Using Habit Reversal Therapy to Treat Trichotillomania in a Child

by

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A Thesis Submitted to the School of Community Services in partial fulfillment of the requirements for the Honours Bachelor of Behavioural Psychology

St. Lawrence College
Kingston, Ontario
Canada
April 14th, 2019
Dedication

For my parents who have encouraged me and believed in me 22 years, and for always pushing me to embrace education as something to be celebrated.
Acknowledgements

Lisa Lynch – Thank you for taking the time to go through this thesis countless times and for your patience and enthusiasm with my many questions. I am forever grateful for your dedication and guidance with this project.

Andrea Roblin-Hanson – Thank you for the amazing learning experience you provided me. Your energy is something I will forever remember and hopefully carry with me.

The Neuro team – What you all taught me both as a group and individually has shaped me not just as a student but as a person. Thank you.
Abstract

Individuals with trichotillomania (TTM) have urges to engage in hair pulling behaviour. Much of the research on TTM has been conducted with adults despite the fact that the majority of people with this disorder start engaging in hair pulling behaviour during childhood (Snorrason, Walther, Elkin, & Woods, 2016). Frequently pulling of hair affects a person socially, physically and psychologically. Treatments have been shown to be effective to reduce hair pulling, such as Habit Reversal Therapy (HRT), however, little research has been conducted on the effects of this type of treatment with children. In this study HRT and positive reinforcement were used to treat TTM in a child. The HRT included providing the participant with education about TTM and awareness about emotions, discovering possible triggers that created the urge to pull one’s hair and demonstrating different relaxation techniques and alternative behaviours. Positive reinforcement was provided by the participant’s guardian when the participant expressed the urge to pull their hair but instead used one of the coping methods that was taught in session. A valuable reinforcer was also provided to the participant after they had abstained from pulling their hair for a week. One on one sessions with the participant where scheduled weekly for a total of nine sessions, however participant absences was a limitation. HRT and positive reinforcement together were effective in decreasing hair pulling behaviour in a child with TTM during the intervention. Recommendations for future research and limitations of the current study are discussed.
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Chapter I: Introduction

Trichotillomania (TTM) is a condition in which a person experiences the impulse to pull their own hair from their head, face, or body which can result in bald spots, bleeding, and/or infections (Rahman, McGuire, Storch, & Lewin, 2017). This behaviour has been shown to decrease the quality of a person’s social life, and self-esteem since this behaviour often results in skin infections, an avoidance of social activities, and the feeling of shame and failure of being unable to stop the behaviour (Diefenbach et al. 2005; Woods et al. 2006a, as cited in Rahman et al., 2017). Woods and Houghton (2016) found that individuals with TTM avoided social situations, and that they were less likely to create social connections and bonds with others of similar age. Though it is estimated that 0.6 – 3.5% of adults are affected by TTM, there is minimal research on the prevalence of it in children. This lack of research concerning children is troubling as many individuals with TTM begin to engage in hair pulling in their childhood, and/or early adolescent years (Snorrason, Walther, Elkin & Woods, 2016). Those who engage in hair pulling behaviour as children often continue this behaviour throughout the rest of their lives if left untreated (Brennen, Francazio, Gunstad, & Flessner, 2016). As a result, it is crucial that this behaviour is stopped as soon as possible as, if left untreated, the hair pulling may result in permanent damage to the hair follicles, the continued feelings of shame and failure, and severe infections that may need medical attention (Brennen et al., 2016).

Habit Reversal Therapy (HRT)

Many different forms of treatment have been used in an attempt to help those with TTM decrease the frequency of their hair pulling behaviour (McDonald, 2012). Habit Reversal Therapy (HRT) has been found to be effective with both adults and children (Cohen et al., 1995). During HRT, the client is taught how to identify the urge to pull hair and to recognize their emotions and behaviours prior to pulling hair. The client is then taught how to alter their body position to make pulling hair harder to engage in and/or less reinforcing. Positive reinforcement was also often used to reinforce the client’s positive alternative behaviour to hair pulling.

The aim of the proposed intervention was to determine if the combination of HRT and positive reinforcement is an effective, and suitable method to decrease hair pulling behaviour in a child. It was hypothesized that by increasing positive reinforcement for alternative behaviours, and using HRT, that the frequency of hair pulling will decrease.

Thesis Overview

This thesis contains five main chapters that includes an introduction, a literature review, methods, results, and conclusions/discussion. The introduction chapter describes general information about TTM, the rational for this study, and the thesis statement. The second chapter is a literature review which examines multiple peer reviewed articles to provide further information regarding possible treatments, and their effects on TTM. The methods chapter summarizes the participants, design, setting and apparatus, measures, and procedure of the research study. The results are shown in chapter four using summaries, figures, and tables. A discussion of the results is presented in section five which identifies the strengths, limitations, challenges, contributions for the study within the Behavioural Psychology field, and recommendations for future research in chapter five.
Chapter II: Literature Review

Trichotillomania (TTM) is a condition that is described in the Diagnostic and Statistical Manual of Mental Disorders V (DSM V) under compulsive disorders, as individuals with this diagnosis often have the urge to pull one’s own hair (American Psychiatric Association, 2013). According to Walther et al., (2014), side effects of TTM could be a combination of physical (bald spots from hair pulling), social (avoidance of activities), and psychological (increased feelings of anxiety and shame) symptoms. During childhood people begin to develop a sense of identity, and learn academic and social habits (Noble, Gnilda, Ashby, & McLaulun, 2017). Children with TTM are especially impacted by its social, physical and psychological effects as TTM decreases their self-esteem and confidence during this critical period in their lives (Brennan et al., 2016). Schumer, Panza, Mulqueen, Jakubovski, and Bloch (2015), found that the symptoms of TTM increased during adolescence years, and feelings of anxiety and depression that often accompany TTM increased drastically. The frequency and intensity of these symptoms also increased if the TTM was untreated (Schumer et al., 2015). These findings suggest that decreasing the frequency of children pulling their hair is important as doing so may help to increase positive social interactions, and personal connections (Schumer et al., 2015). Initiating treatment of TTM during childhood may decrease the chances of amplified TTM symptoms, such as anxiety and depression during one’s adolescent years (Schumer et al., 2015). This is vital as increased TTM symptoms have been found to cause the individual to become less motivated in school (Schumer et al., 2015). Schumer et al. also suggests that adolescents may be less willing to participate in social activities, and more likely to isolate themselves (2015).

