Construction and validation of a self-report measure of trichotillomania distress: the hairpulling distress and impairment scale (HDIS)

Christine M. Larson
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A Dissertation

Entitled

Construction and Validation of a Self-Report Measure of Trichotillomania Distress: The Hairpulling Distress and Impairment Scale (HDIS)

By

Christine M. Larson, M.A.

Submitted as partial fulfillment of the requirements for

the Doctor of Philosophy degree in

Psychology

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August 2007
An Abstract of

Construction and Validation of a Self-Report Measure of Trichotillomania Distress:
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Individuals with Trichotillomania (TTM) engage in chronic, repetitive hair pulling, generally to the point of noticeable hair loss and considerable psychological distress. They may experience intense feelings of shame and guilt for engaging in this self-damaging behavior and for being unable to stop themselves from doing so. The current study was conducted to create and validate a new self-report measure to assess the broader suffering of TTM in adults. The measure developed, entitled the Hairpulling Distress and Impairment Scale (HDIS), could improve the ability of researchers and clinicians to assess individuals’ experiences of TTM and chronic hairpulling and to better inform TTM treatment.
A heterogeneous group of 1189 hair pullers participated in the study, which utilized online data collection. Participants completed an online set of measures which included the HDIS, Massachusetts General Hospital Hairpulling Scale, Massachusetts General Hospital Trichotillomania Impact Scale, modified Psychiatric Institute Trichotillomania Scale, Beck Depression Inventory, and Beck Anxiety Inventory.

The HDIS demonstrated good internal reliability, and its test-retest reliability over a two to four week period was excellent. Factor analysis using a Varimax rotation revealed the presence of three meaningful factors: “Interference,” “Shame,” and “Control,” each of which demonstrated adequate internal reliability and excellent test-retest reliability. The first factor, called “Interference,” consisted of 15 items which measured the general distress of chronic hairpulling. Means and standard deviations were calculated for the total and subscale scores. A correlation matrix was generated to reveal relationships between the total scores on each of the measures. Convergent validity was assessed by comparing the HDIS with three measures of hairpulling severity, and moderate to strong positive correlations were found. Divergent validity was assessed by comparing the HDIS with the BDI and the BAI, and, as predicted, small to moderate positive correlations were found. A reliable change index was calculated to provide a minimum change value by which reliable change on the HDIS Total Score and subscale scores could be demonstrated.

The HDIS is a valid, reliable self-report measure which can be used in conjunction with existing measures of TTM symptom severity to assess the distress and interference associated with hairpulling.
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Chapter One

Introduction

Individuals with Trichotillomania (TTM) engage in chronic, repetitive hair pulling, generally to the point of noticeable hair loss and considerable psychological distress. While most of the early research on TTM focused on hair pulling behavior and on specific treatments (medication, behavioral therapy), more recent research has expanded the focus to include more detailed descriptions of the broader experience of the disorder. TTM can result in psychological suffering and a significant decline in quality of life (Diefenbach, Reitman, & Williamson, 2000; Michael, 2004; O’Sullivan et al., 1997).

Individuals with TTM may experience intense feelings of shame and guilt for engaging in this self-damaging behavior and for being unable to stop themselves from pulling out their own hair. In one study, 89% of participants reported experiencing shame and 79% reported experiencing guilt related to hairpulling (du Toit, van Kradenburg, Niehaus, & Stein, 2001). Measures of shame have been found to correlate positively with measures of general psychopathology (Averill, Diefenbach, Stanley, Breckenridge, & Lusby, 2002). The experience of being unable to control one’s behavior may also contribute to feelings of depression or lower self-esteem.

Many adults with TTM report lowered self esteem, a diminished sense of attractiveness, a sense of isolation, and a feeling of being odd (Mansueto, 1999). A
survey of 62 female hair pullers found that self esteem was not related to severity of hair loss or age of onset of pulling, but was related to level of depression, anxiety, hairpulling frequency, and body dissatisfaction unrelated to hairpulling (Soriano et al., 1996).

Many chronic hair pullers keep their behavior a secret and are too embarrassed to seek help. Some individuals with TTM feel isolated in their secrecy or cannot imagine that anyone else engages in this odd behavior, and they may avoid close friendships or romantic relationships (Casati et al., 2000; Diefenbach et al., 2000; O’Sullivan et al., 2000; Swedo, 1993). While women with TTM are no less likely than non-disordered women their age to marry or live with a romantic partner, some women with TTM keep their disorder a secret from their significant other for years (Diefenbach, Tolin, Hanon, Crocetto, & Worhunsky, 2005; Swedo).

The current study was conducted to create and validate a new self-report measure which can help to assess the broader suffering of TTM in adults. No such measure has yet been published, despite references in the literature to a need for such a measure. The measure developed in the current study, entitled the Hairpulling Distress and Impairment Scale (HDIS), could improve the ability of researchers and clinicians to assess individuals’ experiences of TTM and to better inform TTM treatment.
Chapter Two

Literature Review

Diagnostic Criteria

Trichotillomania (TTM) is classified in the Diagnostic and Statistical Manual of Mental Disorders (4th edition; DSM-IV-TR) as an impulse control disorder (American Psychiatric Association, 2000). The term was first coined in 1889 by Hallopeau, a French dermatologist who described a young man who pulled his hair out, and the word is derived from the Greek *thrix* (hair), *tillein* (to pull), and *mania* (madness) (Tay, Levy, & Metry, 2004). Diagnostic criteria include noticeable hair loss from the recurrent pulling out of one’s own hair; an increasing sense of tension before pulling hair or when attempting to resist pulling; pleasure, gratification, or relief when pulling out the hair; and clinically significant distress or impairment in social, occupational, or other important areas of functioning (APA, 2000). TTM is not diagnosed if hairpulling is better accounted for by another mental disorder or a general medical condition (APA).

The DSM-IV-TR notes that a diagnosis of TTM would still apply to hairpulling resulting in virtually undetectable hair loss, if the individual experiences significant distress (APA, 2000). Psychosocial impact is poorly correlated with hairpulling severity (Keuthen et al., 1995; Soriano et al., 1996). Individuals with extensive hair loss may experience little or no social impact, while an individual with undetectable hair may loss
still suffer a severe social impact (Keuthen et al.). It may be helpful to view hairpulling behavior on a continuum ranging from relatively common and benign behavior to behavior that is highly distressing to the individual and may involve disfigurement (Tay et al., 2004).

Much of the research on chronic, distressing hairpulling indicates that the diagnostic criteria for TTM may be too stringent (Christenson, Mackenzie, & Mitchell, 1991; O’Sullivan, Mansueto, Lerner, & Miguel, 2000; Schlosser, Black, Blum, & Goldstein, 1994). Specifically, clinical experience and research have suggested that the tension before pulling and relief/gratification during pulling criteria may not be useful. Many hair pullers do not experience both of these criteria or only do so intermittently (Keuthen et al., 2001; O’Sullivan et al.). Studies of children with chronic hairpulling indicate that the tension and relief criteria may also be overly restrictive in the diagnosis of TTM in children (Hanna, 1997).

Studies of adults with chronic, distressing hairpulling have found that a significant number of participants do not report one or both of the tension before pulling and relief/gratification after pulling criteria. Between 17 and 23% of hair pullers do not report these experiences (Christenson et al, 1991; Schlosser et al., 1994). Only half (51.6%) of an adult sample drawn from treatment clinics and members of the Trichotillomania Learning Center (a national TTM information, advocacy, and support group) met DSM-III-R criteria for TTM. In a study of 60 adult chronic hair pullers, Christenson and colleagues found that 10 (17%) failed to describe both characteristics, 57 (95%) reported an increasing sense of tension before pulling, and 53 (88%) endorsed feeling gratification or a sense of relief after pulling. The participants in that study were drawn from two
sources, referrals to a TTM clinic and responders to newspaper advertisements announcing a treatment study of adults who pull out their hair. No statistical differences were found between the groups in age, gender, age at onset of hairpulling, or primary hair site involved. Every participant viewed his or her hair pulling as excessive or unusual behavior and was in the process of seeking treatment. The authors concluded that the tension-reduction requirement may be overly restrictive.

Many individuals with chronic, distressing hairpulling have reported experiencing affective states during hairpulling that are not included in the DSM-IV diagnostic criteria. These affective states may serve as stimulus cues for hairpulling, reinforcers of the behavior, or factors in the broader distress of this disorder. Negative affective states such as anxiety, tension, boredom, sadness, anger, frustration, or embarrassment may trigger hairpulling for some individuals in certain situations (Christenson, Ristvedt, & Mackenzie, 1993; Diefenbach, Mouton-Odum, & Stanley, 2002; Mansueto, Stemberger, Townsley, McCombs, & Golomb, 1997). Decreases in tension, boredom, sadness, and anger from before to after pulling (not from before to during pulling) have been found in hairpullers who did not meet DSM-IV criteria for TTM (Diefenbach et al.).

Chronic hair pulling can have a significant impact on quality of life, even if it does not meet DSM-IV criteria for a TTM diagnosis (du Toit et al., 2001). One study found that hair pullers who meet full diagnostic criteria were significantly more likely to attempt to disguise hair loss, but significant differences in self esteem and avoidance of social situations were not found (du Toit et al.). Participants in that study who did not meet full DSM-IV criteria frequently reported avoiding activities and experiencing lower self esteem. Because it is not clear if significant differences exist between hair pullers
who meet full criteria for TTM and those who do not, some researchers have used the term *trichotillomania* to refer to all forms of repetitive hair pulling (Soriano et al., 1996). The current study followed the precedent set by previous researchers in using a definition of TTM which may or may not include the tension before and relief/gratification during criteria.

*Who engages in TTM?*

*Prevalence.* TTM has traditionally been presumed to be a rare disorder. However when researchers began asking larger numbers of people about hair pulling behavior, it became clear that chronic hairpulling is much more prevalent than was imagined. Using strict DSM-III criteria, a survey of 2,579 college freshmen found that .6% of both male and female respondents had at some point in their lives experienced TTM (Christenson, Pyle, & Mitchell, 1991). With a broader definition of TTM (defined in this study as repetitive hair pulling resulting in visible hair loss) prevalence was 3.4% of females and 1.5% of males, or 2.5% of the total sample. Estimates of 2 to 4% of the general population have been found (Christenson & Mansueto, 1999). Christenson and Mansueto estimate a lifetime rate of clinically significant hair pulling of 3.4% for females.

Part of the reason that this disorder was presumed to be so rare may be that many individuals with TTM feel ashamed and embarrassed about their behavior and invest significant amounts of time and money to conceal its effects (Boughn & Holdom, 2002; Christenson et al., 1991; du Toit et al., 2001). Christenson and colleagues noted that most of their participants disguised their hair loss well, by styling their hair to cover thin or bald patches, by applying makeup to the eyelash or eyebrow regions, and/or by wearing a
wig or false eyelashes. Fifty-two (87%) of the 60 participants in that study reported attempting to disguise hair loss. Of the scalp hair pullers, 13 (29%) had worn wigs, 16 (36%) used scarves or hats, and 23 (51%) styled their hair to minimize the visibility of bald spots or hair thinning. Of the eyelash or eyebrow pullers, 11 (34%) had tried wearing false eyelashes, 24 (69%) used makeup to hide hair loss, and 4 (11%) wore eyeglasses to hide hair loss. Even hair pullers themselves, some of whom watch closely for signs of other individuals who pull, may have a difficult time detecting hair loss in other pullers. One participant at a conference for individuals with TTM commented that she was surprised to find that sometimes she could not tell pullers from nonpullers at the conference because most people looked “normal” (anonymous research participant, personal communication, April, 2005).

Another reason that many clinicians erroneously consider TTM to be extremely rare may be that clients are rarely screened for this disorder and it is sometimes overlooked, particularly when it is comorbid with other mental disorders (White Kress, Kelly & McCormick, 2004). Primary care physicians or mental health clinicians who are unfamiliar with the disorder may tend to underreact or overreact to questions from clients about their hairpulling (White Kress et al.). Now it is evident that this disorder is “neither rare nor benign” (Mansueto et al., 1997, p. 567) and it is the responsibility of healthcare providers to become familiar with TTM.

Age of onset. The age of onset for TTM is estimated to be about 12 or 13 (Christenson et al., 1991; Diefenbach et al., 2002; Lochner, Simeon, Niehaus, & Stein, 2002; Soriano et al., 1996). In a survey of 60 hair pullers, participants reported a range of ages of onset from 1 year to 39 years, with a mean ± SD age of onset of 13 ± 8 years
A sample of 62 female hair pullers estimated a mean ± SD of 12.5 ± 6.5 years (Soriano et al., 1996). A sample of 44 individuals diagnosed with TTM resulted in a mean age of onset of 13.5 years (SD=4.7, range=5-28 years) (Difenbach et al.). In a South African survey of 68 patients with TTM, the average age and SD of onset was found to be 13.95 (8.87) (Lochner et al.). It has been noted that for females the age of onset of TTM may be close to the age of onset of menses, indicating possible hormonal factors in the onset of TTM, but individuals rarely report that both began within a brief time span (Keuthen, Stein, & Christenson, 2001).

A disorder which begins in early adolescence may impact normal developmental processes. Because it affects physical appearance and sense of control, and because it often involves secrecy and shame, TTM may negatively impact a young person’s self-concept and self-esteem (Soriano et al., 1996). Adolescence is, according to some theories of development, a period of instability of self image and self esteem, and adolescents may be particularly vulnerable to the incorporation of negative feelings about the self into the self concept (Soriano et al., p. 78).

It has been suggested that hairpulling which begins very early in childhood (sometimes referred to as “baby trich”) may be a different form of the disorder with a more hopeful prognosis. Many children with “baby trich” stop pulling without undergoing any intervention (Golomb & Mansueto, 1994; Hanna, 1997). This behavior may be part of normal tactile, environmental exploration by very young children (Tay et al., 2004). Many older children who pull may present in a similar manner to adults, sometimes pulling in a “trance-like” state, sometimes being aware of pulling, and being unable to stop despite great effort and motivation (Hanna; Tay et al.). The factor of tactile
stimulation has been more frequently mentioned in the literature on children with chronic hairpulling (Golomb et al.). Most adults with TTM report that they began pulling at about age 12 or 13, suggesting that younger children who pull their hair may not grow up to be adults with TTM.

**Gender difference.** TTM is more common in women than in men, with female to male ratios of at least 2:1 (Christenson et al., 1991; King et al., 1995). Ratios of 15:1, 10:1, 9:1, and 6:1 were found in samples drawn partly or completely from individuals seeking treatment for chronic hairpulling (Christenson et al.; Difenbach et al., 2002; Lochner et al., 2002; Schlosser et al., 1994). In the literature on hair pulling prevalence in young children, there is no gender difference. As described above, there might be something inherently different about hair pulling behavior in young children (Hanna, 1997).

