnen, 2015). High relapse rates have been reported by others as well. In a recent study, in which the cognitive and behavioral components of CBT were separated into

two different treatments, the effects of cognitive interventions were comparable to those of behavior therapy, but in both treatments, again, the relapse rates were high (Keijsers, Maas, van Opdorp & Van Minnen, 2016). Given the importance of effective treatments, insight in factors predicting relapse can be considered a highly significant area for exploratory research. Because treatment of TTM with CBT is predominantly focused on self-control procedures (Keijsers & Maas, 2015), a closer look on self-control needs to be taken.

Self-control is defined as a capacity to inhibit unwanted behavioral tendencies and refusing to carry them out (Hoffmann, Friese & Strack, 2009). Applying the ego-depletion theory to the treatment effects of TTM patients, relapse of TTM patients can be explained by a lack of self-control in the individual. Self-control in ego-depletion theory is seen as a power with a limited resource needed for performance on various tasks. Since self-control is limited and has to be economically shared with the performance of other tasks, individuals are likely to quit a task when engaging in two tasks both requiring self-control (Baumeister, Bratslavsky, Muraven & Tice, 1998). While successfully applying CBT in the treatment of TTM, new behavior has not been facilitated yet so extra effort is needed to keep practicing the learned strategies and refuse engagement in hair-pulling. Higher amounts of self-control will be required with the likelihood of relapse.

Exertion of self-control can be considered as more complex than is assumed by Baumeister et al. (1998). Actually, the effect of ego-depletion seems to be mediated by motivation and beliefs about a certain outcome. When believing in a positive outcome, such as helping others by performing good on a task, individuals showed less ego-depletion than controls, who had not received this information (Muraven & Slessareva, 2002). The current findings are also in line with Alberts, Martijn and De Vries (2011) who found, that individuals were more likely to resist urges when believing that performing self-control was beneficial to them. In addition, the beliefs of individuals about their own self-control strengths, affect the individuals' performance on self-control. It has been found that depleted individuals who previously had been primed with words as "persistence" performed better on self-control tasks and showed less ego-depletion (Alberts, Martijn, Greb, Merckelbach & de Vries, 2007).

Applying these findings about self-control to the treatments of TTM-patients, it is reasonable to assume that beliefs about the urge to resist hair pulling play a crucial role in predicting treatment relapse. This idea matches with the finding that many TTM patients report automatic thoughts regarding their unwanted behavior. These automatic thoughts, referred to as '*self-control cognitions*', are negative and thus may lead to self-fulfilling prophecies which actually makes them become true, in line with the findings of Alberts et. al.

(2007) and Muraven and Slessareva (2002). Self-control cognitions can be divided in thoughts regarding the inability to resist to the tempting behavior and thoughts concerning the rewarding effects of the unwanted behavior. Individuals believe that they are unable to resist the tempting behavior and/or they deserve to pull hair in order to reward themselves or reduce negative emotions (Keijsers et al., 2016; Van Minnen et al., 2005). Those thoughts tend to occur before or immediately after performing the unwanted behavior and justify the individual's decision of giving in to the tempting behavior (Maas et al., 2015). An example for a self-control related to someone's belief to be unable to resist can be "I am unable to resist". Justifying one's behavior by self-control cognitions can include cognitions like "When I pull hair I feel more relaxed" (Van Minnen et al., 2005).

Until now, little research has been done to examine the role of self-control cognitions in the relapse rates of TTM-patients. We assume that treating TTM with CBT leads to a decrease in negative self-control cognitions immediately after treatment (Keijsers et al., 2016), but we wonder now whether self-control cognitions before the start of treatment predict relapse after treatment. In the current study, we tested how self-control cognitions before the start of treatment and immediately after treatment discontinuation predict TTM symptom severity 3 months and 6 months after treatment. We examined whether self-control cognitions before treatment can predict symptom severity immediately after treatment. Furthermore, we tested if post-treatment self-control cognitions can predict symptom severity at 3 months and 6 months after treatment.