Physical Effects

Individuals with TTM are physically affected by constant skin and eye infections, as well as loss of hair on their scalp, face, and body, which may lead to visible bald spots and having no eyebrows or eyelashes (Duke, Keeley, Geffken, & Storch, 2010). Some individuals with TTM also engage in the ingestion of the pulled hair, which is referred to as trichophagy (Duke et al., 2010). The ingestion of hair can lead to serious physical health problems including dental erosion, and the formation of hairballs in the digestive system which is called trichobezoars (Duke et al., 2010). If left untreated, trichobezoars can cause gastrointestinal bleeding, physical weakness, weight loss, and ultimately result in death (Duke et al., 2010). However, not everyone with TTM engages in trichophagy. The physical symptoms of TTM that are less dangerous such as bald spots, bare eyelashes or eyebrows, still create problems socially for the individual (Brennen et al., 2016). These physical symptoms can have lasting effects that include the feeling of isolation, trouble creating lasting positive relationships, and the avoidance of activities (Brennen et al., 2016).

Social Effects

Some individuals with TTM may be socially impacted as they avoid activities such as swimming, or other sports for fear of someone seeing bald spots (Brennen et al., 2016). Those with TTM have been found to have lower self-esteem, and confidence due to the physical symptoms of TTM (Brennen et al., 2016). Having lower self-esteem and confidence may increase the individual’s likelihood of isolating themselves and disengaging from their peers resulting in less positive social interactions, and human connections (Brennen et al., 2016). The behaviour of pulling out one’s hair has also been found to affect individuals academically as they have a more difficult time focusing than their peers because they may be focused on trying to not pull their hair or be focused on pulling their hair (Wetterneck, Lee, Flessner, Leonard, & Woods,
2016). According to Ju and Lee (2018), it is during childhood that people create their social habits and are usually introduced to the positive feelings of security and support that come with friendships and attachments to their peers, but children with TTM find that these friendships and attachments are difficult to attain and keep. As a result, children may avoid social situations that could lead to friendships and social connections, as individuals with TTM have been shown to avoid social situations due to the physical symptoms of the TTM (Brennen et al., 2016). The social isolation is a result of the lack of peer connections (Brennen et al., 2016). Boudjouk, Woods, Miltenberger, and Long (2000), examined how the presence of habit disorders like hair pulling disorder or tics affected how an individual with a habit disorder was rated on a social acceptance scale by others their age. Individuals with habit disorders were rated lower on the scale than individuals without a habit disorder (Boudjouk et al., 2000). These results show that individuals with a habit disorder, like TTM, are less socially accepted by their peers (Boudjouk et al., 2000). According to Ju and Lee (2018), the lack of secure peer connections has been shown to increase the risk of individuals developing a mental illness such as depression.

**Psychological Effects**

Due to the physical and social effects of TTM, one’s self-esteem could be negatively impacted, especially pre-teens who are living with TTM (Brennen et al., 2016). Noble et al., (2017) found that those with TTM experienced more feelings of worthlessness, unattractiveness, and shame about their appearance, actions, and character. These results are also supported by Singh, Wetterneck, Williams, and Knott (2016), who reported that those who experience shame tend to report a decreased quality of life. According Altenburger, Tung, and Keuthen (2014), a significant side effect of TTM is lowered self-esteem and this is especially concerning for individuals who are 11-17 years of age. In-Albon, Heyer, Metzke, and Steinhausen (2017) found that during these years of an individual’s life, low self-esteem is a predictor for future mental health concerns like anxiety and depression. As a result, providing help to pre-teens with TTM is important as it may increase their self-esteem and reduce mental health risks in the future (Masselink, Van Roekel, & Oldehinkel, 2018).

**Treatments**

**Medication vs. HRT.** Current treatment for TTM varies. Some experts support prescribing medication, while others prefer to use behavioural therapy, and others still use a combination of both medication and behavioural therapy. For example, Bloch et al., (2007) compared a method of behavioural therapy, called Habit Reversal Therapy (HRT) with pharmacotherapy to determine what treatment was more effective in decreasing hair pulling behaviour. The authors reviewed seven previously completed studies to obtain their results (Bloch et al., 2007). The pharmacotherapy that was used included either selective-serotonin reuptake inhibitors (SSRI), or clomipramine to treat multiple illnesses such as Obsessive-Compulsive Disorder (OCD), and Panic Disorder (Bloch et al., 2007). Other studies on most appropriate treatment discovered that behavioural therapy requires more time, and effort from the participants, but was more effective than pharmacotherapies (Bloch et al., 2007). A limitation of the study by Bloch et al. (2007), however was that each study that was reviewed had a different method of collecting data and multiple clinical rating instruments were used (Bloch et al., 2007). These results indicate that though HRT was reported as most effective by Bloch et al. (2007), some instruments may have been more sensitive than others in measuring the severity of the TTM symptoms.

Schumer et al., (2015), assessed the long-term outcomes of N-acetylcycteine (NAC) on 30 children with TTM. NAC is an over the counter supplement that works in the body by
sending signals to the brain that reduce the urge to engage in the repetitive behaviours such as pulling hair (Schumer et al., 2015). None of the participants within the study continued to use the medication after the intervention, and that the severity of the hair pulling behaviour had not changed significantly from baseline to follow up (Schumer et al., 2015). These results may suggest that the use of medication could have an impact on hair pulling behaviour, however as none of the participants continued to take the medication, the effects are not certain. According to the participants, the continued use of the medication increased their anxiety and depression symptoms over time (Schumer et al., 2015). Even though there was a slight decrease of hair pulling behaviour from baseline to intervention, medication may not be the best treatment option as the side effects negatively impacted the participants. This shows the importance of considering the side effects of a treatment prior to starting it.

**Habit Reversal Therapy.** Habit Reversal Therapy (HRT) is a form of behavioural therapy that is used with the goal to decrease, and finally eliminate the frequency of unwanted behaviours like hair pulling, tics, and nail biting (Azrin & Nunn, 1973). Rahman et al. (2017), treated 40 youth with a primary diagnosis of TTM with either Habit Reversal Therapy (HRT), or Treatment as Usual (TAU). Those participating in the HRT condition took part in eight weekly therapy sessions that provided participants with tools that could be used to help reduce hair pulling (2017). In the sessions, the participants took part in discussions about goals, reviewed homework (frequency recording, the use of different coping tools, and emotional journal entries), participated/observed therapist-assisted practice of using alternative behaviours, were provided with new information regarding how to become more aware of their actions, and possible alternative behaviours that could be used instead of pulling their hair (Rahman et al., 2017). The participants in the TAU condition continued to receive the treatment they had been involved in prior to the study (Rahman et al., 2017). These treatments included psychotherapy, school-based therapy, school interventions, religious counselling, and/or medications (Rahman et al., 2017). Rahman et al. found that those within the HRT condition displayed a significant decrease in hair pulling behaviour where those in the TAU condition displayed a moderate decrease (2017). It is expected that this was because the HRT was specifically created to decrease the frequency of habits as it combined multiple methods of treatment, such as teaching participants awareness of their behaviours and emotions, providing alternative behaviours, and positive reinforcement for using the alternative behaviours. These results indicate that HRT is a more effective method of decreasing hair pulling for individuals with TTM than TAU.