Although it is likely that a “true” gender difference exists for this disorder, it has been suggested that the gender difference in TTM may be exaggerated by several factors. The male-female ratio may be inflated due to the greater likelihood of females to seek help for psychological problems, and the higher ratios tended to be found in samples of individuals seeking treatment (e.g., Schlosser et al., 1994). The strong emphasis placed on female body image may have a significant impact on the body image of women with TTM and may exacerbate feelings of embarrassment, social isolation, fear, guilt, anger, frustration, and low self-esteem (Casati, Toner, & Yu, 2000). Another possible reason that the rate for men seems to be so much lower than the rate for women is that men may be able to claim that bald spots or patches of thin hair caused by pulling are the result of “normal” thinning hair. In Western culture, it tends to be more acceptable for men choose
a very short or completely shaved hairstyle, whereas women who shave their heads may receive more attention. For these reasons, men may be able to escape some of the negative attention of TTM more easily than women, possibly reducing the negative impact of similar hair pulling behavior in daily life.

**Demographics.** The “typical” TTM patient is a European-American female who is in her early thirties, is fairly well-educated, and is of the middle class in socioeconomic status (Boughn et al., 2002; Soriano et al., 1996). A sample of 44 women from a number of different parts of the United States reported a mean age of 33.7 years (SD = 8.9) (Boughn et al.). The women were often well-educated, with an average number of years of college of 3.7 (SD =2.3). Most of the women were employed, with 61% employed in white-collar occupations (education, medicine, law, business) and the others in blue-collar occupations, studying at a university, or working as a stay-at-home mother. Two women were unemployed and received disability income for other health problems (Boughn et al.). These demographics are consistent with other samples; however this study and a number of other studies are based on convenience samples which may distort the “true” status of a “typical” person with TTM. European-American women of the middle and upper class may be more likely to seek treatment for psychological problems and to have the financial means or insurance means to pay for treatment. Men, members of minority groups, and members of lower socioeconomic status may tend to be less likely to seek help for psychological problems (Neal-Barnett, Ward-Brown, Mitchell, & Krownapple, 2000).

**Hair qualities.** The most common location for hairpulling in TTM is the scalp, with approximately 75% of hair pullers pulling from that region (Christenson et al, 1991;
Diefenbach et al., 2002). Approximately 43 to 53% of hair pullers pull from their eyelashes and approximately 39 to 42% pull from their eyebrows (Christenson et al.; Diefenbach et al.). Other less commonly reported regions include the pubic area (17 to 34%), arms and legs (17 to 21%), beard or face (17 to 21%), and chest (3 to 7%) (Christenson et al.; Diefenbach et al.).

A majority of individuals with TTM pull hair from more than one site. One study reported estimated that about 67% of individuals with TTM pull hair primarily from the scalp hair, 22% pull primarily eyelashes, and 5% pull primarily eyebrows (Christenson et al., 1991). Most of the participants who endorsed pulling from multiple regions indicated that they started pulling from one site and eventually added other sites. The mean amount of time between starting with one site and adding another was 8 ± 8 years. Once an individual became accustomed to pulling from the new site, he or she usually was not able to stop.

Sometimes certain kinds of hair are targeted for extraction. Factors such as length of hair, color, straightness or curliness, and/or thickness may influence pulling behavior. Some hair pullers seek out intact roots and continue to pull in search of them. Twenty-seven percent of the participants in Christenson, Mackenzie, and Mitchell’s study (1991) reported pulling out only short or early-growth hair, while 12% only pulled long hair. Fifty-seven percent of the participants mentioned that they were more likely to pull thick or coarse hairs. Pullers with straight hair may target curly strands of hair that do not seem to fit in, and some pullers target hair that is colored differently (darker, lighter, gray) than the other hair. Individuals who are trying to allow their hair to grow back may find it very challenging not to pull regrowing hair, which tends to look different from normal hair.
and may stick up instead of lying flat. Du Toit and colleagues (2001) found the following pulling preferences in their sample: coarse hair only 22 (46.8%), both coarse and fine 22(46.8%), short only 14 (29.8%), long and short 29 (61.7%), dark only 12 (25.5) light only 0 (0%), both light and dark 35 (74.5%).

Some chronic hair pullers seek out the “perfect” hair and may search for hours until pulling the hair that resulted in a sense of “rightness or completion” (O’Sullivan et al., 1997, p. 1442). A sensory tingling or “itch” in the affected region, perhaps due to hair regrowth, can trigger powerful urges in some hair pullers (O’Sullivan et al.; O’Sullivan et al., 2000). The experience of pleasure in some pulling may be the result of chemical mediators being released from the follicle that affect nerve endings in the skin and send signals to the central nervous system (O’Sullivan et al., 2000).

Environmental factors. Individuals with chronic hairpulling generally engage in hair pulling when they are alone (Christenson et al., 1991; Christenson et al., 1999). In one study, about half (53%) of the participants reported pulling hair only when alone, one quarter (25%) pulled only when alone or in the presence of immediate family members, and about one quarter (22%) sometimes engaged in pulling around non-family members (Christenson et al., 1991). The fact that hairpulling can be viewed as a somewhat bizarre behavior, both by others and by the hairpuller herself, may serve to limit pulling in the presence of others.

Sedentary activities in which the hands are not fully occupied tend to be situations in which chronic hair pullers often pull with greater frequency. In a study conducted by Christenson and colleagues (1991), 43 (72%) of the participants reported pulling hair while watching television. Reading and talking on the telephone were reported as high-
risk situations for pulling by 40 (67%) and 30 (50%) of the participants, respectively.

Other activities conducive to pulling include lying in bed, driving, or writing. Twenty-four people (40%) sometimes pulled while lying in bed, 22 people (37%) sometimes pulled while driving, and 15 people (25%) sometimes pulled while writing or doing paperwork. In a study by Diefenbach and colleagues (2002), participants reported pulling in the following situations: 38 (86%) studying or reading, 22 (50%) at work or in class, 39 (89%) watching television, 27 (61%) driving, 35 (80%) talking on telephone, and 31 (71%) lying in bed. Some chronic hair pullers engage in hair pulling while they are thinking or worrying (O'Sullivan et al., 1997).

**Frequency of pulling.** The typical number of episodes of pulling per week is difficult to determine because there is no standard definition of an “episode,” and different studies or individuals sometimes use different definitions. Self reports of the number of pulling episodes can be unreliable, as individuals may forget episodes, have difficulty defining what an episode is for them, or engage in hair pulling without being fully aware that they are pulling. One estimate of scalp hair pulling episodes was reported as a mean ± SD of 27 ± 30 (median = 16) episodes per week, and an estimate of eyelash pulling frequency was reported as a mean ± SD of 15 ± 17 (median = 7) episodes per week (Christenson et al., 2001). Soriano and colleagues (1996) found that participants reported spending a mean of 3.2 hours pulling their hair each day during the last week, with 42 (67.7%) who had not gone 24 hours or more without pulling in the last week. A study using a clinical sample estimated that one-third of the individuals engaged in frequent pulling and one-fifth of the individuals had “very frequent or near constant” symptoms (Lochner et al., 2002, p. 84). It is estimated that most individuals with TTM
generally spend between one and three hours per day in engaging in pulling activities, but this amount may be much longer (O’Sullivan et al., 2000).

Pulling behavior may be affected by diurnal variations and/or by the menstrual cycle (Christenson et al., 1991; Keuthen et al., 1997). In one study, the majority of participants reported diurnal variation in hair pulling, with 53 (95%) noting that their hair pulling is worse in the evening and 3 (5%) noting that their hair pulling is worse in the morning (Christenson et al.). The extent of increased pulling in the evening may be more a reflection of the amount of sedentary or alone time than a true diurnal variation, but the authors made no mention of this possibility. Eleven of the female subjects in that study (20%) reported increased hair pulling during the premenstrual period, and one subject reported only pulling at that time. Another study found that 19.5% of female pullers reported that hair pulling was associated with premenstrual tension and 12.2% were unsure if their pulling was affected by this factor (du Toit et al., 2001).

Some students experience periods of little or no hair pulling during summer vacation or less demanding parts of the semester and return to increased pulling during finals (O’Sullivan et al., 1997). A similar pattern may be found in persons with work-related pressures (Christenson et al., 1993; O’Sullivan et al.). Individuals may tend to pull more during winter months of confinement and less during vacations (O Sullivan et al.).

Rituals. Individuals with chronic hair pulling may have very specific ways in which they usually pull their hair and may engage in certain behavior with the hair before discarding it. A complex, ritualized process of hairpulling was noted in a 27-year-old woman who used a mirror to search for the “right” hair, tugged it quickly to extract the root, bit the hair, swallowed the root, spit the hair out, and needed to find two “really
good” roots before she felt she could temporarily stop pulling (O’Sullivan et al., 1997, p. 1442). All 60 pullers in the Christenson et al. (1991) study used their fingers to pull out hair, and 43% had also used tweezers at least once in noncosmetic pulling. Participants in the study by du Toit and colleagues (2001) reported the following behaviors: playing with their hair before pulling it out (65.9%), playing with the hair after its removal (48.9%), scratching the scalp before pulling hair (53.2%), experiencing an itch before pulling hair (38.3%), touching their face before pulling hair (25.5%), and smelling the hair after pulling (6.4%).

Oral behaviors are common, with 70.2% of the participants engaging in some sort of oral behavior (du Toit et al., 2001). The following oral behaviors with an extracted hair were reported (percentages based on those who report oral behaviors) touch lips (51%), touch tongue (34%), touch teeth (46.8%), bite hair (44.7%), bite root off (32.4%), suck hair (12.8%), and swallow hair (34%). Four of the individuals who swallowed hair reported sometimes experiencing stomach pains due to swallowing hair, but none reported more serious medical consequences (du Toit et al.). About half (48%) of participants in the Christenson et al. (1991) study engaged in some sort of oral behavior with the hairpulling. One quarter (25%) of the participants rubbed an extracted hair around the outside of the mouth, and about one third (33%) chewed or bit off the ends of hair. Licking the hair was reported by five individuals (8%), and six participants (10%) indicated that they sometimes ate the hair.

Attempts to resist pulling. Chronic hair pullers are often quite resourceful in their attempts to resist pulling, and numerous methods have been mentioned on message boards. The vast majority of individuals with TTM report actively trying to resist hair
pulling and feeling unable to do so (Christenson et al., 1991). All but one (98%) of the participants on one study reported actively trying to resist hair pulling when it occurred (Christenson et al.). The methods described in that study were: the use of a hat or scarf as a barrier on the head (33%), change in activities (22%), keeping hands occupied with fidget toys or holding things (20%), wearing mittens or gloves (20%), sitting on hands (15%), taping fingers together (8%), altering fingernails (8%), hiding tweezers (7%), chewing gum (5%), and using petroleum jelly on hands or hair (5%). Some individuals try to avoid situations in which they are at risk for pulling, such as watching television or reading.

Comorbidity. Research suggests that many individuals with TTM have co-morbid disorders, primarily mood and anxiety disorders (Christenson et al., 1991; Diefenbach et al., 2002; Lochner et al., 2002). Of the 44 participants in a recent study, 24 (55%) were diagnosed with one or more co-existent mood or anxiety disorders (Diefenbach et al.). The majority of the participants in one study (82%) received diagnoses of current or past axis I disorders (DSM-III-R) other than TTM (Christenson et al.). Mood disorders were the most prevalent, with 33 (55%) of the participants having a lifetime prevalence of Major Depression, 5 (8%) with Dysthymia, 2 (3%) with Bipolar Disorder, NOS, and 1 (3%) diagnosed with Schizoaffective Disorder. A similar lifetime prevalence rate of Major Depressive Disorder (29 individuals, 51.8%) was found in a sample of 68 patients with TTM at a South African treatment center using DSM-IV criteria, and one of the individuals in that sample was diagnosed with Dysthymia (Lochner et al.). A smaller percentage of individuals with co-existent mood disorders was found in another study (11%) (Deifenbach et al.).
Anxiety disorders are frequently diagnosed in individuals with TTM. In the American sample, the number of individuals who met criteria for anxiety disorders (lifetime prevalence) was 19 (32%) with simple phobias, 16 (27%) with Generalized Anxiety Disorder, 9 (15%) with Obsessive-Compulsive Disorder, 7 (12%) with Panic disorder with agoraphobia, 4 (7%) with Panic disorder without agoraphobia, 5 (8%) with Social Phobia, and 2 (3%) with Agoraphobia. Four individuals (7%) had a history of separation anxiety disorder (Christenson et al., 1991). In the South African sample, no specific phobias were diagnosed, but rates of other anxiety disorders were similar to or higher than the rates found in the American study. Lifetime prevalence rates in the South African sample were found to be 14 (25%) with Generalized Anxiety Disorder, 17 (30%) with Obsessive-Compulsive Disorder, 5 (9%) with Panic disorder, and 8 (14%) with Social Phobia (Lochner et al., 2002). Diefenbach and colleagues (2002) found the following rates of anxiety disorders: GAD (13, 30%), Social phobia (5, 11%), specific phobia (5, 11%), panic disorder with Agoraphobia (3, 7%), and PTSD (2, 5%).

Lifetime prevalence rates for other disorders included Bulimia nervosa: 5 (8%) individuals in the American study and 4 (7%) in the South African study; Anorexia nervosa: 0 individuals in the American study and 1 (2%) individual in the South African study; and Eating Disorder, NOS: 7 individuals (12%) in the American study and 0 individuals in the South African study. The American study also reported prevalence rates of 18% for alcohol abuse or dependence and 17% for other substance abuse or dependence (Christenson, et al., 1991). An increased rate of Body Dysmorphic Disorder has been noted, with 14 (22.6%) of the individuals in one study rated as having probable BDD (Soriano et al., 1996).
Several studies have looked at the prevalence of Axis II disorders in individuals with TTM. Christenson, Chernoff-Clementz, and Clementz (1991) found that 42% of 48 women with TTM met criteria for a personality disorder. They stated that women with TTM have a rate of personality disorders which is higher than the general population but not significantly different from that in a psychiatric clinic sample. Schlosser and colleagues (1994) found that more than one-half of their 22 participants fit the diagnostic criteria for a personality disorder, with Obsessive-compulsive personality disorder being the most frequently diagnosed (n = 6, 27%). The South African study, which randomly assessed smaller numbers of patients for certain personality disorders using the SCID-II, found a high occurrence of personality disorders (Lochner et al., 2002). Of the 52 patients assessed for Obsessive-compulsive personality disorder, 12 (23%) met diagnostic criteria. Five (26%) of the 19 patients assessed for Avoidant personality disorder met diagnostic criteria. One of 15 (7%) assessed for Schizotypal personality disorder was given a diagnosis and two of 15 (13%) assessed for Borderline personality disorder were given the diagnosis (Lochner et al., 2002). These studies seem to indicate that persons with TTM are more likely than non-clinical persons to have a personality disorder and that they have a similar rate of personality disorders to psychiatric clinic samples (Christenson et al.; Schlosser et al.).