Patients received standard, manual-based CBT. Before treatment, immediately after and at the follow-up sessions 3 and 6 months after treatment questionnaires were administered. Considering the findings of Alberts et al. (2007), Van Minnen et al. (2005) and Alberts et al. (2011), we hypothesize that individuals having less negative self-control cognitions before treatment starts, will report less symptoms of TTM after treatment. Furthermore, we hypothesize that the amount of self-control cognitions immediately after treatment predicts TTM symptoms at the follow-up 3 and 6 months after treatment.

Method

The current thesis study is part of a larger study at the Radboud Ambulatorium Nijmegen in cooperation with Virenze RIAGG Maastricht, examining various predictors for treatment effects and follow-up results in trichotillomania. It has been approved by the Ethical

Committee of Maastricht University, reference number ECP-146-04-11-2014. Only measurements relevant to the present research questions are discussed in the method section.

Participants

At the conclusion of the data collection for the present thesis study on December 18, 2017, 17 patients were included in the current study. Out of those participants 15 were females and 2 males, aged from 17 to 41, with a mean age of 26. For inclusion, participants had to be at least 17 years old and meet the DSM 4 criteria (American Psychiatric Association, 2000) for trichotillomania. After intake patients were asked for study participation on voluntary basis. Information on the study was offered orally after intake and written with an informed consent form. The patients were also informed that treatment only concerned TTM symptoms and no other mental health problems. So, patients were included only when it was agreed upon that TTM was the primary diagnosis. Comorbidity with other DSM diagnoses, on the other hand, was no exclusion criterion for participation. Participation in the study or declination of these had no influence on further treatment.

Measurement instruments

To confirm the diagnosis of TTM, a standardized clinical interview was used (Van Minnen et al., 2003). Comorbidity was examined by application of the MINI neuropsychiatric interview. The MINI is a semi-structured interview for examination of axis 1 DSM-IV diagnoses (Sheehan et al., 1998). For this study, the Dutch adaption was used.

For evaluation of TTM symptom severity, the Massachusetts General hospital Hairpulling Scale (MGHS) was administered. The MGHS is a self-rating questionnaire, containing 7 questions with each 5 possible answers, describing the hair-pulling symptoms. The MGHS is the most frequently used instrument to establish symptom severity in TTM-research. Patients have to choose which of the options fits best to their actual behavior. Questions are aimed for measurement of hair-pulling symptom severity during the last week. Psychometric properties, also of the Dutch adaptation, are adequate (Van Minnen et al., 2003).

Symptom severity, severity of urges, resistance to those and its frequencies were examined by using the Severity Urge Resistance Frequency Scale (SURF). The questionnaire is an adaption of the skin picking scale (SPS), used by Schuck (2010). The SURF comprises of four questions, of which two have a VAS format measuring symptom severity, urge severity and one's ability to resist the urge to pull hair. The questions are as follows: "How strong was the urge to pull hair last week?" and "To what degree could you resist the urge to

pull hair this week?”. Presently, no formal validation study of the SURF has been conducted, but face-validation seems to be achieved throughout various studies (Keijsers et al., 2016). In this study, only the two VAS scales have been used, measuring urge severity and ability to resist hairpulling.

Examination of Self-Control Cognitions was carried out by using the Self-Control Cognition Questionnaire (SCCQ) containing 11-items. Items are rated on a 5-point Likert scale, examining to which extent a statement applies to the patient, from one (“does not apply to me at all”) to five (“totally applies to me”). The SCCQ has two subscales, one related to rewarding effects of unwanted behaviors (for example “After I worked hard I deserve to pull hair”) and one examining beliefs about the possibility to resist to those (for example: “The urge to pull hair is so strong that I think I am not able to resist”). The psychometric properties of the SCCQ are good (Maas et al., 2015). For this study, a Dutch adaption of the instrument was used. All instruments mentioned above are included in the appendix of this paper.