Bate, Malouff, Thorsteinsson, and Bhullar (2011) conducted a meta-analytic review of 19 studies of HRT. In 17 of the studies HRT produced superior effects than the comparison groups used. Treatments provided to the comparison groups included supportive psychotherapy, exposure with a response prevention, and self recording (Bate et al., 2011). The studies that were examined all used HRT to treat various habit disorders such as Tic disorders, stuttering, hair pulling, and nail biting (Bate et al., 2011). The meta-analysis also noted the methods of collecting data, and the accuracy of the different recording methods (2011). The authors found that the use of self-reports and direct observations together may lead to the most accurate and reliable data in terms of the symptom frequency, and duration as the combination of these two methods of data collection relies on two sources of data collection instead of one (Himle et al., 2006, Keuthen et al., 2005 as cited in Bate et al., 2011). The use of self monitoring also provides the individual with the opportunity to practice awareness of their own behaviours. This would indicate that when collecting data on the frequency of hair pulling behaviour, both self
monitoring and some form of direct observation would yield the more accurate data.

Snorrason et al., (2016) found that using HRT and function-based interventions, as well as involving the family, proved to be effective in treating an eight-year-old boy with TTM. The function-based intervention included providing the participant with alternative behaviours, like playing with a silly band that supplied the same type of tactile satisfaction as pulling his hair (Snorrason et al., 2016). This study also included making the hair pulling more difficult by asking the participant to wear a hat more often and putting band-aids on his fingers (Snorrason et al.). Snorrason et al. first completed a functional assessment to gather information regarding triggering environments and antecedents to hair pulling. The authors then provided the participant with alternative behaviours, such as wearing a hat, or playing with thread or a fidget toy, when he felt the need to pull his hair (2016). These behaviours were later changed to more appropriate social behaviours that were less obvious, such as clenching his fists. In addition, the participant’s parents were instructed on how they could reinforce the participant’s behaviour by providing the participant with a small toy when they used competing responses at home, as this is where the hair pulling mostly occurred (Snorrason et al., 2016). HRT was then used to give the participant “awareness training”. This training focused on helping the participant recognize when he was wanting to, or was about to pull his hair (Snorrason et al., 2016). The therapist then worked to demonstrate to the participant how alternative behaviours like clenching his fists, playing with the silly band, or sitting on his hands could be used to prevent himself from pulling his hair (Snorrason et al., 2016). Treatment was carried out in eight sessions and was found to decrease the participant’s hair pulling behaviour by 73% (Snorrason et al., 2016).

As HRT was found to be effective in decreasing the frequency of hair pulling behaviour, it was implemented in an attempt to decrease hair pulling behaviour within a child. One limitation is that direct observation is often used to collect data on how often participants are engaging in hair pulling behaviour. As the participant for the present study often engages in hair pulling in the bathroom, direct observation was not possible. To overcome this limitation, and in attempts to ensure that the data being collected is accurate, photographs were taken of the participant’s head, eye brows and eyelashes that were used to compare hair growth through out the weeks of treatment.

Positive Reinforcement. Positive reinforcement increases the frequency, intensity, or duration of a behaviour. For individuals with TTM, the goal is usually to decrease the occurrence of the pulling behaviour, or to increase the use of alternative behaviours. The use of positive reinforcement has proven to be effective in increasing behaviours, and there are occurrences of it being used to help treat individuals with TTM. One example of reinforcement that was shown to be effective in decreasing the frequency of hair pulling was a study by Nuernberger, Vargo, and Ringdahl (2013), who implemented a behavioural plan using differential reinforcement of other behaviours in substitution of hair pulling behaviour with a 19-year-old female with a mild intellectual delay and autism. During the study, the participant was given access to stickers or a computer after she had refrained from pulling her hair, and/or eyelashes/eyebrows during a six-second interval (Nuernberger et al., 2013). If the participant did not pull her hair for two consecutive sessions, the interval length was doubled (to a maximum length of 768 seconds), thus increasing the length of time the participant had to go without pulling her hair to receive the reinforcement (Nuernberger et al., 2013). If the participant did not pull her hair for two consecutive sessions, the interval length was doubled (to a maximum length of 768 seconds), thus increasing the length of time the participant had to go without pulling her hair to receive the reinforcement (Nuernberger et al., 2013). The results showed that the use of positive reinforcement was effective in decreasing hair-pulling behaviour as during baseline she pulled her hair during 90% of the sessions, however after intervention hair-pulling decreased to under 7% of the total number of sessions (Nuernberger et al., 2013). The results from this study would
indicate that by providing an individual with reinforcement when they abstain from a behaviour, the behaviour will likely decrease.

Tiger, Fisher and Bouxssein (2009), used differential reinforcement of other behaviour (DRO), and self monitoring to decrease skin picking behaviour in a 19-year-old man with autism. To increase the independence of the participant, he was instructed on how to monitor when he was feeling the need to engage in the target behaviour (Tiger et al., 2009). Prior to intervention, he was taught competing responses, or alternative behaviours that would prevent, or distract him from the urge to pick his skin (Tiger et al., 2009). If the participant refrained from skin picking, he would earn tickets that would later be exchanged for desired items (Tiger et al., 2009). To ensure accurate self monitoring data during the initial stages of the intervention, a behavioural therapist also collected data which was then compared to the participants data (Tiger et al., 2009). By using self-monitoring, DRO and by providing alternative behaviours to use instead of the target behaviour, the frequency of skin picking behaviour decreased by 100% from baseline to the end of the intervention (Tiger et al., 2009).

Though Tiger et al. (2009), treated skin picking disorder and not TTM, their study may still inform the treatment of TTM as Snorrason, Belleau, and Woods (2012), explain how TTM and skin picking disorder are similar in the way these disorders present themselves, and how they can/are treated. As it was found that using DRO, self monitoring, and providing alternative behaviours are effective in decreasing skin picking, it is hypothesized that these treatment methods would also be effective in reducing hair pulling behaviour.