A study which included 36 women with TTM indicated that individuals with OCD and individuals with TTM reported significantly more childhood trauma than controls (Lochner et al., 2002). Specifically, individuals with OCD or TTM experienced significantly more physical abuse and emotional neglect, but not sexual abuse, emotional abuse, or physical neglect, than controls (2002). A study of 44 women with TTM,
Boughn (2004) found a very high rate (91%) of reported history of family chaos and violence. Eighty-six percent of the women reported that experiences of violence (such as rape, ongoing parental violence, or child sexual abuse) were linked to their onset of TTM (Boughn). This startling number may be partially inflated by the study’s broad definition of parental violence, which included frequent arguing and yelling in addition to emotional, verbal, physical, or sexual abuse, and rape. Most researchers of individuals with TTM have not directly inquired about traumatic experiences in their studies, but studies which included assessment for PTSD did not find a high comorbidity of PTSD with TTM. Boughn’s study indicates that a possible link between violence and TTM should be further assessed, but until her results are replicated they should be viewed with caution.

Classification. TTM has been classified as an impulse control disorder, but there is a debate in the literature over the appropriateness of this classification. Adults with TTM generally present very differently than with individuals with kleptomania, pyromania, or intermittent explosive disorder (O’Sullivan et al., 2000). Children with TTM typically have a low frequency of externalizing symptoms, providing further evidence that TTM may not be properly classified as an impulse control disorder (Hanna, 1997).

It has been suggested that TTM may be better classified as an obsessive-compulsive spectrum disorder, with similarities to and differences from OCD (Keuthen et al., 2001). Similarities between TTM and OCD noted in the literature were summarized by Tükel, Keser, Karali, Olgun and Çalıksu (2001) as: high rates of OCD in patients with TTM, overlap in family history characteristics, some degree of successful treatment of
both disorders with serotonin reuptake inhibitors, and similar neuropsychological test abnormalities. Additionally, both individuals with TTM and OCD consider their behavior to be unreasonable and often describe having irresistible urges and accompanying anxiety driving the behaviors, with a temporary relief following the behavior (Tükel et al.). Noted differences between the disorders included the following: impulsive qualities of TTM (pleasure in pulling), lack of obsessive thoughts prior to pulling, and the fact that OCD symptoms tend to change over time while hair pulling remains stable for many years (Tükel et al.).

In a study comparing TTM and OCD patients, no differences were found in depression and anxiety, assessed with the Hamilton Rating Scale for Depression, the Hamilton Rating Scale for Anxiety, and the State-Trait Anxiety Inventory (Richter, Summerfeldt, Antony, & Swinson, 2003). A significant difference was found on the Y-BOCS obsession and compulsion scales, with TTM patients scoring significantly lower. The authors concluded that there is some justification for including TTM in an OCD spectrum (Richter et al.).

Some researchers suggest that it may be helpful to create a category for TTM and other sorts of habits which could be termed body focused repetitive behavior. Similarities between TTM and other body focused repetitive behaviors such as skin picking, lip-biting, and nail-biting have been found (du Toit et al. 2001, Teng, Woods, Twohig, & Marcks, 2002; Lochner et al., 2002). Similarities with chronic skin picking include similar demographics, psychiatric comorbidity, and personality dimensions (Lochner et al., 2002). Both chronic hairpulling and body focused repetitive behaviors may, in part, serve to regulate emotions by reducing anxiety or tension (Teng et al.).
Conceptualization. Although early conceptualizations of TTM tended to focus on possible unconscious motives in a psychodynamic or psychoanalytic approach, more current conceptualizations of the disorder are based on behavioral, cognitive, and emotional-processing models. A comprehensive behavioral model identifies three stages associated with pulling behaviors: the preparatory stage (finding an environment conducive to pulling), consideration about how hair should be removed (single hairs, clumps, fingers or tweezers, slowly or quickly), and disposition of the hair (immediate discarding or examining and playing with hair) (O’Sullivan et al., 2000). Positive and negative consequences, as well as affective, sensory and cognitive factors, may be emphasized in a behavioral conceptualization. Positive consequences, which serve to positively reinforce hair pulling, may include the pleasurable sensations from pulling, a sense of accomplishment in pulling a specific hair, or desired outcomes such as a symmetric hairline (O’Sullivan et al.). Another rewarding experience may be the reduction or elimination of negative feelings (stress, boredom) and escape from undesirable tasks (homework) or thoughts (“I have so much to do”) (O’Sullivan et al., p. 598). Experiences of aversive sensations, such as fatigue or soreness, or negative thoughts and feelings about oneself may end a pulling episode (O’Sullivan et al.). For the majority of individuals with TTM, pulling hair from favored pulling sites generally does not cause any pain (Christenson et al., 1991). Cognitive behavioral therapists may conceptualize pulling behavior as a response to cognitive, emotional and situational factors, such as frustration or impatience with academic work (Pélassier & O’Connor, 2004). Treatment would then include cognitive challenging of unhelpful assumptions, such as perfectionistic thoughts.
Recent research has focused on the possibility that hair pulling may serve as a means of emotional regulation (a coping mechanism) for many individuals with TTM. Positive or negative cues may precede hair pulling of this sort (du Toit et al., 2001). In one study which included a question about positive and negative affective cues, 5 (10%) experienced positive affective clues only, 19 (38.3%) experienced negative cues only, and 21 (44.7%) experienced either positive or negative cues (du Toit et al., 2001).

Associations between hair pulling and tension, anxiety, and sadness have been found in clinical (Christenson et al., 1993; Diefenbach et al., 2002) and non-clinical (Stanley, Borden, Mouton, & Breckenridge, 1995) samples (Teng et al., 2004). At times, hairpulling can release tension and anxiety and/or can feel pleasurable, making it satisfying in the short term despite the long term negative consequences (O’Sullivan et al., 2000). Hair pulling has been associated with decreases in tension, boredom, anger, sadness in non-clinical pullers (Stanley et al.). Factors such as anxiety or worry experienced directly before pulling have been found to be significantly correlated with greater TTM severity (Wetterneck & Woods, 2005).

It has been suggested that there may be a tension-reduction-tension cycle, in which increases in negative affective states (e.g., boredom) precede hairpulling, pulling is reinforced by reduced negative emotions/stimulation, which then triggers increases in other negative states (e.g., guilt, shame), and so on (Diefenbach et al., 2002). Another possibility is that negative emotions could be associated with thoughts of failure, leading to increased likelihood of pulling (Diefenbach et al.).

A study of 436 individuals who reported being diagnosed with TTM examined the possible relationship between experiential avoidance, a term used to describe escape from
or avoidance of unwanted thoughts or emotions, and TTM (Begotka, Woods, & Wetterneck, 2004). A positive correlation was found between experiential avoidance and severity of TTM with more experientially avoidant individuals tending to experience more frequent and intense urges to pull, less ability to control the urges, and greater distress related to pulling (Begotka et al.). However, no clear difference was found between experientially avoidant and non-avoidant individuals on the likelihood to actually pull or success in limiting pulling. There was a moderate effect size with high avoiders reporting higher pulling frequency.

**Focused versus non-focused distinction.** A number of researchers have suggested that there may be two different types of hair pulling, focused and non-focused or automatic (Christenson et al., 1991; Christenson et al., 1999; du Toit et al., 2001; Michael, 2004). Focused hair pulling refers to hair pulling that is consciously engaged in (the focus of the individual’s attention), and non-focused hair pulling refers to pulling which is “automatic” and occurs outside of conscious awareness. Focused pulling is phenomenologically similar to OCD (du Toit et al.). Sometimes non-focused pulling is described as a “trancelike” or dissociated state (Christenson et al., 1999). Some evidence has been found for a possible role of dissociation in some hair pulling. Individuals with TTM scored significantly higher than patients with pathological skin-picking on a scale of dissociative experiences (Lochner et al., 2002). Ten (21.3%) pullers in one study reported experiencing depersonalization at times during pulling episodes (du Toit et al., 2001).
Research on this possible focused/non-focused distinction is still in the early stages, and to date no clear divisions between individuals with TTM have been found. Self-awareness of pulling may vary based on mood state, with pulling behavior being more automatic and less subject to conscious cognitive processing of the event during periods of stress (Michael, 2004). Christenson and colleagues (1991) found that 3 (5%) of the individuals in their sample reported that they always engaged in pulling without full awareness of what they were doing. Nine (15%) participants stated that during hair pulling the focus of their attention was primarily on the pulling. The majority of participants in that study (48 people, 80%) described experiences varying between full and incomplete awareness, often beginning with incomplete awareness and developing into full awareness. Du Toit and colleagues (2001) found that 29 (61.7%) of 47 participants indicated that they were not always aware of pulling hair, 9 (19.1%) reported both automatic and focused episodes equally frequently, 22 (46.8%) reported more focused episodes, and 15 (31.9%) reported more automatic episodes. In that study, the only significant difference in phenomenology between the focused and non-focused groups was that pullers who primarily focused attention on hairpulling were more likely to pull from pubic region (which may simply reflect the relative inaccessibility of that area of the body, which is usually covered with clothing) (du Toit et al.). There was a tendency for focused hair pullers to experience a greater sense of shame than non-focused or mixed groups (du Toit et al.).

No correlation has been found between automaticity of hairpulling and use of either the dominant or the nondominant hand in pulling (Christenson et al., 1991, du Toit et al., 2001). In one study, of the participants who volunteered which hand they use to
pull more, 10 (38%) pulled with the dominant hand, 10 (38%) pulled with the nondominant hand, and 6 (23%) used both hands with equal frequency (Christenson, et al.). Another study reported that about half of the participants used only their dominant hand to pull, while the other half used their nondominant hand or both hands to pull (du Toit et al.).

**Measurement of TTM**

There is no “gold standard” measure for TTM (Diefenbach et al., 2005). Clinicians should try to understand TTM from the client’s perspective and avoid presupposing a particular etiology or function of the disorder (White Kress et al., 2004). As with any disorder, it is important to assess a full range of possible effects. Pulling behavior is just one aspect of the broader disorder which often includes negative self-image, shame, reduced sense of control, and avoidance of certain activities (O’Sullivan et al., 1995). Individuals with TTM are often ashamed of hairpulling, and clinicians should be especially sensitive and empathic when conducting the clinical interview. O’Sullivan and colleagues warned clinicians against making the common mistake of asking a patient to expose the area of hair loss for inspection too early in the assessment (2000). They pointed out that “Disclosure can be an opportunity to break down barriers of secrecy and shame but, if not handled, sensitively, is an additional shaming experience for patients” (p.589).

Methods of assessment include objective assessment (such as measuring the area of hair loss, taking photographs), measures rated by clinicians, and self-report measures. Direct observation is one method of objective assessment which is recommended for a
comprehensive assessment of TTM (Diefenbach et al., 2005). Damage caused by pulling can be photographed or measured and used as a record of pulling severity with which to assess treatment progress. Sometimes clients are asked to collect pulled hair and count it or bring it to the session, either as a form of objective measurement or as an aversive consequence of pulling (Diefenbach et al., 2000). (This may be experienced as shaming and should be used with caution.)

A number of clinician-rated measures have been constructed, many of them based on measures of OCD (Stanley et al., 1999). The Yale-Brown Obsessive Compulsive Scale for Trichotillomania (YBOCS-TM) (Stanley et al., 1993) was derived from the Yale-Brown Obsessive Compulsive Scale, which was reworded to replace words related to obsessions and compulsions with “thoughts about hair pulling” and “hair pulling,” respectively. The Psychiatric Institute Trichotillomania Scale (PITS) (Winchel et al., 1992) consists of six items which assess the number of hair pulling sites, time spent pulling and thinking about pulling, frequency with which symptoms can be resisted, distress associated with the behavior, avoidance of activities because of TTM, and severity of hair loss. The NIMH Trichotillomania Severity Scale (TSS) and Trichotillomania Impairment Scale (TIS) were also derived from Y-BOCS. The TSS consists of five items that assess duration of pulling, degree of resistance, distress and interference. The TIS measures the degree of damage resulting from pulling, time spent pulling or concealing damage, and the patient’s ability to control behavior. These measures tended to have poor reliability and stability for the items and subscale scores (possibly due to a restricted range of data), poor internal consistency, inadequate interrater agreement, and questionable validity (Diefenbach et al., 2005; Stanley et al.,
Diefenbach and colleagues (2005) found that self report did not correlate with clinician-rated global severity scales.

Only one self-report measure of TTM has been published, the Massachusetts General Hospital Hair Pulling Scale (MGH-HPS). The properties of this scale are described in the Measures section of this proposal.

*Experience of TTM for children and adolescents*

Younger children tend to be less likely to experience feelings of shame or lack of control experienced by many adults with TTM, but some young children experience a sense of being different (Golomb et al., 1994). Some children with TTM endure teasing, distressing attention from family members, or self-consciousness. Although pulling behavior by children may be linked to environmental conditions or negative feelings, these factors may be less influential for young children than for adolescents and adults (Golomb et al.). For adolescents, whose self-esteem and sense of competence can be closely tied to appearance, development of positive self- and body-images, autonomy, self-control, and confidence may be negatively impacted (O’Sullivan et al., 1997; Soriano et al., 1996). Some adolescents who pull while doing homework may feel forced to choose between losing hair or achieving better grades and may avoid participating in sports such as swimming or track because of fear of exposure (O’Sullivan et al.).

In an unpublished study by the author of this proposal, ten adolescents (whose parents consented to their participation) were interviewed about their experiences of TTM. The participants were all female and ranged in age from 12 to 20 (M = 14.6 years). They estimated that they had been pulling for one to ten years (M = 5.5 years) and
reported pulling from one or more of the following sites: scalp, eyelashes, eyebrows, arms, and legs. In a semi-structured interview, these strong young people shared what it is like for them to live with TTM and insightfully described many of the struggles and rewards that they had experienced in dealing with this disorder. The interviews were recorded, transcribed, and analyzed using the method of Grounded Theory Analysis.

The first major component described was labeled “Feeling Defective or Damaged,” and this referred to negative experiences such as shame and self-criticism that often are a part of this disorder. Eight participants described feeling a lack of control which was experienced as feeling helpless, frustrated, or angry at yourself for not being able to stop the pulling behavior. Seven described feeling isolated or not knowing anyone who understands what it is like to have “Trich.” Other experiences described here included feelings of depression, decreased self esteem, and guilt for causing distress to one’s parents.