Procedure

During the intake procedure the TTM standardized interview was administered to collect several characteristics of the TTM symptoms and to examine whether patients met the DSM-IV diagnostic criteria for TTM. If criteria were met, patients were informed about the study, and if interested were given an informed consent form for participation. They were asked to consider participation in the forthcoming week. After deciding for participation, they received an invitation for the pre-treatment measurements, immediately followed by the first treatment session. Pre-treatment measurements consisted of the MGHS, SCCQ, and SURF. The participants received standardized CBT, including five sessions of behavioral therapy and two sessions of cognitive therapy offered once in two weeks. Additionally, there were follow-up sessions at three and six months after the seventh session. At session seven and both follow-up sessions, MGHS, SCCQ and SURF were administered again. Further information about the treatment will be given in the following paragraph.

Treatment

Treatment was carried out by BIG-licensed mental healthcare psychologists or clinical psychologists, or by master students doing an internship at Radboud Ambulatorium as part of their study program. In the latter case, the master students worked under close supervision of a clinical psychologist. All therapists had been trained in the treatment before offering it to their patients. Treatment sessions were offered individually and took 45 minutes

per session. Patients received homework exercises, such as monitoring the hairs pulled every day. Treatment was based on CBT using self-control procedures. Self-control procedures focused on elevating patients awareness of hair pulling and changing the situations where patients feel the urge to pull hair. Patients were asked to carry out self-monitoring assignments, such as counting pulled hair or register time it took them to pull hair to enhance awareness to pulling behavior. Furthermore, stimulus-response interventions and response-consequences were used. Patients were instructed to carry out behavior which competes with the urge of hair pulling and receive negative consequences when still carrying out the pulling behavior. This treatment has been found to be effective in various studies (Keijsers & Hoogduin, 2017).

Data analysis

The data was analyzed by IBM SPSS Statistics, conducting hierarchical regression analyses and bivariate correlations. In the first regression model, MGHS pre-treatment scores were used to predict MGHS post-treatment scores. In the second model SCCQ pre-treatment scores were added to predict MGHS post-treatment scores. The same procedure was repeated for the MGHS scores of the first and second follow-up measurements, all the analyses had also been carried out for both SURF-subscale scores as dependent variables.

Results

In total, 17 patients were included in this study. In Table 1 descriptive statistics of symptom severity measurements and predictors for pre- and post-treatment measurements are given. Symptom reduction is visible on all outcome measurements, as well as on the SCCQ as predictor of symptom reduction.

Table 1: Descriptive Statistics of Predictors and Treatment-outcome Measurements (N=17)

	Mean (SD) and Minimum-Maximum Pre-Treatment	Mean (Sd) and Minimum-Maximum Post-Treatment
MGHS	15.70 (5.47), 2-23	6.58 (4.27), 0-14
SURF-urge	63.29 (25.64), 3-98	29.94 (26.13) 1-91

SURF-resistance	60.52 (26.51), 2-98	20.23 (23.23), 0-68
SCCQ	30.80 (8.98), 18-50	18.76 (8.16), 11-36

Note. MGHS: Massachusetts General Hairpulling Scale. SURF-urge: Measurement of urges with the Severity Urge Resistance Frequency Scale. SURF-resistance: Measurement of resistance with the Severity Urge Resistance Frequency Scale. SCCQ: Self-Control Cognition Questionnaire

Table 2 shows descriptive statistics for the follow-up measurements. Compared to pre-treatment scores also follow-up measurements show a clear symptom reduction on all outcome measurements and the predictor SCCQ. Compared to post-treatment measurements, scores on all outcome variables increased. Furthermore, scores decreased from follow-up 1 to follow-up 2, except scores on SURF-urge.