**Prompts.** Prompts are described as different types of memory aids that remind an individual to increase or decrease a behaviour (McKenzie-Mohr & Schultz, 2014). Prompts may be in various forms such as a visual prompt that the individual sees, or auditory prompts that the participant hears (McKenzie-Mohr & Schultz, 2014). The authors noted that prompts are most effective when they are promoting desirable behaviours instead of prompting the absence of a behaviour (McKenzie-Mohr & Schultz, 2014). In other words, when a prompt encourages a behaviour (like hand washing) it is more effective than when a prompt tells someone to stop a behaviour (like nail biting) as people are not always aware of when they are engaging in a behaviour (McKenzie-Mohr & Schultz, 2014). Prompts can however bring awareness of the occurrence of a behaviour however which can aid in teaching awareness to an individual about their behaviour.

McKenzie-Mohr and Schultz (2014), suggest that telling individuals not to engage in a behaviour is not as effective as providing alternative behaviours. The reasoning is because individuals are not usually aware that they maybe engaging in a behaviour. In the present study, a visual prompt will be created that tells the individual to stop hair pulling, and it will provide the participant with possible alternative behaviours. Even though the visual aid will tell the participant to stop a behaviour, because the participant will be taught to be aware of the occurrences of the hair pulling behaviour during treatment, it is expected that the prompt will be effective in decreasing hair pulling behaviour. The visual prompt will also be placed on the participant’s bathroom mirror where the participant can see it and their reflection which will show if they are engaging in hair pulling behaviour. In conclusion, the prompt will help the participant as they will be able to see themselves in the mirror, and they will be taught self awareness in sessions.

**Conclusion.** In conclusion, treating individuals with TTM is important, as treatment will help them physically, emotionally, and socially (Duke et al., 2010; Ju and Lee, 2018; In-Albon et al., 2017). The hair pulling behaviour has affected the participant in the current study by causing physical distress through bald spots, bare eyelashes and thinning eyebrows, which then results in
emotional distress by increasing one’s social anxiety. The research suggests that using HRT and positive reinforcement to treat TTM is effective in decreasing hair pulling behaviour, as HRT and positive reinforcement will teach the individual how to be more aware of the feelings and emotions that trigger the urge to pull, provide alternative behaviours to pulling hair, and will reinforce the use of the alternative behaviours.
Chapter III: Methods

Participant
This study involved one participant, whose gender and specific age of the participant is not reported in order to protect the participant’s identity. The participant had a diagnosis of TTM and attention deficit hyper activity disorder (ADHD) and was referred to the Neurodevelopmental Team at a hospital for their hair pulling behaviour.

Selection
The participant was referred to the thesis student by the behavioural therapist at the hospital as the participant met the criteria of having TTM, and ADHD in the absence of any a speech and language disorder. The participant was eager to participate in the study as they expressed frustration with being unable to stop the pulling behaviour on their own. They had also been experiencing bullying from their peers at school due to their bare eyelashes.

Informed Consent
After the study received ethical approval from two ethics boards, the St. Lawrence College and the Queens University Ethics board, the participant and their legal guardian were provided the consent form (Appendix A). Consent was collected from the participant and their legal guardian (as the participant was under the age of 18), through the consent form which contained all important and necessary information such as the expectations of the study, the benefits and risks, and the procedures. Prior to the legal guardian signing the consent form, the participant and their guardian read over the consent form and were provided the opportunity to ask the student and on-site placement supervisor questions. Assent was then obtained from the participant using an Informed Assent script (Appendix B) which was read to the participant and explained.

Research Design
The study used an AB design. The ‘A’ phase of the design included the collection of baseline data through self-reports and the function of the behaviour was discovered through a motivational assessment (Durand & Crimmins, 1992) and ABC charts. Due to time constraints, baseline data was collected during the first three HRT sessions. These sessions included teaching the participant how to record frequency data, how to complete the ABC chart, and how to be aware of emotions or events that triggered the hair pulling behaviour. The ‘B’ phase of the design included the implementation of the intervention, which included Habit Reversal Therapy and positive reinforcement to decrease the hair pulling behaviour. The independent variable was the Habit Reversal Therapy and positive reinforcement, and the dependant variable was the hair pulling behaviour.

Behaviours
Hair pulling behaviour was operationally defined as reaching one’s hand up to their head, eyebrows or eyelashes, grasping onto either one or multiple hairs, and pulling which results in the hair or eyelashes being pulled out from the eyelid or scalp. Each time the child reached up, grasped one or a few hairs and pulled was considered an instance of hair pulling behaviour. Alternative behaviours include any other behaviour engaging in with hands such as; playing with feathers, pompoms, fidget toys, or clay, as well as drawing or coloring. These activities were used to replace the hair pulling behaviour as they keep the participant’s hands busy and provided the sensory stimulation that was indicated to be the main function of the participant’s hair-pulling behaviour.

Setting and Apparatus
The majority of the intervention was completed in an office within a hospital. The
participant did, however, record the frequency of hair pulling behaviour at home and utilized the alternative behaviours at home. Materials that were used during the intervention included frequency recording sheets and a MindMasters CD (Orlick, 2000). Alternative behaviour toys such as feathers, pompoms, fidget toys, clay, pens, pencils, and a sketchbook were also used, as well as a visual prompt and Hershey kisses as positive reinforcement.

**Assessment**

An ABC chart (Appendix D) was also used to provide the participant and the student researcher insight as to what was occurring before and after the hair pulling behaviour. This ABC chart was explained to the participant by the student. The participant was informed that an ABC chart would be used to assess possible triggers. The participant was instructed to fill this chart out as soon as they realized that they were pulling their hair. They were to think about what had occurred within 2 minutes before they had started pulling their hair, and to write it down in the ‘A’ column. The participant was then to think about what had occurred after they pulled their hair and write that down in the ‘C’ column. Possible things that the participant was told to consider when recording in the ABC chart was any emotions they were feeling after pulling their hair or any events. The ‘B’ column was the behaviour of hair pulling. This chart was also completed at first by both the participant and the student, then the participant completed it alone while the student observed.

A motivational assessment scale (Durand & Crimmins, 1992; Appendix E) was also completed by the placement student during the first meeting with the participant. The functional assessment was used to provide the possible function of the participant’s behaviour which was used to determine the methods of treatment that would be provided. These methods were used to help teach the participant why they were possibly engaging in hair pulling and what is going on in their body before pulling their hair.

**Measures**

Data were collected on the frequency of hair pulling behaviour. The participant used a frequency recording sheet to collect and record data (Appendix C). This form was given to the participant in a duo tang that they could always carry with them. The form was to be used why the participant felt the urge to pull their hair. They were to write down the date, place, and whether they pulled their hair. The purpose of this form was to track the frequency of the hair pulling behaviour, and to assess how often the participant was able to refrain from pulling their hair.