The second major component was called “Hiding from Others.” All of the participants attempted to disguise their hair loss in some way, with a wig or bandana, a special hairstyle, or makeup. Seven adolescents described disguising their hair loss and the vigilance that comes with continually monitoring one’s appearance and wondering if others can tell. Six shared the experience of secrecy and how difficult it can be to hide hairpulling. Declined opportunities were identified by six participants, who admitted that sometimes they avoided activities that could lead to exposure, such as swimming, sleepovers, riding in cars with the windows down, or makeovers.

“Interacting with Others” was the third major component. Of the six adolescents who described choosing to reveal their hairpulling to peers, four said that their friends
reacted in a supportive manner. Six participants mentioned the challenge of dealing with unwanted attention from peers, including questions about hair loss or experiences of teasing or ridicule. Five referred to negative interactions with parents (sometimes characterized as “Hair Police”) including being closely watched or frequently reprimanded for hairpulling. For some adolescents, these negative interactions increased their feelings of shame, anger, anxiety, or frustration.

The fourth major component was called “Overcoming” and consisted of positive, growth-oriented experiences. Three participants stated that they like who they are and think of themselves as normal, good people. Six adolescents described putting Trich in perspective as only one part of their lives. Six indicated that they felt the experience of struggling with Trich has made them better, stronger, or more understanding individuals. Two participants mentioned being glad that Trich gave them the opportunity to pursue personal growth in therapy. One adolescent felt that she sees things differently because of living with Trich.

It is important to remember that there were only ten participants, all of whom were female, so some common experiences may not have been described. Also, the participants were attending a TLC conference, an opportunity that most people with TTM do not have. Therefore, the “typical” adolescent experience of TTM may be somewhat different from the experiences of adolescents whose parents were able to bring them to a TLC conference. Overall, the experiences described by these adolescents mirror many of the experiences described by adults with TTM.
Impact of TTM for adults

Due to the experience of shame, many individuals with TTM avoid situations in which they may come under physical scrutiny (du Toit et al., 2001; O’Sullivan et al., 2000). Avoidance of windy or rainy weather conditions, swimming, hairdressers, is common, and many women with TTM avoid dental, ophthalmologic, gynecologic, and other medical examinations (du Toit et al.; Mansueto et al., 2000; O’Sullivan et al., 1997). Du Toit and colleagues reported the following: 27 (57%) of participants avoided certain social situations because of noticeable hair loss, 29 (62%) avoided going to the hairdresser, 39 (83%) had told family members, and 32 (68%) had told friends.

The explanation an individual has for his or her hairpulling may serve to increase or decrease the stigma of engaging in an odd, seemingly voluntary, destructive activity. Of the participants in du Toit and colleagues’ (2001) study, most thought of pulling as primarily a habit 26 (55%), 25 (53%) thought it was caused by stress, 19 (40%) believe there are neurochemical factors involved, 12 (26%) ascribed hair pulling to being weak-willed, and 11 (23%) viewed conflict as an important factor in the onset and maintenance of the disorder.

Seven women who met DSM-IV criteria for TTM participated in focused interviews, and the data were analyzed using the constant comparative method described by Glaser and Strauss (Casati et al., 2000). The women’s attempts to resist hair pulling were futile, despite many strategies such as taping fingers together, using stress balls, wearing gloves, and avoiding “high-risk” situations (Casati et al.). Ten major themes were found, six relating to the negative effects experienced by the hair pullers, three related to the issue of control, and one related to triggers that may have lead to starting
compulsive hair pulling. The themes classified under negative effects included the following:

1) embarrassment and shame (keeping hair pulling a secret, disguising hair loss, avoiding activities in which hair loss might be discovered);

2) isolation (social withdrawal, reluctance to engage in intimate relationships and friendships, not telling spouse about TTM, feeling like the only person in the world with this odd behavior);

3) fear and guilt (fear that hair loss may be discovered, guilt at not being able to spend time with friends, guilt at self-induced effects of behavior, fear and guilt about possible medical consequences);

4) anger and frustration (at inability to stop and interference with goals/lifestyle);

5) humiliation and pain (impact on social, emotional, and psychological well-being, impact on the sense of self from keeping the secret)

and 6) body image (societal value for attractiveness includes importance of thick hair, distress about attractiveness).

The themes classified under control included the following:

1) lack of control (distress about inability to stop);

2) self-disclosure (ability to determine if and to whom to self-disclose);

and 3) lack of information from the medical community (lack of understanding by clinicians about the disorder, emotional, psychological, and social implications may be trivialized, feelings of shame and embarrassment may be reinforced).

The final theme, triggering events, described how individuals began pulling (illness, harassment, family conflict) and how the behavior continued (Casati et al.).
TTM treatments

Early treatments for hairpulling often approached the behavior from the perspective that it was a symptom of some underlying pathological process, whereas more recent treatments focus on reducing pulling behavior and urges to pull and on coping with the effects of chronic hairpulling (Nelson, 1982). Effective treatment for TTM requires a broad, flexible approach (O’Sullivan et al., 2000). As with any treatment, active listening and genuine empathy are indispensable, and a lack of these qualities in the therapy can frustrate or even harm the client (Boughn et al., 2002; Keuthen et al., 2000).

As with many other disorders, it is believed that the majority of individuals with TTM have not received treatment for the disorder. However, as information about the disorder has become more widely available (through the work of groups such as TLC and through the increased availability of information on the internet), it is likely that more and more individuals with TTM are seeking treatment. Of 123 participants in a national mail-in survey (who were offered the chance to participate in the study after they requested information on TTM by responding to a magazine article about the disorder), 58% had not received treatment for TTM (Cohen et al., 1995). In the same study, 30% had been prescribed medication, 32% had participated in some form of therapy, and 29% had received both medication and therapy (Cohen et al.). Psychotherapy (25%) and behavior therapy (18%) were the most common treatments reported (Cohen et al.).

Most researchers and clinicians familiar with TTM suggest that effective treatment should include a behavioral component based on the core techniques of habit reversal and may include pharmacotherapy (Keuthen et al., 2000). Evidence has been
found supporting the inclusion of “cognitive” techniques, the techniques of Acceptance and Commitment Therapy, and/or supportive or psychodynamic psychotherapy (Pélissier et al., 2004; Watson & Winter, 2000; Wetterneck et al., 2005). A majority of (undergraduate) participants rated habit reversal, hypnosis, medication, and punishment (e.g., snapping a rubber band on the wrist when an urge to pull is experienced) to be acceptable treatment interventions, with habit reversal and hypnosis receiving the highest acceptability ratings (Elliott & Fuqua, 2002).

Many of the studies of successful treatments failed to include follow-up assessment or were flawed in some way. One study of treatment efficacy found that 73% of participants (a sample drawn from TLC and the message boards) had learned behavioral-modification techniques and of these 56% had found that the techniques were effective in curbing urges, 31% found they were not effective, and 13% were unsure of any effect on urges (Boughn et al., 2002). Studies of Habit Reversal Training showed promising results but failed to complete long-term follow-up assessments and tended to rely on self-reported symptom reduction. In a large-scale, controlled CBT treatment trial, habit reversal training was reported to be statistically more effective than negative practice, but the study relied on self-report of hair-pulling episodes and has been criticized for lacking a number of controls (Keuthen et al., 2001). One study found that CBT may be helpful in targeting thoughts which may be maintaining or exacerbating pulling behavior, such as “everything must be perfect” (Pélissier et al., 2004), and the cognitive component of consisted of only one or two sessions of cognitive restructuring, and the design was a single case study. A high risk for relapse may exist for many pullers with successful initial CBT outcomes (Keuthen et al., 2000).
Results of non-behavioral treatment are also mixed. In a study of reports of
treatment efficacy (Boughn et al, 2002), psychotherapy (including behavior therapy) was
found to be more helpful than medication for most participants, but its effectiveness was
limited. Of the 31 participants who had undergone individual psychotherapy (including
behavior therapy), 10 (32%) reported that it was effective in some way. In one case study,
neither behavior therapy focused solely on decreasing pulling, nor psychodynamic
therapy which focused on uncovering the stress or problems that presumably led to the
hair pulling helped a woman to reduce her hair pulling (O’Sullivan et al., 1997). In
another case study, involving a less severe case, psychodynamic therapy which did not
focus directly on hairpulling was found to be helpful reducing hairpulling (Watson et al.,
2000).

Watson and Winter (2000) suggest that response to treatment may be determined
less by diagnosis than by the personal meaning the client has for his or her problems.
They recommend that in order for the most appropriate mode of intervention to be
applied to a particular case, a clinician should consider each client’s general functioning,
social context, and personal construction of the meaning of their hairpulling. Watson and
Winter presented two case studies of two women with chronic hairpulling who had
previously received medication and behavior therapy and were still pulling hair. One
woman experienced significant reduction in hairpulling with twelve sessions of brief
psychodynamic therapy (which did not focus directly on hairpulling) and the other
participated in five sessions of cognitive-behavioral therapy (focused on hairpulling)
before becoming dissatisfied and dropping out of treatment. The results of this study with
regard to cognitive-behavioral therapy should be viewed with caution, because the
cognitive-behavioral therapist’s insensitive response mode could be described as “ballistic action” (p. 258). However, it seems clear that non-behavioral psychotherapy can be helpful for some individuals with chronic hairpulling (Boughn et al., 2002; Watson et al.).

Pharmacological interventions to treat TTM have yielded contradictory results, with some studies indicating that SSRIs could decrease symptoms and other studies finding no difference between a placebo and an SSRI (Boughn et al., 2002). Boughn and Holdom found that of the 44 women in their study, 34 had a history of taking medicine, and only 2 reported long-term effectiveness of the medication. One of these women had no effect from four other medications and responded to St. John’s Wort. Nineteen of the women who had tried medication had no effect, short term effectiveness or a small decrease in pulling urges (Boughn et al.). There are few well-controlled, large-scale studies of pharmacologic treatment, and most of these fail to include follow-up data (Keuthen et al., 2001). A number of case studies have revealed that medication can be useful in reducing urges to pull (O’Sullivan et al., 1997). Individuals who received both behavioral and medication treatment showed a greater reduction in hair-pulling than those receiving either treatment alone (Keuthen et al.).

Given the mixed evidence of treatment success, a number of studies have suggested that the best treatments available are ones which include several components and remain flexible in continually modifying the approach to fit the needs of the client. It is very important for the clinician to take an open-minded, empathic, patient, and at times humble, approach to the assessment and treatment of an individual with chronic hairpulling (Silverman, 1999). Longitudinal analyses and personal accounts of
individuals with TTM have indicated that recovery from this disorder is possible. Improvement has been found in reduced hair-pulling severity and impact, decreased depression and anxiety, and increased self-esteem for self-described treatment responders (many of whom sought a number of different kinds of treatment before finding the right one for them) (Keuthen et al., 2001). Individual case studies have pointed out the importance of remaining flexible in treatment implementation and of the powerful role that support groups can play in fostering long-term treatment success (O’Sullivan et al., 1997).

**Broader definition of recovery from TTM**

The complex nature of TTM and significant distress that individuals with this disorder may experience regardless of level of hair loss clearly indicate that the definition of recovery from TTM should not be limited to the reduction or cessation of hair pulling urges or behavior. It may be more realistic and helpful to conceptualize recovery from TTM in terms of remission rather than cure. Urges to pull are not considered to be under the conscious control of the individual, and even individuals who have stopped pulling for years may at times experience urges to pull (Christina Pearson, personal communication, April 2005). Basing treatment success solely on decreased pulling or smaller bald areas can be short-sighted and misleading. Keuthen and colleagues (2001) stated that fluctuations in pulling severity are a normal part of TTM. Remissions and relapses of pulling behavior are common (O’Sullivan et al., 1997), and damage caused to hair follicles by years of pulling may prevent hair regrowth for some people, despite a significant decrease in or elimination of their hair pulling (Diefenbach et al., 2005).
While a reduction in hairpulling symptoms is an important part of the recovery process, the definition of recovery from TTM must be broad enough to include factors such as the reduction of secrecy, isolation, and shame and an improvement of coping abilities (Casati et al., 2000). Recovery may be seen as a process of overcoming a disability or of increasing acceptance of having a disorder which may involve a life-long struggle with urges to pull hair. Each individual with TTM must personally define what recovery means for them. Some definitions of recovery given by individuals with chronic hair pulling include “to be able to wear my hair down,” “to feel at peace with myself,” “to have some control over my behavior,” “to never have another urge to pull,” “to feel happy about myself,” and “to do everything I would do if I didn’t have Trich” (Golomb et al., 1994).

The role of support groups in recovery from TTM

Support groups, both traditional and non-traditional, may be an important part of the recovery process for individuals with TTM, especially because participation in a group can help to reduce painful feelings of shame and isolation (Boughn et al, 2002; Casati et al., 2000; O’Sullivan et al., 1997). In-person groups (which have been referred to in the literature as “traditional group therapy” although they are often conducted without the guidance of a mental health professional) may include groups specific to TTM or not specific to that disorder. Non-traditional group therapy may include participation in internet groups or participation in organizations such as TLC.

Of 30 participants (primarily drawn from a convenience sample of TLC members) who had experienced traditional or non-traditional group therapy, 70% reported that it
was effective (Boughn et al., 2002). Five of the 8 participants in traditional group therapy specific to TTM found it helpful, but none of the participants in group therapy non-specific to TTM (such as support groups for obsessive-compulsive disorder or 12-step programs) found it to be effective (Boughn et al.). Seventeen of the 18 participants engaged in nontraditional group therapy found it to be effective.

The wider availability of the internet has enabled individuals with TTM to engage in anonymous, nonvisual groups (such as message boards) where they could feel free to reveal experiences of shame, embarrassment and fear and where the stigma and isolation of being a hairpuller could be decreased. All of the individuals engaged in internet support groups reported that online support was effective for them in decreasing their sense of isolation and in curbing urges to pull hair (Boughn et al., 2002). Of the 8 participants involved in TLC, 7 reported similar positive effects (feeling less isolated and better able to control the urge to pull) as those provided by the internet groups (affiliation, support, and subsequent relief) (Boughn et al.). (One eyebrow puller felt alienated by the group’s focus on scalp pulling.) Some individuals may need to be physically present and engaged in discussing their personal experiences of TTM for the group experience to affect them (O’Sullivan et al., 1997).