Table 2: Descriptive Statistics Follow-up 1 (N=16) and Follow-up 2 (N=15)

	Mean (SD) and Minimum-Maximum Follow-up 1	Mean(SD) and Minimum-Maximum Follow-up 2
MGHS	8.87 (5.08), 3-23	8.73 (5.47), 0-18
SURF-urge	32.75 (27.05), 1-88	36.93 (30.12), 0-87
SURF-resistance	33.18 (31.93), 1-88	28.20 (28.30), 0-97
SCCQ	20.43 (7.38), 13-40	19.33 (8.30), 11-41

Note. MGHS: Massachusetts General Hairpulling Scale. SURF-urge: Measurement of urges with the Severity Urge Resistance Frequency Scale. SURF-resistance: Measurement of resistance with the Severity Urge Resistance Frequency Scale. SCCQ: Self-Control Cognition Questionnaire

Treatment effectiveness was tested by running a multivariate Repeated-measures ANOVA. The outcome measurements SURF_urge, SURF_resistance, MGHS and SCCQ were used as within-subject variables. To test treatment effectiveness, the effect of time was measured by using T1 and T2 scores. The overall effect of time was significant,

$F(4,13)=11.17, p<.001, \eta^2=.78$. Furthermore, the effect on the MGHS was also significant, $F(1,16)= 36.84, p<.001, \eta^2=.70, d=1.49$, indicating that reduction of symptom severity after treatment is significant. Also symptom reduction on the SURF_urge, $F(1,16)=14.60 p=.002, \eta^2=.47, d=.92$, and SURF_resistance, $F(1,16)=26.02, p<.001, \eta^2=.62, d=1.24$, was significant. Furthermore, reduction of symptoms can also be shown on the SCCQ, $F(1,16)=32.71, p<.001, \eta^2=.67, d=1.39$, indicating a significant reduction of self-control cognitions over time. In summary, it can be concluded that treatment was effective over time. Cohen's d were between .92 and 1.49, η^2 between .47 and .70.

Table 3: Pearson Correlations for the Outcome Measures, N=17 for T1 and T2, N=16 for T3 and N=15 for T4

	MGHS T1	MGHS T2	SURF_u_ T1	SURF_res _T1	SURF_u_ T2	SURF_res _T2	SCCQ T1	SCCQ T2	MGHS T3
MGHS T2	.21								
SURF_ U_T1	.84**	.00							
SURF_ Res_ T1	.89**	.20	.75**						
SURF_ U_T2	.28	.85**	.03	.25					
SURF_ Res_ T2	.14	.92**	-.13	.14	.76				
SCCQ T1	.57*	.21	.47	.69**	.13	.22			
SCCQ T2	.32	.59*	.00	.46	.48	.72	.49*		
MGHS T3	.35	.49	.26	.18	.49	.56*	.18	.34	
MGHS T4	.13	.07	.32	.07	-.11	-.11	.04	-.44	.11

Note. * Correlation is significant at the .05 level (2-tailed) ** Correlation is significant at the .01level (2-tailed). MGHS: Massachusetts General Hairpulling Scale, SURF_u: Measurement of urges with the Severity Urge Resistance Frequency Scale. SURF_res: Measurement of

resistance with the Severity Urge Resistance Frequency Scale. SCCQ: Self-Control Cognition Questionnaire.

No significant correlation could be found between MGHS pre-treatment and post-treatment scores. No correlations between pre- and post-treatment scores could be found for the other outcome variables as well. For the SCCQ, a significant correlation between pre- and post-treatment scores could be found ($r=.49$). No significant correlations were found between MGHS T1 and MGHS T3 and T4. Furthermore, correlations between all post-treatment measurements were high. MGHS post-treatment scores correlated significantly and relatively high with post-treatment SURF scales and the SCCQ post treatment scores. Furthermore, a significant correlation between SCCQ T2 and MGHS T3 could be found ($r=.56$). Furthermore, we found moderate correlations between MGHS T3 and SURF_urge_T2 ($r=.49$) and MGHS T3 and MGHS T2 ($r=.49$).

Influence of self-control cognitions on treatment outcome was tested by running a hierarchical regression analysis, using method blockwise entry and two separate blocks. In the first model MGHS T1 was used to predict MGHS T2, followed by adding SCCQ T1 to the second model. The model showed that R^2 was .04 and adjusted R^2 -.02. In the first model, there was no significant effect of MGHS T1 on MGHS T2 ($F=.69$, $p=.42$). In the second model, SCCQ T1 was added as a variable. No significant effect of the predictor has been found ($F=.39$, $p=.67$). The same calculations were applied for severity of urge and resistance after treatment as dependent variables. The effect of SURF_urge_T1 on SURF_urge_T2 was not significant ($F=.01$, $p=.89$). When included, SCCQ T1 had no significant predictive value ($F=.13$, $p=.87$). Effects of SURF_resistance_T1 on SURF_resistance_T2 were not significant either ($F=.33$, $p=.57$), also when adding SCCQ T1 no significant effect could be found ($F=.67$, $p=.52$).