The data was analyzed through visual analysis and calculations including the stability of data and the Percentage of Data Points Exceeding the Median (PEM; Ma, 2006). Permanent product data was also used to track the progress of the treatment by examining the participant’s eyelashes at each session to see if there were any new eyelashes starting to grow. Statistical analysis was done through calculating PEM, Percentage of Non-overlapping Data (PND), and stability. This was done by looking at the frequency recording chart and by calculating the average frequency per day that the client pulled their hair. The total number of times that the participant pulled their hair between sessions was divided by the number of days between sessions. The average frequency of hair pulling behaviour per day was then compared at each session and graphed over the duration of the treatment.

The placement student implemented the intervention with the supervision of the onsite placement supervisor. As the method of data collection was self-recording, the participant was instructed on how and when to record the frequency of the hair pulling behaviour. The training was done by the placement student. The participant was trained on how to record the frequency...
of their hair pulling behaviour.

**Procedures**

**Intervention.** Habit Reversal Therapy (HRT), prompting, and positive reinforcement were used to decrease the frequency of hair pulling behaviour. HRT was delivered in nine, one-hour long sessions. These sessions focused on teaching the participant awareness, alternative behaviours, and how to use social support.

**HRT Sessions.**

**Session 1:** This session was used to teach the participant how to track the data in the frequency recording sheet. Training on how to record data was done by explaining the importance of valid and reliable data to the participant, and then providing an explanation of the different columns of the data sheet. The participant and the student completed an actual data entry together, and then the participant completed one alone while the student observed. The completion of this data entry together with the participant and student was done to ensure that the participant understood the data record and completed it properly.

**Session 2:** Goals were set with the participant, which included learning about alternative behaviours, and learning what triggers the hair pulling behaviour. The participant also learned how to complete the ABC data sheet in this session which included explaining what type of details go into the ‘A’ section, (what occurred before the participant pulled their hair, any emotions that were noticed, if something was said etc.), ‘B’ section, (the behaviour of hair pulling), and the ‘C’ section, (what occurred after, any emotions etc.).

**Sessions 3 and 4:** The focus of these sessions was to teach the participant how to be aware of themselves, and what may trigger the hair pulling behaviour. Session two focused on the possible emotional and cognitive triggers such as negative thoughts or feelings. This was done by introducing the participant to “Thinking Errors” (Appendix F) and providing an explanation of how these thinking errors can affect the hair pulling. It was explained to the participant that thinking errors are thoughts that people sometimes have that are not always true, and they can make people feel emotions like worry, anger or sadness. The ten most common thinking errors were introduced to the participant on a handout (Appendix F) which were all discussed and explained. Together, the participant and the student came up with examples of the thinking errors, and the participant was told to make note of what/any thinking errors they had during the next week. Session three focused on the possible physical triggers that there could be and how to be aware of these physical triggers. This was done by teaching them how to complete a body scan, and by using progressive muscle relaxation. The participant was provided with a CD that contained 12 recordings of guided meditation that would instruct the participant on different ways to complete body scans, and/or note any feelings of discomfort. The purpose of this was to teach the participant how to identify any feelings that may trigger the need to pull their hair. This was done to ensure that if the participant could identify these feelings, they would be able to engage in an alternative behaviour before they pulled their hair.

**Sessions 5 and 6:** These sessions were focused on reviewing the material learned during the previous few weeks and discussing anything that was found in terms of possible triggers, and what methods of awareness worked, or did not work. The sessions were also used to find alternative behaviours that would provide a sensory stimulation that was similar to pulling hair and/or keep the participant’s hands busy. Items like feathers, pompoms, clay, and fidget toys were used, as well as activities like drawing and/or coloring. This was done by presenting the participant with multiple alternative behaviours that could replace the hair pulling behaviour.
The participant engaged in the alternative behaviours one at a time and ranked them in order from most effective to least effective in keeping their hands occupied, how the participant rated how it felt to use the different items and accessible the different items were to the participant throughout the day.

**Session 7:** This session was used to create the visual prompt and to educate the participant of how/why to use it. Together the participant and the student discussed and created the visual prompt which was a picture of a stop sign, with a list of alternative behaviours around it. This visual prompt was given to the participant and their legal guardian with the instruction to hang it up by the bathroom mirror as this was the placement the participant most often pulled their hair. The participant was also provided a copy of the visual prompt to keep in their duo tang to place in any other places they noticed they pull their hair. The majority of the hair pulling however, usually occurred in the bathroom at home.

**Session 8:** Using social supports was the main focus of this session and the participants guardian was included for some of the session. During the time with only the participant, it was discussed that by being able to tell someone when the participant was feeling the urge to pull, they could be redirected to an alternative behaviour. The participant was also taught to tell their guardian when they go to the bathroom without pulling their hair. Once they had done this, the guardian would provide them with positive reinforcement (i.e., a Hershey kiss). When the guardian was brought into the session, this was explained to them and they were taught how and when to provide the participant with a reinforcer. A Hershey kiss was chosen by the participant for use as a reinforcer because they did not have access to it usually, they enjoyed it, and it could be easily brought to other environments. The Hershey kiss was chosen as a reinforcer by the participant when the idea of positive reinforcement was discussed with them.

**Session 9:** The final session included looking at the participant’s progress throughout the duration of treatment and reviewing the strategies and skills that were learned. The participant and the student together created a list of beneficial skills that the participant can always keep with them.
Chapter IV: Results

Functional Assessments

To assess the function of the hair pulling behaviour, the participant completed an ABC chart (Appendix D) on their own, and Motivational Assessment (Appendix E) with the placement student prior to the intervention. The ABC chart indicated that the participant would engage in hair pulling behaviour when they felt sad, mad or bored. This would suggest that the function of the behaviour would be escape as the participant would use hair pulling as a means of distraction from the emotions being experienced. The Motivational Assessment (Durand & Crimmins, 1992) showed that the primary function of the hair pulling behaviour was sensory with a score of 11 and the mean being 2.75, the secondary function was escape with the score of 7 and a mean of 1.75, the third function was tangible with 5 being the score and 1.25 being the mean, and finally attention being the fourth function with a score of 3 and mean of 0.75. This would suggest that the participant was engaging in hair pulling behaviour as it provided sensory reinforcement.

Self-Recording

The participant collected data by recording in a table every time they engaged in hair pulling behaviour (Appendix G). The table included space for the participant to mark the time and place where the hair pulling behaviour occurred. Any spaces that were marked with a hyphen indicate that the participant did not fill in the time or place. This occurred because the participant struggled with remembering to write the date for each entry. Each record chart displays the frequency data for the total number of days between the sessions.