Purpose of the current study

As with any disorder, effective treatment for TTM involves selecting the correct goals to work on, based on the client’s experience of the disorder, implementing the treatment strategy that best fits that client’s needs, and modifying the treatment if it is not working well enough. It is difficult to accomplish these things without well-validated
outcome measures which are specific to TTM. Diefenbach and colleagues (2005) argue that the lack of well-validated measures of TTM has been “one of the obstacles impeding further development of the TTM literature, and in particular treatment outcome research” (p. 169). They suggest that the functional impact (interference with daily functioning) and emotional impact (distress) of pulling are variables which should be included in a comprehensive assessment. There is a clear need for well-validated measures that can be used to establish baseline severity of the broader suffering of TTM and as a treatment outcome assessment tool (Diefenbach et al.). O’Sullivan and colleagues (1995) stated that assessment of TTM should include “the full range of effects,” including “negative self-image, shame which often hinders efforts to seek or comply with treatment, and a reduced sense of personal control” (p. 147). Those factors, as well as isolation, secrecy, and avoidance of activities, can play a large role in the suffering of TTM, and including these experiences in an initial assessment would help to better inform the treatment.

The purpose of the current study was to create and validate a new self-report measure to assess the broader distress of TTM. Such a measure could be used during the initial assessment and at regular intervals to follow treatment progress. The new measure was called the Hairpulling Distress and Impairment Scale (HDIS). Existing measures do not assess the broader experience of TTM (e.g., focus primarily on pulling behavior), assess it minimally (e.g., asking one or two vague questions about distress), or assess distress in a clinician-rated format. The accuracy of the clinician-rated measures, which are often given on the very first office visit, could be affected by a number of factors, such as the amount of experience a clinician has in administering the measure, the sensitivity and empathy the clinician displays in his or her inquiry, and the level of
embarrassment the client feels in responding to questions about behavior which may be experienced as shameful. Individuals who feel uncomfortable or ashamed to describe their experiences out loud to a mental health professional they have just met may feel much more comfortable responding to a paper-and-pencil measure.

HDIS items themselves were derived from qualitative and quantitative research and on published accounts of clinical experience. Several items were based on statements made by individuals with TTM during research interviews. One item was borrowed from an unpublished measure (the Massachusetts General Hospital Trichotillomania Impact Scale described below). Items were chosen in an attempt to capture the full spectrum of individual TTM distress, from severe impairment to mild, or no impairment.

The HDIS is intended for use in research, treatment planning, outcome research, and perhaps by individuals who wish to assess their own progress. As indicated above, researchers and clinicians need a valid measure of the broader impact of TTM, and currently no published self-report measure exists. TTM researchers could use the HDIS score to examine the role that the severity of the broader impact of TTM may have on the construct they are studying (e.g., does HDIS severity predict response to various forms of treatment?). In treatment planning, the HDIS (both the severity score and responses to individual items) may be used to assess the broader distress experienced by the client and to suggest treatment goals accordingly (e.g., include a goal of participating in an activity which was previously avoided). The HDIS can also be used as a self-report treatment outcome measure to be taken before, during, after, and at follow-up to treatment. Some individuals with TTM may find it helpful to assess their own recovery process by periodically taking the HDIS. Traditional (in-person) support groups may also find the
HDIS to be useful in helping individual members to suggest recovery topics that may be important to focus on (e.g., a group of severely distressed hairpullers might choose the topic of overcoming shame while a group of hairpullers who are less severely distressed might choose to focus on putting TTM in perspective as just one part of life.) The potential value and contribution of the HDIS lies in its ability to validly assess the broader impact of distressing hair pulling in a brief, self-report format which is easily administered and scored.

This study addressed the following research hypotheses: 1) The Hairpulling Distress and Impairment Scale was predicted to correlate positively with two self-report measures, the Massachusetts General Hospital-Hairpulling Scale and the Massachusetts General Hospital –Trichotillomania Impact Scale, and with the distress and interference items on the modified Psychiatric Institute Trichotillomania Scale. 2) The HDIS was predicted to demonstrate a small to moderate correlation with the Beck Depression Inventory-II and the Beck Anxiety Inventory.
Chapter 3

Method

Participants

Male and female participants from multiple ethnic groups and various socio-economic levels were invited to participate in this study. Individuals were required to be at least 18 years of age to participate. Eleven hundred eighty nine individuals participated in the study. Most participants were female (N = 976); 71 males participated, and 142 participants did not indicate their gender. (This was probably because the question about gender was near the end of the survey and 181 of the individuals who began the survey did not complete it entirely.) All participants reported engaging in clinically distressing chronic, repetitive hairpulling. They did not need to report experiencing increasing tension/relief or pleasure related to pulling to be included. Many participants reported having other diagnoses, including but not limited to mood or anxiety disorders. Some were or at some point had been engaged in treatment. Other than being of age to legally consent to participate, no exclusionary criteria were applied.

Participants for the current study were recruited through TTM support groups and message boards. Most of the participants accessed the study through a link placed on the Trichotillomania Learning Center (TLC) website. TLC is a non-profit organization that provides information, a monthly newsletter, annual conferences and retreats, research
grants, and networking support to thousands of individuals and families dealing with TTM. The link was available on the TLC main page for several months, including the first week of October, which is National Trichotillomania Awareness week.

**Measures**

*Demographic Form.* Demographic information requested included the participant’s age, gender, ethnicity, marital status, level of education, self-reported previously diagnosed co-morbid conditions, hair pulling tendencies, attempts to disguise pulling (e.g., wig), and diagnostic and treatment history related to hairpulling.

*DSM-IV diagnostic questions.* Participants were to respond to diagnostic questions from each of the DSM-IV categories in order to determine whether or not their reports are consistent with a diagnosis of TTM. In addition to questions directly adapted from the DSM-IV criteria, questions about interference, distress, and severity of hair loss were adapted from those three items on the Psychiatric Institute Trichotillomania Scale (PITS) (Winchel et al., 1992). The PITS is a clinician-administered diagnostic interview modeled after the SCID-I format designed to assess severity of hair loss, duration of daily hair pulling, ability to resist the urge to pull, distress related to hair pulling, and interference in social/vocational function. Items on the PITS are rated for severity on an 8-point Likert scale ranging from 0 to 7, a total score is calculated by summing the ratings for all 6 items. Significant correlations were found between clinician ratings of TTM severity and PITS scores of interference (p < .001), distress (p < .01), hair loss severity (p < .001), and total score (p < .001) (Stanley et al., 1999). Diefenbach et al. (2005) found a low internal consistency of .60 for the PITS, and they suggest relying
more heavily on item than total score analysis (p. 176). When they summed three of the PITS items (distress, interference, and hair-loss severity) they found an adequate internal consistency of .72, and these three items were used in such a manner in the present study.

*Massachusetts General Hospital Hairpulling Scale (MGH Scale)*. The MGH Scale consists of 7 items which were modeled after the 10-item Y-BOCS, with ‘hairpulling’ substituted for ‘compulsion’ (Keuthen et al., 1995). This self-report measure asks respondents to focus on their experiences over the past week and to rate them on a five-point scale (0-4). Items 1 through 3 assess frequency, intensity, and perceived control over hairpulling urges. Instead of focusing on obsessions, as the Y-BOCS items did, items 4 through 6 on the MGH Scale focus on pulling frequency, efforts to resist pulling, and control over pulling behavior. The final item assesses distress associated with hairpulling by asking the respondent to rate how uncomfortable their hairpulling made them feel. (An eighth item meant to assess social impact of TTM was dropped, due to its limited response variability and poor correlation with another measure of hairpulling severity). The MGH Scale demonstrated adequate internal consistency, with a coefficient alpha of 0.89, in a sample of 119 patients with chronic hairpulling. Factor analysis revealed that the scale forms a homogenous total score (Keuthen et al.). The reliability and validity of the scale was tested on an independent sample of 26 patients who met full DSM-IV criteria for TTM (O’Sullivan et al., 1995). Reliability testing (conducted with only one hour between administrations) indicated product-moment correlations of .97. Convergent validity was found between the MGH Scale and two clinician-administered measures: the Psychiatric Institute Trichotillomania Scale (PITS) \(r = 0.63, \text{ d.f.} = 24, p < 0.001\) and the Clinical Global Improvement Scale (CHS) \(r =
Divergent validity was demonstrated through non-significant correlations with the Beck Depression Inventory (\( r = 0.30, \text{d.f.} = 21, p > 0.10 \)) and the Beck Anxiety Inventory (\( r = 0.10, \text{d.f.} = 21, p > 0.10 \)). Sensitivity to change was assessed by comparing changes on the MGH Scale with changes on the PITS and CHS and by comparing Clinical Global Improvement (CGI) scores. Changes on the MGH Scale correlated significantly with changes on both the PITS (\( r = 0.83, \text{d.f.} = 21, p < 0.001 \)) and the CGS (\( r = 0.74, \text{d.f.} = 21, p < 0.001 \)). The MGH Scale correlated significantly with the CGI score (\( r = -0.50, \text{d.f.} = 21, p < 0.02 \)). The authors of the scale concluded that the scale is a valid measure for evaluating symptom severity and symptom change (O’Sullivan et al.). They also suggested that the measure would be useful for monitoring the course of hairpulling and treatment effects, due to its brevity and easy-to-administer self-report format (O’Sullivan et al.).

*Massachusetts General Hospital Trichotillomania Impact Scale (MGH-TIS).*

While the MGH Scale was designed to monitor symptom severity and change, the MGH-TIS was designed as a measure of the “broader ‘syndrome’ of TTM” to be administered in conjunction with behavioral symptom assessment (O’Sullivan et al., 1995, p. 147-148). The measure consists of 24 items with severity ratings of 0 to 5 which are to be assessed for severity over the past week. This measure was never published.

*Hairpulling Distress and Impairment Scale (HDIS).* The measure developed in the current study is a self-report measure which asks respondents to rate their experience of TTM on a five-point scale, from never to always. A total score is computed by reverse scoring four of the items (HDIS21, HDIS24, HDIS26, and HDIS27) and then summing the 27 individual item responses. Scores can range from 27 to 135, and the range found in
the current study was 39 – 133. The purpose and construction of the measure are
described above, and its psychometric properties are described in Chapter Four.

*Beck Depression Inventory- II (BDI-II).* Mild to moderate depressive and anxiety
symptoms are often noted in individuals seeking treatment for TTM, and most previous
studies have included measures of depression and anxiety; therefore the current study
should include measures of depressive and anxiety symptoms. The BDI was the most
frequently used measure of depressive symptoms in the TTM literature, and using the
BDI-II in the current study allowed a more direct comparison between this study and
previous studies. The BDI-II was constructed to measure the severity of depressive
symptoms which are included in the DSM-IV diagnostic criteria for Major Depressive
Disorder over a two-week period. Each item is rated on a 4 point scale ranging from 0 to
3, and the total score is classified as minimal, mild, moderate, or severe (Beck, Steer,
Ball, & Ranieri, 1996). Cronbach alphas of .91 to .93 indicated high split-half reliability,
and the test-retest reliability over one week has been found to be .74 to .96 (Sprinkle et
al., 2002). A strong correlation (r = .83) has been found for the BDI-II and the depression
section of the SCID-I (Sprinkle et al., 2002).

*Beck Anxiety Inventory (BAI).* The BAI is a general measure of anxiety which
consists of 21 self-report items rated on a 4 point scale over the past week. It has
demonstrated strong psychometric properties for both clinical and non-clinical
populations. A Cronbach alpha of .92 was reported, and the test-retest reliability over one
week was found to be .75 (Beck et al., 1988). Individuals diagnosed with anxiety
disorders obtained significantly higher scores on the BAI than those with depression, and
the BAI was moderately correlated with the Hamilton Anxiety Rating Scale (.51).
**Procedure**

Online data collection can provide an efficient method of collecting larger amounts of data from a more diverse sample than would be possible in person (Begotka et al., 2004). The possibility of obtaining informed consent online has been debated, and it has been found that obtaining informed consent online is not substantially different than obtaining it by paper (Varnhagen et al., 2005). Regardless of the method of data collection, researchers should take care to provide clear information and an opportunity to ask the researchers questions about participation. No greater risk exists for internet research than exists for traditional methods (Kraut et al., 2004). Online data collection was utilized to recruit a larger, broader sample than could have been recruited in person.

Data was collected over an eight month period (April 2006 – November 2006). All items were entered into an online survey service called *SurveyMonkey.com* to be filled out by participants on the internet. The SSL option, which provides encryption of information, was used to provide greater security. The survey could not be accessed through an internet search; participants had to enter the survey through an invitation link posted on a message board or through a link posted on the Trichotillomania Learning Center website. Before beginning to fill out the measures, participants were informed about confidentiality, requirements of the research, risks, and benefits. An email address and phone number were posted for participants to contact the researchers with questions. Neither of the researchers was contacted with questions, but several participants emailed their comments about the study. Participants were asked to check off a box indicating consent to participate, and they were asked to enter initials into another box indicating that they were at least eighteen years of age.
After giving consent, the participants were led through the surveys, which required the use of a computer mouse to mark chosen responses. All participants were asked to complete six self-report questionnaires and a demographic form. The measures included the HDIS, MGH-HPS, MGH-TIS, BDI, BAI, and DSM-IV Trichotillomania criteria. It took about 40 to 60 minutes for most participants to complete the surveys. SurveyMonkey.com offered the feature of allowing participants who did not complete the survey in one sitting to begin where they left off.

The final screen thanked the participant for contributing to the research and provided the option of entering an email address where they could be contacted for further help with the study. Participants were also informed that in order to be eligible for the prize drawing, they needed to provide an email address. Participants were assured that their email addresses would be kept confidential and that all email addresses collected would be erased after data collection and prize distribution were complete. The exit screen directed the participant to the Trichotillomania Learning Center website (www.trich.org).