Testing the influence of post-treatment scores on follow-up measurements, again a hierarchical regression analysis had been used with blockwise entry into two steps. MGHS T2 significantly predicted MGHS T3 ($F=4.54$, $p=.05$, $R^2=.24$). When adding SCCQ T2 to the model, the effect was no longer significant ($F=2.22$, $p=.14$). SURF_urge_T2 was no significant predictor for SURF_urge_T3 ($F=1.52$, $p=.23$). Significance did not change by adding SCCQ T2 to the model ($F=1.28$, $p=.31$). Furthermore, the same findings were made when predicting SURF_resistance_T3 without SCCQ T2 as predictor ($F=3.59$, $p=.07$) and also with SCCQ T2 included ($F=1.73$, $p=.21$).

Also, for T4 no significant results could be found. MGHS T2 did not significantly predict MGHS T4 ($F=.07, p=.78$), not even when SCCQ T2 was included in the model ($F=2.76, p=.10$). When predicting SURF_urge_T4 from SURF_urge_T2, no significant effect could be found as well ($F=.32, p=.58$), not even when SCCQ T2 was added as predictor ($F=2.83, p=.09$). The same calculations were applied to SURF_resistance_T4. We failed to predict SURF_resistance_T4 from SURF_resistance_T2 ($F=.07, p=.78$), even when adding SCCQ T2 to the model ($F=.60, p=.56$).

Discussion

In the present study we investigated whether negative beliefs about one's self-control ability play a role in predicting relapse after 7-session manual based CBT for TTM patients. First, we tested if treatment was successful and lead to significant symptom reduction. Second, we tested whether self-control cognitions before treatment predict symptom severity after treatment to investigate whether this affects treatment success. Finally, we examined whether self-control cognitions had predictive value for symptom severity at 3 and 6 months after completed therapy.

First, it can be concluded that there was an overall treatment effect on all outcome measurements. Patients reported significant symptom decrease on the outcome variables (MGHS and both SURF subscales) after treatment compared to pre-treatment measurements. These findings are in line with current research generally indicating good short-treatment outcomes of CBT for TTM-patients (Bloch et al., 2007; Rehm et al., 2015). We tested if self-control cognitions before treatment affect treatment outcomes. No such effect could be found. Interestingly, there was no significant effect of pre-treatment symptom severity either. No significant effects could be found for any of the pre-treatment measurements (MGHS, SURF_urge, SURF_resistance) predicting post-treatment outcome. Due to these findings, it can be concluded that treatment success is independent of symptom severity at the beginning of the treatment.

In the next step, we looked at post-treatment outcomes predicting treatment results 3 months after treatment stopped. Significance could only be achieved by MGHS T2 predicting MGHS T3. When adding SCCQ-T2 to the model, significance could no longer be found. Therefore, it can be concluded that symptom severity after treatment predicts symptom severity 3 months after the completed treatment. Patients reporting more symptoms after treatment will report more symptoms 3 months after the completed treatment. Surprisingly,

this effect could not be found for the urges to pull hair or the ability to resist the urges. Neither, self-control cognitions had any predictive value.

Looking at the Pearson correlations, there generally were high correlations between the MGHS, SURF and SCCQ scores within the same measurement points. So, before and after treatment (and partly also for follow up measurements) the symptom severity scales, including negative beliefs about self-control, tended to clearly correlate (correlations between .47 and .92). Therefore, we can conclude that there is a relationship between symptom severity, severity of urges and resistance to urges. Furthermore, a high significant correlation between SCCQ post treatment scores and the post treatment scores on MGHS could be found, indicating a relationship between them. Because no significant predictive value of SCCQ scores has been found, we cannot conclude that SCCQ affects MGHS. Therefore, it seems that treatment effects and follow-up scores at 3 months after treatment are independent from symptom severity, urge severity and negative beliefs about self-control measured earlier in time. Finally, we tested if those effects were different 6 months after treatment. No significant effects of MGHS T2 on MGHS T4 could be found. When adding SCCQ post to the model, no significant effects could be achieved either. Moreover, none of the T2 outcome variables significantly predicted scores at T4.