It was found through the use of visual analysis that the frequency of hair pulling behaviour decreased during the intervention phase which included HRT, positive reinforcement and visual prompts. The data was analyzed through in session observation, visual analysis and statistical analysis. In session observation was conducted by examining the participant’s eyelashes, eyebrows and scalp at each session to see if there were any new eyelashes starting to grow and/or if there were any new bald spots. This was also done by the mother of the participant who took photographs every session which were compared week by week. Due to confidentiality, the photos were deleted by the mother after they were used to compare. In session observation was also used to ensure the reliability of the data that the participant had collected. If the participant reported that they had not engaged in a lot of hair pulling during the week but then presented with no eye lashes, this would have suggested that the self-report data were not reliable. There were no instances however, where the visual observation indicated that the data that had been collected by the participant was false or inaccurate.

Calculations

Due to the participant missing sessions, the frequency of hair pulling behaviour per week could not be used as there were an inconsistent number of days between the sessions. This would have created an inaccurate reflect of the results. To ensure the data was accurate, the statistical analysis was completed by examining the frequency recording chart and calculating the average frequency that the participant had pulled their hair each day. This was done by dividing the frequency of the hair pulling behaviour by the number of days that had passed since the last session. This provided the average number of occurrences that the participant had pulled their hair each day between sessions. The average frequency of hair pulling behaviour was then compared session by session and graphed with trendlines (Appendix I) over the duration of the treatment to calculate the direction of change in the frequency of hair pulling behaviour and determine the effectiveness of the intervention.
The data was graphed by taking the frequency recordings of hair pulling between sessions and dividing this by the number of days that had passed between the sessions (Appendix G). As the sessions were carried out at the end of the day, the participant would begin recording the frequency of the behaviour in the new chart after the session. One day was considered to be one 24-hour period, beginning after each session was completed. This was done as the participant would frequently miss appointments, which would result in there being an inconsistent number of days between sessions.

**Conclusion**

The hair pulling behaviour decreased when the intervention was put into place. Table 1 displays a summary of statistics for baseline and intervention data. The participant on average pulled their hair on average 3.17 times a day during the baseline. This average decreased to the participant engaging in hair pulling behaviour an average of 0.60 per day during intervention. This demonstrates an improvement of 81.07% from baseline to intervention (Appendix H). Figure 1 displays the decrease of average frequency of hair pulling behaviour from baseline to intervention.

**Stability**

The stability of the data was calculated (Appendix H). For data to be considered stable, 80 to 90% of the data points have to fall within a 25% range of the median (Gast & Ledford, 2014). It was found that the 25% range for baseline was data points that fell within 3.52 and 2.74 average hair pulling per day. In baseline, three of three, or 100% of the data points fell between this range which indicated that the data was considered stable. In the intervention, the data points had to be between 0.82 and 0.64 average hair pulling per day. Only two out of six, or 33.33% of the data points fell between this range, which indicated that the data was not stable.

<table>
<thead>
<tr>
<th>Program Stage</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>3.17</td>
<td>3.13</td>
<td>0.19</td>
</tr>
<tr>
<td>Intervention</td>
<td>0.60</td>
<td>0.73</td>
<td>0.38</td>
</tr>
</tbody>
</table>

**PEM**

To determine the level of overlap between data from baseline and intervention, the Percentage of Data Points Exceeding the Median (PEM; Ma, 2006) was used to help determine the effectiveness of the intervention (Appendix J). The PEM calculations (Appendix J) indicated that 100% of the intervention data points were below the median, which indicates that the hair pulling behaviour did decrease while the intervention was being implemented. The frequency of hair pulling behaviour did decrease from baseline to the intervention.
Figure 1: Average frequency of hair pulling behaviour
Chapter V: Discussion

Summary of Research

TTM affects a person socially, physically and mentally. It was hypothesized that a treatment package combining HRT and positive reinforcement for using alternative behaviours would decrease the frequency of hair pulling behaviour in a child with TTM. The treatment plan included teaching a variety of skills to the participant in hopes of decreasing the effects associated with TTM, such as hair pulling. The skills that were taught included self awareness, relaxation techniques, identification of thinking errors, social supports, the use of visuals, and alternative behaviours. Each of these skills were used to help decrease hair pulling behaviour which would also help manage the social, physical or mental symptoms associated with TTM however no data was recorded on these. The results indicated that the combination of HRT and positive reinforcement was effective in decreasing the frequency of hair pulling behaviour in a child with TTM. The data that determined the effectiveness of the intervention was collected by self-monitoring as the participant recorded the frequency of their hair pulling behaviour. The frequency of hair pulling behaviour decreased by 81.07% from baseline to intervention. During intervention, the participant indicated that the visual in the bathroom, as well as the different relaxation techniques were helpful. Positive reinforcement of the use of alternative behaviours in the form of desirable items like edibles and a gift card to a favoured store or a new computer game, also contributed to the success of the program.

Strengths

This study had many strengths including social validity, individualization, and generalization.

Social validity. The present study examined how HRT and positive reinforcement could affect the frequency of hair pulling behaviour in a child with TTM. The goal was to decrease the hair pulling behaviour as this behaviour was affecting the client physically, mentally, emotionally, and socially. The client was experiencing bullying from their peers as they did not have any eyebrows or eyelashes. The client would also spend a lot of time alone when they were pulling their hair, which resulted in them missing opportunities to socialize with peers or family. As the hair pulling behaviour decreased during the study, the time spent with other people increased thus providing the individual more time to socialize. This was shared by the participant. As the individual’s eye lashes and eyebrows grew back, the individual reported that bullying was reduced, which provided the participant the chance to create new relationships and feel more comfortable and confident when socializing.

Individualization. The study taught the participant multiple methods to decrease the hair pulling behaviour. Many of these methods were based on what the individual enjoyed or was interested in. An example of this was the visualization that was used in the bathroom to remind the participant not to pulling their hair. The visualization was chosen as the participant enjoyed art and drawing so they created the visual aid that was used. Another strength was that the program was created with the participant which provided them with a feeling of control and accomplishment. treatment possibilities were discussed with the individual and they reflected on what they believed would work best for them.

Potential Generalization. The skills that were taught during the study can all be used for different reasons in different environments. These skills include awareness of self, using alternative behaviours, knowledge of thinking errors, relaxation techniques and using social supports.