For the purpose of assessing test-retest reliability, the 94 participants who completed the survey between September 28, 2006 and October 2, 2006 were invited to complete the HDIS again within two to four weeks by accessing a separate survey page through a link in an email. (This sample was chosen for convenience, and by that point over 350 participants had already completed the survey.) Of those invited to take the HDIS again, 57 completed the measure within two to four weeks. Five of the completed measures were dropped from the test-retest analysis due to missing items. The remaining 52 measures were used in the test-retest comparison.
Data Analysis

First, scale structure, reliability and validity were assessed for the original HDIS items. Factor analysis was then conducted to find any reliable and meaningful subscales. Next, scale structure, reliability, and validity were reassessed for the revised HDIS measure. Test-retest reliability was then determined by correlating mean scores and relevant subscales within a timeframe of two to four weeks. Cronbach alphas were examined to assess the internal consistency of the measure with the total score. Finally, convergent and discriminant construct validity were assessed.
Chapter Four

Results

*Demographics*

A heterogeneous group of 1189 hair pullers participated in the study. The participants included 976 females (82.1%), 71 males (6.0%), and 142 individuals (11.9%) who did not indicate their gender. Participants ranged in age between 18 and 72 years, with a mean age of 32.88 years ($SD = 10.95$). The sample represented various ethnicities with the following percentages: European-American (73.9%), Hispanic/ Latin-American (3.9%), Asian-American (2.7%), African-American (2.6%), and “other” (4.7%). One hundred forty five participants (12.2%) did not indicate their ethnicity. See Table 1 for detailed demographic information.
Table 1

Demographic Information (N=1189)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>(SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>32.88</td>
<td>(10.95)</td>
<td>18-72</td>
</tr>
</tbody>
</table>

Category

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>976</td>
<td>82.1</td>
</tr>
<tr>
<td>Male</td>
<td>71</td>
<td>6.0</td>
</tr>
<tr>
<td>Not Indicated</td>
<td>142</td>
<td>11.9</td>
</tr>
</tbody>
</table>

Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>European-American</td>
<td>879</td>
<td>73.9</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>46</td>
<td>3.9</td>
</tr>
<tr>
<td>Asian-American</td>
<td>32</td>
<td>2.7</td>
</tr>
<tr>
<td>African-American</td>
<td>31</td>
<td>2.6</td>
</tr>
<tr>
<td>Other</td>
<td>56</td>
<td>4.7</td>
</tr>
</tbody>
</table>

Country of Residence

<table>
<thead>
<tr>
<th>Country of Residence</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>907</td>
<td>86.5</td>
</tr>
<tr>
<td>Canada</td>
<td>62</td>
<td>5.9</td>
</tr>
<tr>
<td>Other</td>
<td>80</td>
<td>7.6</td>
</tr>
</tbody>
</table>

Note. Country of Residence N = 27 for United Kingdom, N = 18 for Australia, N = 5 for Ireland, N = 3 for India, Mexico, and Sweden, N = 2 for Spain, and N = 1 for Antigua, Bangladesh, Botswana, Czech Republic, Egypt, Finland, France, Germany, Hong Kong, Israel, Jamaica, South Korea, Malaysia, Netherlands, Philippines, Poland, Singapore, South Africa, and Sri Lanka.

Other demographic data was also collected. The educational level of the participants was high; 28.40% reported attending some college or technical school, and 24.20% completed college or technical school. Eight percent attended some graduate school, and 15.70% earned a graduate school degree. About half of the participants reported being married or living with a partner, 31.90% of the sample denoted that they
were single, and 7.0% indicated being divorced. See Table 2 for detailed education, income, and marital status data.

Table 2

*Education, Annual Income, and Marital Status of Participants (N= 1189)*

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some high school</td>
<td>26</td>
<td>2.2</td>
</tr>
<tr>
<td>High school diploma</td>
<td>113</td>
<td>9.5</td>
</tr>
<tr>
<td>Some college/technical school</td>
<td>338</td>
<td>28.4</td>
</tr>
<tr>
<td>College/technical school degree</td>
<td>288</td>
<td>24.2</td>
</tr>
<tr>
<td>Some graduate school</td>
<td>99</td>
<td>8.3</td>
</tr>
<tr>
<td>Graduate school degree</td>
<td>187</td>
<td>15.7</td>
</tr>
<tr>
<td><strong>Family Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $15,000</td>
<td>103</td>
<td>8.7</td>
</tr>
<tr>
<td>$15,001 - $30,000</td>
<td>176</td>
<td>14.8</td>
</tr>
<tr>
<td>$30,001 - $60,000</td>
<td>332</td>
<td>27.9</td>
</tr>
<tr>
<td>$60,001+</td>
<td>421</td>
<td>35.4</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>379</td>
<td>31.9</td>
</tr>
<tr>
<td>Living with partner</td>
<td>148</td>
<td>12.4</td>
</tr>
<tr>
<td>Married</td>
<td>405</td>
<td>34.1</td>
</tr>
<tr>
<td>Divorced, not remarried</td>
<td>83</td>
<td>7.0</td>
</tr>
<tr>
<td>Divorced and remarried</td>
<td>35</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Nearly every participant (94.8%) had pulled in the past week. Approximately half of the individuals (51.6%) began pulling between the ages of ten and fourteen, and 90.7% began pulling by age nineteen. Many participants (40.2%) indicated that they had been diagnosed with Trichotillomania by a doctor or mental health professional. Participants reported engaging in psychotherapy or counseling (25.6%) to address the pulling, and
28.9% took medication to decrease pulling or urges to pull. Some sought help through support groups (8.2%) or online support groups or message boards (15.2%). See Table 3 for hairpulling demographics.

Table 3

*Hairpulling Demographics (N=1189)*

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Most recent pulling incident</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Today</td>
<td>867</td>
<td>73.5</td>
</tr>
<tr>
<td>This week</td>
<td>251</td>
<td>21.3</td>
</tr>
<tr>
<td>This month</td>
<td>34</td>
<td>2.9</td>
</tr>
<tr>
<td>In the past year</td>
<td>18</td>
<td>1.5</td>
</tr>
<tr>
<td>Over a year ago</td>
<td>10</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Age began pulling</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-4</td>
<td>41</td>
<td>4.0</td>
</tr>
<tr>
<td>5-9</td>
<td>207</td>
<td>20.1</td>
</tr>
<tr>
<td>10-14</td>
<td>530</td>
<td>51.6</td>
</tr>
<tr>
<td>15-19</td>
<td>161</td>
<td>15.0</td>
</tr>
<tr>
<td>20+</td>
<td>89</td>
<td>9.3</td>
</tr>
<tr>
<td><strong>Treatment and support</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participated in psychotherapy</td>
<td>304</td>
<td>25.6</td>
</tr>
<tr>
<td>Prescribed psychotropic medication</td>
<td>343</td>
<td>28.9</td>
</tr>
<tr>
<td>Support group or conference</td>
<td>97</td>
<td>8.2</td>
</tr>
<tr>
<td>Online support or message board</td>
<td>181</td>
<td>15.2</td>
</tr>
</tbody>
</table>

Participants self-reported the main areas from which they pulled hair most frequently. Hairpulling from the scalp was most common, with 82.2% of participants reporting pulling scalp hair most often, second most often, or third most often. Forty six percent of participants self-reported pulling eyebrows, 39.0% reported pulling eyelashes,
and 34.2% pulled from the pubic area. Hair from the arms or legs was pulled by 17.3% of participants. Moustache/beard, nose, and other hair were pulled by 6.6, 5.2, and 4.0% of the participants, respectively. See Table 4 for detailed information on areas of hair pulled.

Participants reported using the following means of hiding or disguising hair loss: brushing or styling hair a certain way, wearing a wig, wearing a hat or bandana, wearing makeup to conceal hair loss, wearing false eyelashes, and wearing permanent makeup.

Table 4

Areas of Hair Pulled (N=1189)

<table>
<thead>
<tr>
<th>Area</th>
<th>Most often</th>
<th>2nd</th>
<th>3rd</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scalp</td>
<td>739</td>
<td>127</td>
<td>111</td>
<td>977</td>
<td>82.2</td>
</tr>
<tr>
<td>Eyebrows</td>
<td>155</td>
<td>261</td>
<td>140</td>
<td>556</td>
<td>46.8</td>
</tr>
<tr>
<td>Eyelashes</td>
<td>185</td>
<td>158</td>
<td>121</td>
<td>464</td>
<td>39.0</td>
</tr>
<tr>
<td>Pubic area</td>
<td>56</td>
<td>222</td>
<td>128</td>
<td>406</td>
<td>34.2</td>
</tr>
<tr>
<td>Arm or leg</td>
<td>35</td>
<td>69</td>
<td>102</td>
<td>206</td>
<td>17.3</td>
</tr>
<tr>
<td>Moustache/beard</td>
<td>21</td>
<td>32</td>
<td>26</td>
<td>79</td>
<td>6.6</td>
</tr>
<tr>
<td>Nose</td>
<td>6</td>
<td>15</td>
<td>41</td>
<td>62</td>
<td>5.2</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>17</td>
<td>23</td>
<td>48</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Reliability

Reliability coefficients (Cronbach alphas) were computed for the self-report instruments. An alpha coefficient of .93 for the HDIS total scale demonstrated good internal reliability for the measure. The MGH Scale also had good internal reliability, with an alpha coefficient of .86. An alpha coefficient of .90 was found for the TIS scale, indicating good internal reliability. Similarly, the BDI and BAI demonstrated good
internal reliability, with alpha coefficients of .94 and .92, respectively. See Table 5 for reliability coefficients, means, and standard deviations.

Table 5

Reliability (Cronbach Alpha) Coefficients, Means and Standard Deviations for the HDIS, MGH, TIS, BDI, and BAI Scales

<table>
<thead>
<tr>
<th>Measure</th>
<th>N</th>
<th>Alpha</th>
<th>Mean</th>
<th>Range</th>
<th>(SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDIS</td>
<td>1035</td>
<td>.93</td>
<td>93.70</td>
<td>39-133</td>
<td>(18.62)</td>
</tr>
<tr>
<td>MGH</td>
<td>1122</td>
<td>.86</td>
<td>23.90</td>
<td>7-35</td>
<td>(5.34)</td>
</tr>
<tr>
<td>TIS</td>
<td>868</td>
<td>.90</td>
<td>35.33</td>
<td>0-115</td>
<td>(5.80)</td>
</tr>
<tr>
<td>BDI</td>
<td>977</td>
<td>.94</td>
<td>39.90</td>
<td>21-83</td>
<td>(12.86)</td>
</tr>
<tr>
<td>BAI</td>
<td>963</td>
<td>.92</td>
<td>34.04</td>
<td>21-84</td>
<td>(10.86)</td>
</tr>
</tbody>
</table>

Note. HDIS = Hairpulling Distress and Impairment Scale; MGH = Massachusetts General Hospital Scale; TIS = Trichotillomania Impact Scale; BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory.

Descriptive Statistics

The mean HDIS score was 93.70, and the standard deviation of the HDIS was 18.62. The mean MGH Scale score was 23.90 ($SD = 5.34$), and the mean score of the TIS was 35.33 ($SD = 5.80$). For the BDI, a mean score of 39.90 ($SD = 12.86$) was found, and the mean score for the BAI was 34.04 ($SD = 10.86$).

Convergent and Discriminant Validity

The magnitude of the correlations between the HDIS and other measures was examined to demonstrate convergent validity and discriminant validity. The magnitude of the correlation between the HDIS and the seventh item of the MGH, which specifically
addressed distress, was also examined. A correlation matrix was generated to reveal relationships between the total scores. See Table 6 for the correlation matrix.

Table 6

*Correlation Coefficients Between the HDIS, MGH, TIS, BDI, BAI, and PITS (N=1189)*

<table>
<thead>
<tr>
<th>Measure</th>
<th>HDIS</th>
<th>MGH</th>
<th>TIS</th>
<th>BDI</th>
<th>BAI</th>
<th>PITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDIS</td>
<td>-</td>
<td>.42*</td>
<td>.71*</td>
<td>.45*</td>
<td>.31*</td>
<td>.76*</td>
</tr>
<tr>
<td>MGH</td>
<td>--</td>
<td>-</td>
<td>.25*</td>
<td>.32*</td>
<td>.23*</td>
<td>.34*</td>
</tr>
<tr>
<td>TIS</td>
<td>--</td>
<td>--</td>
<td>-</td>
<td>.42*</td>
<td>.27*</td>
<td>.70*</td>
</tr>
<tr>
<td>BDI</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>-</td>
<td>.61*</td>
<td>.41*</td>
</tr>
<tr>
<td>BAI</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>-</td>
<td>.26*</td>
</tr>
<tr>
<td>PITS</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>-</td>
</tr>
</tbody>
</table>

*p < .01

*Note. HDIS = Hairpulling Distress and Impairment Scale; MGH = Massachusetts General Hospital Scale; TIS = Trichotillomania Impact Scale; BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory; PITS = modified Psychiatric Institute Trichotillomania Scale.*

In order to demonstrate convergent validity, strong and positive correlations should exist between measures of the same construct (Campbell and Fiske, 1959). Small to medium positive correlations were found for all of the measures used in the current study, indicating that the measures displayed good convergent validity. The HDIS and MGH shared a small to medium correlation, \( r(1063) = .42, p < .01 \), with approximately 17.6% of the variance shared. A medium correlation was found between the HDIS and TIS, \( r(1036) = .71, p < .01 \), sharing 50.4% of the variance. A medium to large correlation was found for HDIS and modified PITS, \( r(1101) = .76, p < .01 \); 57.8% of the variance
was shared. This indicates that higher levels of distress reported on the HDIS were associated with self-report of Trichotillomania symptoms (distress, avoidance of activities, and severity of hair loss). When the HDIS total and the distress item of the MGH scale (item 7) were compared, a medium correlation was found, $r(1132) = .56, p < .01$. Approximately 31.6% of the variance is shared between the HDIS and the distress item of the MGH. When the HDIS total was compared with the total of MGH items 1 through 6 (removing the distress item), a small correlation was found, $r(1016) = .34, p < .01$, with 11.6% of the variance shared.

To demonstrate discriminant validity, measures of theoretically unrelated constructs should not be highly correlated (Campbell & Fiske, 1959). Discriminant validity was assessed in the current study by comparing the HDIS to the BDI and BAI. As predicted, small to medium correlations were found to exist for the measures. A small to medium correlation was found between the HDIS and BDI, $r(1061) = .45, p < .01$. A small correlation was found between the HDIS and BAI, $r(1051) = .31, p < .01$. The HDIS shared 20.3% of the variance with the BDI, while the HDIS and BAI shared 9.6% of the variance.

Factor analysis

In order to get a clearer picture of the possible underlying factors, an initial factor analysis was performed on the HDIS measures completed by participants who self-reported as female. Females were chosen because they represented the vast majority of participants, which parallels the greater prevalence of TTM in women suggested by the literature.
The suitability of the data for factor analysis was assessed by inspecting the item correlation matrix, which displayed many coefficients of .4 and above. A principal components analysis (PCA) was performed. The Kaiser-Meyer-Okin value was .95, exceeding the recommended value of .60 (Kaiser, 1974). The Bartlett’s Test of Sphericity (Bartlett, 1954) was statistically significant, suggesting that factors may be found in the correlation matrix. Individual items were then examined to determine whether or not they were useful to retain in further analyses. Out of the original 34 items, two items (28o and 37o) were discarded because their item-total correlations were low (.166 and .300, respectively). The correlation matrix was examined to look for highly correlated items which did not add qualitatively different information to the scale, and the following five items were removed: 11o, 13o, 22o, 23o, and 27o.