Based on the current findings, we can conclude that manual based CBT is effective in treating TTM symptoms. Regardless of symptom severity, urge severity and ability to resist urges, the treatment leads to declination of these symptoms over time. We failed to confirm our hypothesis, identifying self-control cognitions as a predictor for treatment outcome. None of the given models supported our hypothesis, indicating self-control cognitions as a predictor for treatment outcome. Nevertheless, correlations between SCCQ measurements were moderate or high. Therefore, we suggest that self-control cognitions cannot be seen as a predictor for treatment outcome but should be considered as a measure of symptom severity. SCCQ T1 measurements correlate highly with SURF_urge_T1 and MGHS T1, which measure subjective perception of symptom severity and urge severity. Hereby, we indicate that self-control cognitions must be seen as a perception of complaints instead of being considered as a predictor of those. In this case, SCCQ should be considered as a covariate in the model instead of predictor.

Interestingly, MGHS T2 could be identified to significantly predict MGHS T3, but not MGHS T4. None of the other outcome variables at T2 could be identified to predict either T3 scores or T4 scores. Due to these findings, we hypothesize that treatment outcome immediately after treatment discontinuation and treatment outcome at 3 or 6 months after

treatment discontinuation could be predicted by different contributors. Because relapse rates after treatment are still high, further research is needed to clarify which factors contribute to the high relapse rates (Keijsers et al., 2006).

However, other explanations for the absence of a statistical significant effect are also possible. Due to the high correlations between the treatment-outcome measurements and the SCCQ it is more difficult to find a statistically significant effect of SCCQ, because the proportion of explained variance is partly caused by the other treatment-outcome variables. Further research is required to get more clarity about the role of self-control cognitions in predicting treatment outcome. Besides, the sample sizes were small. For pre- and post-treatment measurement only 17 participants were included in the study, for the follow-up measurements 16 and 15 respectively. As mentioned before, this study was part of a larger research about treatment outcome results in TTM patients. Adding more participants will make the outcomes more reliable.

Finally, we conclude that more research is needed to get a better insight in reasons for treatment relapse. We tested if self-control cognitions before treatment predict post-treatment symptom severity. Furthermore, we hypothesized that post-treatment self-control cognitions would predict symptom severity at 3 and 6 months after treatment discontinuation. Although we can conclude that treatment was effective, self-control cognitions could not be identified to predict treatment outcome. There are two explanations for this outcome. First, we failed to find a significant effect because of high correlations between the variables, causing a high proportion of explained variance. Combined with the small sample size, this makes it difficult to achieve statistical significance. Second, it might be possible that self-control cognitions are no predictor of treatment outcome, but need to be considered as covariate, measuring subjective perception of TTM complaints. Further research is required to clarify the role of self-control cognitions in TTM.

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Appendix 1: MGHS

The Massachusetts General Hospital Hair pulling Scale

Meetmoment:

Datum van invulling:

Onderzoeksnummer:

Instructies

Kies bij iedere vraag die uitspraak (omcirkel cijfer) die het best uw gedrag en/of gevoelens van de **afgelopen week** weergeeft. Wanneer er sterke wisselingen zijn geweest, probeer dan een gemiddelde voor de afgelopen week te bepalen. Let erop dat u alle uitspraken in elke groep leest voordat u een keuze maakt.

Beoordeel bij de eerste 3 vragen alleen *de drang* om haar te trekken.

1. Frequentie van drang

Hoe vaak heeft u op een gemiddelde dag de drang tot haartrekken gevoeld?