Awareness of self. The participant was taught and practiced skills such as body scan to
promote awareness of their body and emotions so they could identify when and if they were feeling the need to pull their hair. This skill can be used for multiple different reasons throughout the remainder of the participant’s life to tell them if they need a break, or if they are feeling a strong emotion. The individual reported that they struggled with impulsivity so by providing them with the ability to be aware and conscious of what they need, this would possibly decrease the number of impulsive outbursts.

**Knowledge of thinking errors.** People everyday use thinking errors about all topics in their lives. Having knowledge of common thinking errors and being able to recognize when one is using a thinking error can decrease an individual’s level of anxiety and stress. This is because once a person notices that they are using a thinking error, they can change it to reduce the negative thoughts which will then reduce the feelings of anxiety and stress. The participant informed the student that they had noticed themselves having negative thoughts during a test when they were feeling anxious. The participant indicated that once they became aware of these negative thoughts, they worked to change them to become more positive.

**Using social supports.** By teaching the individual when and how to use the social supports around them, they will likely feel more comfortable and confident reaching out to adults, or friends to help with a problem they may have. In the study, the purpose of this was for the individual to inform their parent when they were feeling the urge to pull their hair so the parent could provide distraction or positive reinforcement, if the participant did not engage in hair pulling. This is important because prior to the study the participant would rarely look for help from other people. After this study however, the participant started seeing value in people and in social interactions because other people provided reinforcement and resulted in decreased hair pulling behaviour.

**Limitations**

During this study, limitations were identified which included time, a small sample size, data collection, experimental design and parental participation.

**Time.** Time was a limitation as the participant could only meet for one hour at a time which resulted in a lot of skills and information being provided within one session. Due to time restraints, a follow up and maintenance period was not completed which could have been beneficial, as it would indicate if the work that was completed during the study continued to decrease the frequency of hair pulling behaviour. Though meeting more than once a week would have been beneficial as it would have provided a more structured intervention phase by ensuring that the participant was completely filling out the frequency data sheets properly. This also would have been beneficial as if there was something the participant did not understand once they were home, they would not have to wait as long to get clarification. Meeting more than one a week at scheduled times would also provide data for each day of the intervention and would result in there being the same number of days between sessions. Though meeting more than once a week would have been beneficial, this was not possible due to scheduling.

**Number of participants.** Due to the specific criteria, the study only had one participant. As a result, it was more difficult to generalize the outcome of this one participant to all individuals. Having more than one participant would have been helpful as it would ensure that the results were not being affected by another variable and that the intervention could be generalized to multiple people rather than just one. It would also have provided results that were more reliable and accurate as it would decreases the chances of a random variable effecting the
outcome.

**Data collection.** As the data was all self recorded by the participant there was the chance that it was not completely accurate. Though photographs were used to ensure that there were no significant differences between the data and the visual results, there was still a possibility that the data was not 100% accurate. The participant also would frequently forget to write the date and time that the behaviour would occur which resulted in it not being possible to track the frequency of hair pulling behaviour everyday of treatment.

**Experimental Design.** The design of the study was AB which does not allow one to determine that the decrease in hair pulling behaviour was due to the intervention. Though the hair pulling behaviour decreased during the intervention phase, this does not mean that the intervention was the cause in this decrease.

**Parental participation.** The participant was a minor, therefore their parent was responsible for bringing them to and from appointments and getting them there on time. Unfortunately, the parent would forget or just not bring the participant to scheduled appointments. This resulted in the participant missing sessions. The participant missing sessions also resulted in there being an unequal number of days between sessions. The unequal number of days between sessions effected the data as the frequency of hair pulling behaviour could not be displayed on a week by week basis. The parent of the participant would also interfere with some of the methods that were used to decrease the participant’s hair pulling behaviour. An example of this was the parent removing the visual aid from the bathroom which was used as a reminder to the individual not to engage in hair pulling behaviour. After discussing this with the parent, they reported that they did not like having something that blocked part of the mirror in their bathroom. Though it was explained that the participant found the visual helpful in decreasing the hair pulling behaviour, the parent still would take the visual down. The visual being taken down may have been the reason for the slight increase in the hair pulling behaviour for a period. This slight increase in the hair pulling behaviour can be seen on the graph (Figure 1) at session 5.

**Multilevel Challenges**

With all projects and studies there are challenges that occur on different levels including client, program, organization and society.

**Client level.** While implementing HRT and positive reinforcement to decrease hair pulling behaviour, it was important that all sessions were attended. This was important to ensure the participant could be taught the skills, as well as, provide times for the placement student and participant to discuss progress and barriers. One problem that occurred at the client level was the participant not attending all the scheduled sessions. The participant missing some sessions resulted in some skills not being as thoroughly discussed as planned.

Another challenge at the client level was the guardian not following through with the determined treatment plan. This was seen when the guardian would frequently take down the visual aid, which was helping to decrease the participant’s hair pulling behaviour. Even when reminded of the importance of the visual, the guardian would continue to take it down.

**Program level.** As the client was referred through the behavioural team, a challenge that occurred was the lack of staff within this section of the hospital. As a student, one wants to make sure that they are helping and participating in events that will help the division. As there was a lack of staff, days at the hospital were usually extremely busy which resulted in everyone’s schedules being filled with little room for change. This was a challenge as when the participant would miss a session, their parent would call with the hope of rescheduling the appointment. As the student was busy helping other staff, and with all of the staff members having full schedules,
it was very difficult to find another time for the missed appointment that would work for the student, and the staff member to supervise the appointment. This resulted in the participant having to wait until the next week to have their session.

**Organization level.** As all of the sessions took place in a hospital, they had to occur within the hours that the hospital was open. Scheduling sessions during hospital hours was challenging as the participant was in school from early in the morning to late afternoon which only left an hour for the sessions to take place. The participant being late at times was frustrating at times as the participant was late for a session; the session would have to be shortened as the division at the hospital would close.

Another challenge at the organizational level was receiving ethical approval. Due to the organization being a hospital, all research had to be approved by ethics boards. The applications to all the needed ethics boards was time consuming, and therefore decreased the amount of time that could be spent with the client.

**Societal level.** Though society is working to discuss the importance of awareness around mental health, there is still a stigma around those with mental health or behaviour concerns. This stigma became a challenge when speaking to the participant and their parent about possible methods of treatment. An example of this was the parent taking down the visual aid that was used to remind the participant not to engage in hair pulling behaviour. When asked and reminded about its importance, the parent indicated that they were concerned about it being seen by others in the house or visitors. The guardian being concerned about the visual being seen by others was challenging as the visual aid was helping to decrease the hair pulling behaviour, however, due to the stigma around behaviour and mental health concerns, it was taken away.