To find a clearer view of the underlying structure, the remaining 27 items were subjected to a factor analysis with a Varimax (orthogonal) rotation. Five possible factors had an eigenvalue of greater than one, and an examination of the scree plot suggested the possibility of three, four, or five factors. Parallel analysis using the common factors model was applied to produce random data matrices for comparison with eigenvalues from the real data (O’Connor, 2000). The random data matrices suggested the reasonable presence of four statistically-meaningful factors in a 27-item dataset of this size.

The three-factor solution accounted for 54.2 percent of the variance, with the factors accounting for 26.6, 43.8, and 54.2 percent of the variance, respectively. The four factors in a rotated four-factor solution accounted for 18.0, 33.6, 48.9, and 58.8 percent of the variance, respectively. Including a fifth factor accounted for an additional 3.7 percent of the variance. Five-factor, four-factor, and three-factor solutions for the measure were
examined to find the most comprehensible factor structure. The three-factor solution, which was the most comprehensible and had the simplest structure, was chosen. See Figure 1 for the factor solution scree plot.

Figure 1

![Scree Plot for the HDIS Three Factor Solution]

The suitability of the data for factor analysis was again examined, using the three-factor solution. Many coefficients of .40 and above were evident in the correlation matrix. The Kaiser-Meyer-Okin value was .95, exceeding the recommended value of .60
(Kaiser, 1974) and the Bartlett’s Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix. No additional items were eliminated.

The three-factor solution accounted for 54.2% of the total variance. Factor 1 was composed of 15 items and was labeled “Interference.” This factor explained 26.6% of the variance. The second factor had 6 items and was labeled “Shame.” The second factor accounted for 17.1% of the variance. The third factor, which also had 6 items, was labeled “Control.” This factor explained 10.5% of the variance. See Table 7 for a list of the items with the factor loadings and Table 8 for a list of the items on each factor.
Table 7

_A Rotated Factor Pattern for the HDIS Items: Three Factor Solution_

<table>
<thead>
<tr>
<th>#</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Because of my hairpulling, I avoid social events (dating, parties…).</td>
<td>.80</td>
<td>.15</td>
</tr>
<tr>
<td>13</td>
<td>There are things I have not been able to do because of pulling (swimming, sports…).</td>
<td>.80</td>
<td>.16</td>
</tr>
<tr>
<td>2</td>
<td>I get nervous being near to others, in the front row, or in bright light, rain, or wind.</td>
<td>.79</td>
<td>.15</td>
</tr>
<tr>
<td>5</td>
<td>I feel unattractive because of my pulling.</td>
<td>.70</td>
<td>.36</td>
</tr>
<tr>
<td>8</td>
<td>I think my hair loss is noticeable to others.</td>
<td>.70</td>
<td>.12</td>
</tr>
<tr>
<td>3</td>
<td>Hairpulling really interferes with my life.</td>
<td>.69</td>
<td>.21</td>
</tr>
<tr>
<td>23</td>
<td>Because of my pulling, I get nervous when I meet someone new.</td>
<td>.69</td>
<td>.34</td>
</tr>
<tr>
<td>11</td>
<td>I feel guilty for the trouble my pulling has caused.</td>
<td>.64</td>
<td>.31</td>
</tr>
<tr>
<td>16</td>
<td>I check to make sure my hair loss is hidden.</td>
<td>.63</td>
<td>.26</td>
</tr>
<tr>
<td>4</td>
<td>I worry that someone will ask me about my hair loss.</td>
<td>.61</td>
<td>.44</td>
</tr>
<tr>
<td>17</td>
<td>I avoid going to doctors because of my hair loss (physician, optometrist…).</td>
<td>.61</td>
<td>.13</td>
</tr>
<tr>
<td>6</td>
<td>There are times when pulling really gets me down.</td>
<td>.58</td>
<td>.40</td>
</tr>
<tr>
<td>10</td>
<td>Because of my pulling, I feel isolated and alone.</td>
<td>.58</td>
<td>.45</td>
</tr>
<tr>
<td>15</td>
<td>I am less productive... because of the time I spend pulling or covering up hair loss.</td>
<td>.54</td>
<td>.02</td>
</tr>
<tr>
<td>1</td>
<td>I feel frustrated about my hairpulling.</td>
<td>.41</td>
<td>.36</td>
</tr>
<tr>
<td>Shame</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>I feel weird or strange because I pull my hair.</td>
<td>.20</td>
<td>.79</td>
</tr>
<tr>
<td>22</td>
<td>I feel that there is no one I can talk to about my hairpulling.</td>
<td>.07</td>
<td>.74</td>
</tr>
<tr>
<td>14</td>
<td>I think people probably think I'm crazy because I pull my hair out.</td>
<td>.23</td>
<td>.72</td>
</tr>
<tr>
<td>7</td>
<td>I feel embarrassed or ashamed about pulling.</td>
<td>.36</td>
<td>.69</td>
</tr>
<tr>
<td>18</td>
<td>I feel like no one understands me.</td>
<td>.25</td>
<td>.69</td>
</tr>
<tr>
<td>20</td>
<td>I feel scared others would reject me if they knew about my pulling.</td>
<td>.42</td>
<td>.62</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>I am able to resist the urge to pull.</td>
<td>.17</td>
<td>.13</td>
</tr>
<tr>
<td>21</td>
<td>If I accidentally pull one hair, I can catch myself and stop.</td>
<td>.10</td>
<td>.02</td>
</tr>
<tr>
<td>27</td>
<td>I think I am making progress in dealing with my hairpulling.</td>
<td>.05</td>
<td>.13</td>
</tr>
<tr>
<td>26</td>
<td>I use effective strategies to help me limit my pulling.</td>
<td>-.22</td>
<td>-.02</td>
</tr>
<tr>
<td>9</td>
<td>I feel helpless to stop pulling my hair.</td>
<td>.32</td>
<td>.46</td>
</tr>
<tr>
<td>12</td>
<td>I believe that even if I try hard not to pull, I'll just start pulling again.</td>
<td>.14</td>
<td>.31</td>
</tr>
<tr>
<td>Item</td>
<td>Item Content/Factor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Factor 1 – Interference</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS1</td>
<td>I feel frustrated about my hairpulling.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS3</td>
<td>Hairpulling really interferes with my life.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS8</td>
<td>I think my hair loss is noticeable to others.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS2</td>
<td>I get nervous being near to others, being in the front row, or being in bright light, rain, or wind.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS13</td>
<td>There are things I have not been able to do because of pulling. (e.g., swimming, sports, going to hairdresser).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS19</td>
<td>Because of my hairpulling, I avoid social events. (e.g., dating, parties, meetings).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS17</td>
<td>I avoid going to doctors because of my hair loss. (e.g., physician, optometrist, dentist, OB/GYN)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS15</td>
<td>I am less productive at work, school, or home because of the time I spend pulling or covering up my hair loss.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS5</td>
<td>I feel unattractive because of my pulling.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS6</td>
<td>There are times when pulling really gets me down.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS4</td>
<td>I worry that someone will ask me about my hair loss.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS16</td>
<td>I check to make sure my hair loss is hidden.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS11</td>
<td>I feel guilty for the trouble my pulling has caused.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS10</td>
<td>Because of my pulling, I feel isolated and alone.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS23</td>
<td>Because of my pulling, I get nervous when I meet someone new.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Factor 2 – Shame</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS18</td>
<td>I feel like no one understands me.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS14</td>
<td>I think people probably think I'm crazy because I pull my hair out.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS22</td>
<td>I feel that there is no one I can talk to about my hairpulling.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS25</td>
<td>I feel weird or strange because I pull my hair.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS7</td>
<td>I feel embarrassed or ashamed about pulling.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS20</td>
<td>I feel scared others would reject me if they knew about my pulling.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Factor 3 – Control</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS24</td>
<td>I am able to resist the urge to pull.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS21</td>
<td>If I accidentally pull one hair, I can catch myself and stop.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS9</td>
<td>I feel helpless to stop pulling my hair.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS26</td>
<td>I use effective strategies to help me limit my pulling.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS27</td>
<td>I think I am making progress in dealing with my hairpulling.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDIS12</td>
<td>I believe that even if I try hard not to pull, I'll just start pulling again.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Next, scores for each of the factors were calculated, based on the items loading on each of the factors. The internal reliability (Cronbach’s alpha) was assessed for each of the factors. The first factor (Interference) had good reliability, with an alpha coefficient of .93. The reliability for the second factor (Control) was .86. The third factor (Shame) had an alpha coefficient of .75. Thus, each of the factors demonstrated adequate internal reliability. See Table 9 for means, standard deviations, reliability, and variance of the three factors.

Table 9

*Mean (SD), Internal Reliability and Variance for the Three Factor Solution of the HDIS*

<table>
<thead>
<tr>
<th>Factor</th>
<th>Items</th>
<th>Mean</th>
<th>(SD)</th>
<th>Alpha</th>
<th>% Variance Explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – Interference</td>
<td>15</td>
<td>48.50</td>
<td>(13.03)</td>
<td>.93</td>
<td>26.6</td>
</tr>
<tr>
<td>2 – Shame</td>
<td>6</td>
<td>23.28</td>
<td>(5.31)</td>
<td>.86</td>
<td>17.1</td>
</tr>
<tr>
<td>3 – Control</td>
<td>6</td>
<td>21.92</td>
<td>(3.75)</td>
<td>.75</td>
<td>10.5</td>
</tr>
</tbody>
</table>

Subsequent factor analysis was performed for the whole data set \( N = 1189 \), including males and individuals who did not identify gender, and nearly identical factors were found. Only one item differed between the two factor analyses. Item HDIS1, “I feel frustrated about my hairpulling,” was part of the Interference factor in the female dataset and became part of the Shame factor in the whole dataset. It is not surprising that frustration about hairpulling could accompany feelings that hairpulling interferes with one’s life or feelings of shame. The literature revealed that many individuals with distressing hairpulling report frequent feelings of frustration about hairpulling and its
consequences. While dropping that item would not change the factors, the item was determined to be relevant and was kept.

Additional explorations were conducted on the male dataset ($N = 71$), which was too small for a formal factor analysis. An examination of the rotated component matrix revealed that five of the 27 items differed between the male and female datasets. HDIS1 once again loaded on the Shame factor rather than on the Interference factor. Items HDIS4 and HDIS16, “I worry that someone will ask me about my hair loss” and “I check to make sure my hair loss is hidden,” were part of the Shame factor rather than the Interference factor. Item HDIS20, “I feel scared others would reject me if they knew about my pulling,” loaded slightly more highly on the Interference factor than the Shame factor (components of .519 and .502, respectively). Finally, HDIS12 “I believe that even if I try hard not to pull, I’ll just start pulling again,” became a part of the Shame factor instead of the Control factor. The other 22 items were the same for the male dataset as they were for the female dataset.

Test-retest

To determine test-retest reliability, Pearson’s correlations were calculated ($N = 52$) on measures completed within two to four weeks of the first administration. Reliability testing indicated high test-retest reliability for the measure, with $r(52) = .86, p < .01$. Each of the factors demonstrated high reliability, with the first, second and third factors having correlations of .86, .81, and .80, respectively. Thus, the measure and its factors were found to be reliable over time.
Effect size measures

To look at the standardized difference between total and item means from the current sample and means from a clinical sample, Cohen’s *d* effect sizes were calculated, using Diefenbach and colleagues’ (2005) sample of 28 individuals who were being treated for TTM. For the MGH, medium to large effect sizes were found, ranging from 0.73 to 1.20. Thus, the mean of the current sample is at the 77th or higher percentile, compared with the mean of the published clinical sample. For the three individual items adopted from the PITS, small to medium effect sizes were found, ranging from .06 to .34. The means of the current sample compared with the PITS items ranged from the 52nd percentile to the 64th percentile. See Table 10 for effect size measures.

This suggests that individuals participating in the current study were experiencing similar or higher levels of symptoms than individuals participating in the clinical study. It is possible that individuals who were fortunate enough to find and engage in TTM treatment at a highly respected clinic experienced a decrease in symptoms based on their hope that the treatment would help. It is also possible that individuals who do not have access to treatment feel more distress and less hope than those who are engaging in treatment. A number of individuals who participated in the current study shared that they had just learned that hairpulling could be classified as a disorder, that they are not the only person in the world who pulls hair, and that treatments are available. Individuals engaging in the clinic-based study may have already benefited from this knowledge.
Table 10

*Effect Size Measures of MGH and PITS for Current and Published Samples*

<table>
<thead>
<tr>
<th>Scale-item</th>
<th>Sample</th>
<th>Mean</th>
<th>(SD)</th>
<th>Cohen’s $d$</th>
<th>Percentile Standing</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGH-1</td>
<td>Current</td>
<td>3.50</td>
<td>(1.06)</td>
<td>1.19</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>Published</td>
<td>2.35</td>
<td>(0.87)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGH-2</td>
<td>Current</td>
<td>3.46</td>
<td>(0.97)</td>
<td>1.13</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>Published</td>
<td>2.39</td>
<td>(0.92)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGH-3</td>
<td>Current</td>
<td>3.42</td>
<td>(1.02)</td>
<td>0.86</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>Published</td>
<td>2.57</td>
<td>(0.96)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGH-4</td>
<td>Current</td>
<td>3.24</td>
<td>(1.07)</td>
<td>1.10</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>Published</td>
<td>2.14</td>
<td>(0.93)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGH-5</td>
<td>Current</td>
<td>3.04</td>
<td>(0.88)</td>
<td>1.20</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>Published</td>
<td>1.96</td>
<td>(0.92)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGH-6</td>
<td>Current</td>
<td>4.03</td>
<td>(1.01)</td>
<td>0.94</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>Published</td>
<td>3.11</td>
<td>(0.96)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGH-7</td>
<td>Current</td>
<td>3.16</td>
<td>(1.27)</td>
<td>0.73</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>Published</td>
<td>2.18</td>
<td>(1.42)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGH-Total</td>
<td>Current</td>
<td>23.90</td>
<td>(5.34)</td>
<td>1.03</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td>Published</td>
<td>16.71</td>
<td>(4.48)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PITS-4</td>
<td>Current</td>
<td>3.19</td>
<td>(2.29)</td>
<td>0.06</td>
<td>52</td>
</tr>
<tr>
<td>(Interference)</td>
<td>Published</td>
<td>3.07</td>
<td>(2.07)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PITS-5</td>
<td>Current</td>
<td>4.60</td>
<td>(1.94)</td>
<td>0.34</td>
<td>64</td>
</tr>
<tr>
<td>(Distress)</td>
<td>Published</td>
<td>4.04</td>
<td>(1.29)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PITS-6</td>
<td>Current</td>
<td>5.17</td>
<td>(1.94)</td>
<td>0.20</td>
<td>58</td>
</tr>
<tr>
<td>(Hair loss)</td>
<td>Published</td>
<td>4.79</td>
<td>(1.85)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Mean and SD reported in Table II, p. 174, of Diefenbach et al., 2005.