0. Deze week voelde ik geen drang om aan mijn haar te trekken
1. Deze week voelde ik af en toe de drang om aan mijn haar te trekken
2. Deze week voelde ik vaak de drang om aan mijn haar te trekken
3. Deze week voelde ik zeer vaak de drang om aan mijn haar te trekken
4. Deze week voelde ik bijna constant de drang om aan mijn haar te trekken

2. Intensiteit van de drang

Hoe intens of sterk was op een gemiddelde dag de drang om aan uw haar te trekken?

0. Deze week heb ik geen enkele drang gevoeld om aan mijn haar te trekken
1. Deze week voelde ik een milde drang om aan mijn haar te trekken
2. Deze week voelde ik een matige drang om aan mijn haar te trekken
3. Deze week voelde ik een hevige drang om aan mijn haar te trekken
4. Deze week voelde ik een extreem sterke drang om aan mijn haar te trekken

3. Vermogen om drang te weerstaan

Hoeveel weerstand kunt u, op een gemiddelde dag, aan de drang tot haartrekken bieden?

0. Deze week kon ik altijd weerstand bieden aan de drang, of ik voelde geen drang om aan mijn haar te trekken
1. Deze week was ik meestal in staat mezelf af te leiden van de drang om mijn haar te trekken
2. Deze week was ik soms in staat mezelf af te leiden van de drang om mijn haar te trekken
3. Deze week was ik zelden in staat mezelf af te leiden van de drang om mijn haar te trekken
4. Deze week was ik nooit in staat mezelf af te leiden van de drang om mijn haar te trekken

Beoordeel bij de volgende 3 vragen alleen *het daadwerkelijke* haartrekken.

4. Frequentie van het haartrekken

Hoe vaak trok u op een gemiddelde dag werkelijk aan uw haar?

0. Deze week heb ik niet aan mijn haar getrokken
1. Deze week trok ik af en toe aan mijn haar

2. Deze week trok ik vaak aan mijn haar
3. Deze week trok ik zeer vaak aan mijn haar
4. Deze week trok ik zo vaak aan mijn haar dat het voelde alsof ik het constant deed

5. *Pogingen om haartrekken te weerstaan*

Hoe vaak heeft u, op een gemiddelde dag, een poging gedaan om uzelf te weerhouden van het haartrekken?

0. Deze week voelde ik geen drang om mijn haar uit te trekken
1. Deze week probeerde ik bijna altijd weerstand te bieden aan de drang om aan mijn haar te trekken
2. Deze week probeerde ik soms weerstand te bieden aan de drang om aan mijn haar te trekken
3. Deze week probeerde ik zelden weerstand te bieden aan de drang om aan mijn haar te trekken
4. Deze week probeerde ik nooit weerstand te bieden aan de drang om aan mijn haar te trekken

6. *Controle over haartrekken*

Hoe vaak slaagde u er, op een gemiddelde dag, in om uzelf ervan te weerhouden aan het haar te trekken?

0. Deze week heb ik niet aan mijn haar getrokken
1. Deze week was ik bijna altijd in staat mezelf ervan te weerhouden om aan mijn haar te trekken
2. Deze week was ik meestal in staat mezelf ervan te weerhouden om aan mijn haar te trekken
3. Deze week was ik soms in staat mezelf ervan te weerhouden om aan mijn haar te trekken
4. Deze week was ik zelden in staat mezelf ervan te weerhouden om aan mijn haar te trekken

Beoordeel bij de laatste vraag de gevolgen van uw haartrekken.

7. *Ermee verbonden gevoelens van onbehagen*

Haartrekken kan tot gevolg hebben dat mensen zich humeurig, somber of labiel voelen. Hoe onbehaaglijk voelde u zich gedurende de afgelopen week als gevolg van het haartrekken?

0. Deze week voelde ik me niet onbehaaglijk over mijn haartrekken
1. Deze week voelde ik me enigszins onbehaaglijk over mijn haartrekken
2. Deze week voelde ik me aanmerkelijk onbehaaglijk over mijn haartrekken
3. Deze week voelde ik me zeer onbehaaglijk over mijn haartrekken
4. Deze week voelde ik me intens onbehaaglijk over mijn haartrekken

Appendix 2: SURF

SURF TTM

Meetmoment:..... Datum:

Onderzoeksnummer:

**Geef s.v.p. aan in hoeverre de onderstaande vragen op u van toepassing waren
in de laatste week.**

1. Hoe vaak kwam het haartrekken in de laatste week op een gemiddelde dag voor?
 - ☐ minder dan een keer per dag
 - ☐ een keer per dag
 - ☐ twee keer per dag
 - ☐ drie tot vijf keer per dag
 - ☐ meer dan vijf keer per dag

2. Hoe erg is het haartrekken de laatste week geweest?
 - ☐ ik heb geen haar getrokken
 - ☐ ik heb maar enkele haren getrokken
 - ☐ ik heb redelijk veel haren getrokken
 - ☐ ik heb veel haren getrokken
 - ☐ ik heb ontzettend veel haren getrokken

3. Hoe sterk was de drang tot haartrekken in de laatste week? (Zet een streepje/kruisje op de lijn hieronder.)

geheel
afwezig

•

•

heel
sterk

4. In welke mate kon u in de afgelopen week weerstand bieden aan de drang om haar te trekken? (Zet een streepje/kruisje op de lijn hieronder.)

hoge
mate

•

•

geheel
niet

Appendix 3: SCCQ

Nummer:

Datum:

ZCCL - TTM

Deze vragenlijst gaat over gedachten die voor of tijdens het haartrekken bij u op kunnen komen. Wilt u per vraag aangeven in hoeverre deze gedachten voor u herkenbaar zijn door dát cijfer te omcirkelen dat het beste bij u past ?

1. **Nadat ik hard gewerkt heb, heb ik vaak de gedachte dat ik het verdiend heb om haar te trekken.**

1	2	3	4	5
Helemaal niet van toepassing				Helemaal van toepassing

2. **De drang om haar te trekken is zo sterk, dat ik denk dat ik me daar niet tegen kan verzetten.**

1	2	3	4	5
Helemaal niet van toepassing				Helemaal van toepassing

3. **Als ik me vervelend voel, denk ik dat haartrekken me helpt om me even beter te voelen.**

1	2	3	4	5
Helemaal niet van toepassing				Helemaal van toepassing

4. **Wanneer ik verdrietig ben, verwacht ik dat haartrekken me zal troosten.**

1	2	3	4	5
Helemaal niet van toepassing				Helemaal van toepassing

5. **Als ik de drang om haar te trekken niet kan weerstaan, zeg ik tegen mezelf: “Alleen deze keer geef ik toe; morgen stop ik weer”.**

1	2	3	4	5
Helemaal niet van toepassing				Helemaal van toepassing

6. **Als ik de drang om haar te trekken weersta, heb ik het idee dat ik me een tijdlang gespannen zal blijven voelen.**

1	2	3	4	5
Helemaal niet van toepassing				Helemaal van toepassing

7. **Als ik denk over stoppen met haartrekken, denk ik: “Dat lukt me nooit.”**

1	2	3	4	5
Helemaal niet van toepassing				Helemaal van toepassing

8. **Als ik de drang om haar te trekken niet langer heb kunnen weerstaan, zeg ik tegen mezelf: “Ik heb het nu toch al verpest” en ga dan door met trekken.**

1	2	3	4	5
Helemaal niet van toepassing				Helemaal van toepassing

9. **Als ik medelijden heb met mijzelf, vind ik het geoorloofd om haar te trekken.**

1	2	3	4	5
Helemaal niet van toepassing				Helemaal van toepassing

10. **Voor ik iets moet doen waar ik tegenop zie, heb ik het idee dat haartrekken me zal helpen.**

1	2	3	4	5
Helemaal niet van toepassing				Helemaal van toepassing

11. **Als ik me ellendig voel, heb ik het idee mezelf juist een dienst te bewijzen door een beetje haar te trekken, omdat ik me dan even beter zal voelen.**

1	2	3	4	5
Helemaal niet van toepassing				Helemaal van toepassing