**Reliable change**

A reliable change index (RCI) was calculated to provide a minimum change value by which reliable change on the HDIS Total Score can be demonstrated. The following formula was used: $\text{RCI} = 1.96 \times s_1 \sqrt{2(1-r_{xx})}$, with $s_1$ representing the standard deviation for the measure and $r_{xx}$ representing the reliability of the measure (Jacobson & Truax, 1991). An RCI of 13.66 was found, indicating that a change of at least 13.66 would be necessary to exceed the error of difference for the HDIS. Thus, a decrease of 13.66 on the
HDIS suggests a reliable improvement. Reliable change indices were also calculated for each of the subscales. The Interference subscale has an RCI of 9.56. The RCI for the Shame subscale is 5.51, and the RCI for the Control subscale is 5.20.

Exploratory Analyses

Exploratory analyses were conducted to look for possible differences in total and factor scores based on gender and marital status. Independent $t$ tests were performed to compare HDIS total scores for females and males. A significant difference was found ($p < .01$) between males and females for the HDIS total score, with women ($M = 89.59$) scoring significantly higher than men ($M = 80.08$). Significant differences between the genders were also found for each of the three factors, with women scoring significantly higher than men. See Table 11 for detailed gender comparisons on the HDIS. Participants were divided into those who reported being single versus those who reported being married or living with a partner, and no significant difference ($p = .108$) was found in the HDIS total score. An examination of the HDIS totals for individuals who had told someone about their hairpulling and those who had told no one about their hairpulling revealed no significant difference between the groups ($p = .265$).
### Table 11

**Comparisons of Mean Scores for HDIS Total and Factors by Gender**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Mean</th>
<th>(SD)</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>Female</td>
<td>89.59</td>
<td>(18.58)</td>
<td>4.13</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>80.08</td>
<td>(20.67)</td>
<td></td>
</tr>
<tr>
<td>Interference</td>
<td>Female</td>
<td>48.36</td>
<td>(13.05)</td>
<td>4.12</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>41.73</td>
<td>(13.49)</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>Female</td>
<td>21.96</td>
<td>(3.76)</td>
<td>2.40</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>20.83</td>
<td>(4.56)</td>
<td></td>
</tr>
<tr>
<td>Shame</td>
<td>Female</td>
<td>23.30</td>
<td>(5.33)</td>
<td>3.87</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>20.73</td>
<td>(6.29)</td>
<td></td>
</tr>
</tbody>
</table>

* $p < .05$, ** $p < .01$

Note: $N = 976$ females; $N = 71$ males.
Chapter Five
Discussion

The purpose of the present study was to create and validate a self-report measure of TTM distress that could improve the assessment and treatment of chronic hairpulling. A sample of 1189 adult hair pullers completed the new measure, as well as measures of convergent and divergent validity. The age of onset, gender ratio, education, and economic class of the participants in the present study was similar to the demographic information reported in the literature. The sample included individuals who reported being diagnosed with TTM and those whose hairpulling did not meet full DSM-IV criteria. Members of both groups reported that hairpulling significantly impacted their self esteem and was associated with avoidance of social situations. This is consistent with du Toit and colleagues’ (2001) observation that hairpulling can have a significant impact on quality of life, even if it does not meet DSM-IV diagnostic criteria for TTM.

An effect size comparison of hairpulling severity scores reported in a recent clinic-based sample (Diefenbach et al, 2005) with scores from the current sample indicated that the current sample reported significantly more severe symptoms. This suggests that the sample gathered by online data collection includes many individuals with chronic hairpulling which is as severe, or more severe, than clinic-based samples. This finding is not surprising, given that online data collection provides the means of
reaching a wider population, including individuals who have just learned about the disorder and those who have limited access treatment. Clinics offering Trichotillomania treatment are few and far between, and individuals who are fortunate enough to find specialized treatment or to be included in a clinic-based research study may feel a bit more in control of or more hopeful about their condition than those who have not connected with such resources.

The HDIS was designed to be used in conjunction with existing measures of TTM symptom severity, to assess the distress and interference associated with hairpulling. It has good internal reliability, and its test-retest reliability over a two to four week period was found to be excellent. As predicted, the HDIS correlated positively with measures of convergent validity, including the MGH Hairpulling Scale, the MGH TIS, and the distress and interference items of the PITS. This indicates that the HDIS is measuring a similar, but not identical, construct as the existing measures and suggests that it can be used in conjunction with existing measures to gather unique, relevant information. Also as predicted, small to moderate correlations were found between the HDIS and two measures of convergent validity, the BDI and BAI. Thus, the HDIS is not simply measuring concurrent depression or anxiety.

The data was suitable for factor analysis, and a three-factor solution was chosen because it was the most comprehensible and had the simplest structure. The first factor, called “Interference,” consisted of 15 items which measured the general distress of chronic hairpulling. The second factor, “Shame,” consisted of 6 items which appeared to be measuring shame and stigma about hairpulling. The third factor, which also consisted of 6 items and was called “Control,” appeared to measure the experience of control or
lack of control over hairpulling. These factors represent recognizable constructs found in
the literature and described by many individuals who engage in chronic hairpulling. The
three subscales of the HDIS demonstrated good internal reliability and test-retest
reliability.

*Strengths of the current study*

The current study was based on one of the largest samples reported in the
literature, and the sample included individuals from across the United States, Canada, and
many other countries. The study benefited from the occurrence of National
Trichotillomania Awareness week during data collection. Publicity efforts for the annual
awareness week led to many individuals learning for the first time that other people
engage in distressing hairpulling. A number of these individuals participated in the
current study, and some of them indicated that they had just learned about TTM that day.

Great care was taken in selecting the items of the HDIS. Rather than adapting a
scale designed for a different, theoretically related disorder (such as Obsessive
Compulsive Disorder), HDIS items were taken from the literature on TTM and
distressing hairpulling. Many of the items were based on qualitative studies which
included interviews with hairpullers. This means of construction is particularly important
in creating a measure which could assess the general and more specific distress of this
unique, complex disorder. A number of participants expressed that in completing the
HDIS they came across items which helped them to reflect, sometimes for the first time,
on how hairpulling has affected many areas of their life.
Diefenbach et al. (2005) suggested that the construction of a well-validated measure which included homogenous subscales for distress and interference would be superior to using single items from the PITS to measure those constructs. Rather than forming specific face-valid subscales for the constructs of distress and interference and then looking at their validity as subscales, a broad pool of items was gathered and exploratory factor analyses were performed. It was believed that specific factors and constructs would emerge from the measure, and it was understood that certain items might load highly on more than one factor. For instance, an item measuring social interference could also be expected to load highly on a distress scale. The subscales of the HDIS clearly measure distress, shame, and control, and the few items which load highly on more than one subscale are those which would be expected to do so.

**Limitations of the current study**

Several limitations exist for the current study. The sample includes a significant number of men, but the proportion of men to women is low. A common limitation in TTM research, it is unclear whether the gender difference reflects a greater prevalence of distressing hairpulling in women or if women are just more likely to report or seek help for hairpulling. Regardless, further research is needed to determine if men’s and women’s experiences of distressing hairpulling differ significantly and if the same factors would be found in a larger dataset of males.

A similar issue may be underlying the fact that the majority of participants were European-American, well-educated, and middle or upper economic class. It is unclear if this is a factor of biased sampling or if distressing hairpulling is actually more prevalent
for those individuals. Online data collection may have biased the sample in favor of those
who have access to and use the internet. This could have contributed to the limited ethnic,
educational, and economic diversity of the sample. Once again, this is a common
limitation in TTM research, as well as in research utilizing online data collection.

The participants invited to complete the retest to assess test-retest reliability were
chosen on the basis of convenience, and only participants who were willing to provide
email addresses were eligible. It is possible that the individuals who completed the
measure during those few days or who were willing to provide email addresses may have
differed in some way from the overall sample. However, the test-retest reliability is
consistent with the Cronbach alpha, providing support for the assumption that the test-
retest data provided an accurate indication of the overall test-retest reliability of the
HDIS.

Online data collection also necessitated reliance upon self-report measures, and
the current study depends entirely on self-report. The benefits of using self-report
measures in assessing hairpulling distress were discussed above, and possible limitations
of self-report include limited insight, minimization or exaggeration of symptoms, and
socially desirable responding. The anonymous nature of online data collection may have
encouraged participants to be as honest as possible in reporting the severity of their
symptoms, and the lack of interaction with the researcher may have limited socially
desirable responding.

Finally, the length of time required to complete the measures was significant (an
average of 40 – 60 minutes). Participants may have felt more reluctant to take a break
from online surveys than they would have from paper-based surveys. Their performance
could have been influenced by fatigue or problems concentrating. To minimize the impact of fatigue, the HDIS was placed near the beginning of the survey, and a reminder to take a break was included about halfway through the survey.

**Conclusions and implications of the current study**

In conclusion, the HDIS is a well-validated measure of hairpulling distress which could fill an important gap in the assessment of chronic hairpulling. It is a valid, easy-to-administer self-report measure which takes an average of five to ten minutes to complete. Currently, no other measure of hairpulling distress has been published. Ideally, the HDIS would be administered with a measure of symptom severity (such as the MGH), as well as a clinical interview (such as the PITS), to provide a comprehensive assessment of the baseline severity and treatment outcome for TTM. Using the HDIS in an initial assessment can also provide the clinician and client with detailed qualitative information which could be valuable in planning the most effective treatment for that client.

**Recommendations for future research**

There is a need to cross validate the HDIS with a new sample to see if the same factors emerge. Future studies on the properties of the HDIS should incorporate in-person data collection and, if possible, verification of diagnostic criteria by means of an individual interview. It will be important to validate the HDIS with a large enough sample of males to see if the same factors emerge. Establishing clinical and non-clinical cut-off scores based on a pretreatment and posttreatment population is an important next step. It may also be helpful to look more closely at how co-morbid diagnoses affect HDIS
scores and TTM treatment. Rasch modeling and item-response analyses could be conducted to assess the performance of the rating scale and to clarify the nature of the measured construct.

The HDIS should be used in future treatment studies to assess hairpulling distress and to determine which treatments are most effective for individuals with high or low levels of distress. For example, it is possible that some treatments are more effective with individuals who are low in general distress than with individuals who are highly impaired by distress or shame. It is important to explore the possible impact of modifying treatment on an individual basis, to address these areas of high distress. The HDIS may also detect meaningful pre-post treatment changes in hairpulling distress which would not be detected if hairpulling frequency, hairpulling severity, and hair loss were the only measured criteria.

Many individuals report that attending a TTM conference and meeting other hair pullers reduced the intensity of their shame and isolation. It would be interesting to administer the HDIS to individuals who are attending their first TTM conference, to see if the HDIS is sensitive enough to measure a pre-post change in shame and distress. A similar study might look at the role of online or telephone support.
References


Assessment of trichotillomania: A psychometric evaluation of hair-pulling scales.


*Behaviour Research and Therapy, 43*(7), 869-884.


*Comprehensive Psychiatry, 42*(3), 247-256.


Appendix A

Instructions Given to Participants

Welcome! My name is Christine Larson, and I am a doctoral student in clinical psychology at the University of Toledo, Ohio. For my dissertation research, I am constructing a self-report measure that could help to improve treatment for chronic hairpulling. In order to do this, I need your help. If you have ever engaged in hairpulling that caused you distress, and if you are at least 18 years old, you are eligible to help with this study. As a participant, you will be asked to complete several online questionnaires about your experience of hairpulling. (It usually takes about 20 - 45 minutes.)

This study was approved by the Human Subjects Research Review Committee at the University of Toledo. There are no anticipated risks to participating. All information collected for the study will be kept strictly confidential. Your participation is voluntary and anonymous, and you can choose to stop at any time, without penalty.

Participants who complete the survey have the option of entering a random drawing to win a $100 prize. The first 100 participants will also be entered in a bonus drawing to win $50. If you are interested in receiving feedback about your responses to the survey (a brief summary of your scores) or information about the results of the study, you will be given the opportunity to request this information. If you have any questions or concerns about the study, please contact me at…. Thank you for taking the time to help with this project.

By entering your initials in the box below and continuing with the survey, you indicate that you have read the above information, agree to participate in the project, and are at least 18 years of age.
Appendix B

Hairpulling Distress and Impairment Scale

**Directions:**
The goal of this questionnaire is to assess your experience of hair pulling this week. Please read each statement carefully. Indicate how frequently it applies to you this past week by filling in the circle under one response.

\[N = \text{Never} \quad R = \text{Rarely} \quad S = \text{Sometimes} \quad O = \text{Often} \quad A = \text{Always}\]

<p>| | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel frustrated about my hair pulling.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I get nervous being near to others, being in the front row, or being in bright light, rain, or wind.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Hairpulling really interferes with my life.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I worry that someone will ask me about my hair loss.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I feel unattractive because of my pulling.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. There are times when pulling really gets me down.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I feel embarrassed or ashamed about hair pulling.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I think my hair loss is noticeable to others.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I feel helpless to stop pulling my hair.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Because of my pulling, I feel isolated and alone.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I feel guilty for the trouble my pulling has caused.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. I believe that even if I try hard not to pull, I’ll just start pulling again.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. There are things I have not been able to do because of pulling (e.g. swimming, sports, going to hairdresser).</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. I think people probably think I’m crazy because I pull my hair out.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. I am less productive at work, school, or home because of the time I spend pulling or covering up my hair loss.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Please continue on next page.*
N = Never    R = Rarely    S = Sometimes    O = Often    A = Always

16. I check to make sure my hair loss is hidden.  O O O O O
17. I avoid going to doctors because of my hair loss (e.g. physician, optometrist, dentist, obstetrician/gynecologist).  O O O O O
18. I feel like no one understands me.  O O O O O
19. Because of my hair pulling I avoid social events (e.g. dating, parties, meetings).  O O O O O
20. I feel scared others would reject me if they knew about my pulling.  O O O O O
21. If I accidentally pull one hair I can catch myself and stop.  O O O O O
22. I feel that there is no one I can talk to about my hair pulling.  O O O O O
23. Because of my pulling, I get nervous when I meet someone new.  O O O O O
24. I am able to resist the urge to pull.  O O O O O
25. I feel weird or strange because I pull my hair.  O O O O O
26. I use effective strategies to help me limit my pulling.  O O O O O
27. I think I am making progress in dealing with my hair pulling.  O O O O O

Thank you for completing this measure