**Implications for the Behavioural Psychology Field**

The current study demonstrated that the use of Habit Reversal Therapy and positive reinforcement was effective in decreasing the frequency of hair pulling behaviour with a child with TTM. Though peer reviewed studies using HRT to treat TTM were found, no articles using both HRT and positive reinforcement together to treat TTM were discovered. As the current study uses both of these methods of treatment, it would benefit the behaviour psychology field by showing that the combination of empirically reviewed treatments is another option in treating TTM. This would be beneficial as it provides the individuals and families with more treatment options and it allows for a more individualized approach for those with TTM.

Research studies that looked at the effects of treatment on TTM symptoms were found to use a lot of adult participants. This was especially concerning as many individuals with TTM begin to engage in hair pulling behaviour when they are children (Morris et al., 2016). The studies that did look at treatment methods for children with TTM usually would use medication or a combination of behavioural therapies and a variety of other treatments like Cognitive Behavioural Therapy (CBT). Within these studies, very few provided details about what the different treatments included. Franklin, Edson, and Freeman (2010) used behavioural techniques that included awareness training, psychoeducation and alternative behaviours, however they also used a control group called Minimal Attention Control (MAC) that reportedly met with a therapist once a week and also was provided behavioural therapy after some time. It was not revealed what was done with the therapist however it was revealed that the TTM symptoms did decrease overtime. These positive effects may have occurred before or after the behavioural therapy was implemented. The present study outlines what methods of treatment were effective in decreasing hair pulling behaviour with a child with TTM. This will hopefully help close the gap in research by using a child participant with TTM and by combining HRT with positive
reinforcement.

Though the parent of the participant was aware of the general topics that were discussed with the participant, a lot of the treatment was completed by just the participant and the student. The treatment activities such as, creating a visual, completing homework and tracking the frequency of hair pulling behaviour was taught and demonstrated in a way that was comprehensible to the participant. This treatment showed that another family member was not needed all the time for the treatment to be effective in decreasing hair pulling behaviour. Not depending on a family member is a strength as it provides the participant with the independence to carry on the treatment and skills learned during the treatment alone.

**Recommendations for Further Research**

It is recommended that future researchers replicate the current study with more participants and complete a follow up phrase. By replicating the current study, it would provide the opportunity to validate this treatment approach with more participants, and it would give insight regarding how the treatment effects the frequency of hair pulling behaviour on a long-term basis. As the study involved a child participant, it is recommended that the guardians of all child participants are informed of the importance of the child attending sessions, recording data, and completing the work outside of the sessions. By completing the sessions in a home environment, it would also provide the opportunity for the participant to practice the skills learned in a natural environment while being observed.

Further research should use a research design that would help determine if the intervention was responsible for the decrease of hair pulling behaviour. A possible research design would include slowly incorporating different components of the intervention one at a time. An example could be an ABACADAE design. The A phase would be baseline, B phase may include HRT, C phase would implement visual prompts, D phase would be using positive reinforcement and E phase would be the combination of all the treatment components. This research design would provide insight as to if a specific part of the intervention would be best for decreasing hair pulling behaviour or if the combination of all three components is most effective.

Self-reported data may at times result in inaccurate data. Though measures were taken in an attempt to ensure the data was accurate, there is the possibility that the self-reported data was false. As the participant in the present study engaged in hair pulling behaviour in the bathroom at home, it would have been unethical to use other recording methods like collecting Inter-Observer Agreement (IOA) data. Should this study be repeated with a participant who engages in hair pulling behaviour in public or in school, observation or IOA maybe used to collect data that maybe more accurate than self-Recording data.

Using methods to measure or track hair growth is recommended for future researchers. Though photographs were used to assess the accuracy of the data that was collected by the participant, this is not a standardized measure.

Another possible recommendation for further research would be to add a parent or guardian component to the treatment. As mentioned previously, the visual prompt was removed from the bathroom even though it was helping to decrease the hair pulling behaviour. It is hypothesized that if the parent was taught about TTM and its effects on individuals, they would have possibly been more willing to allow the visual prompt to stay in the bathroom. To increase awareness of the effects of TTM and the importance of treatment, the addition of a parent or guardian education session may be beneficial. This would provide education around what TTM is, why HRT and positive reinforcement are effective, and how they can better help their child reach their goals. This component would also provide the parents the opportunity to ask
questions and to meet other parents who have children with TTM.
References


Appendix A: Consent Form

Project title: Using Habit Reversal Therapy to Treat Trichotillomania in a Child with ADHD
Principal Investigator (Student): Rebecca Seward
Supervisor: Lisa Lynch, St. Lawrence College Supervise and Andrea Roblin-Hanson, Behaviour Therapist at Hotel Dieu Hospital
Institution: Hotel Dieu Hospital

Invitation

Your child is being invited to take part as a participant in a research study. I am a 4th year student in the Honors of Behavioural Psychology program at St. Lawrence College. As part of this program, I am on placement at Hotel Dieu Hospital with the Neurodevelopmental Team. During this placement experience, I am doing a research project (which is also known as an applied thesis). I would like to ask you and your child to help with this project. All information in this form will help you understand my project. Please read this form carefully and make sure that all your questions are answered before choosing to consent.

Why is this study being done?

This study is being completed to evaluate the effects of Habit Reversal Therapy and positive reinforcement to treat Trichotillomania (hair pulling). Habit Reversal Therapy is a form of therapy that is often used to decrease how often someone engages in a habit, such as hair pulling. This study will help determine how effective this form of therapy is and will hopefully decrease the frequency of your child’s hair pulling.

What does your child need to do if you consent to them taking part?

If you consent to allowing your child to participate in this study, your child will need to attend at least 8 sessions that will be held twice a week, for one hour. The sessions will be on Mondays and Wednesdays at 10 am at Hotel Dieu Hospital. Once the intervention has begun, we will discuss if there is a need to add more sessions to help with treatment success. The sessions will start on November 26th and will end on December 17th. I will be running the sessions. The sessions will be supervised by, Andrea Roblin-Hanson. The first few sessions will focus on teaching your child to become aware of when they are pulling their hair. This will also involve teaching awareness of what events or emotions are present when your child wants to engage in hair pulling. A treatment plan will be created based on information learned in the first session and it will be individualized around your child’s identified triggers. The second part of the treatment will focus on appropriate behaviours that can be used to replace the hair pulling behaviour. Your child will receive positive reinforcements (by giving your child verbal praise and either a toy or candy they enjoy) when they engage in the replacement behaviour. If you consent to your child taking part in my research study, your child will need to attend sessions and practice the skills outside of the sessions.

What are the potential direct benefits of taking part in this study?

Benefits of taking part in this research study may include decreasing the hair pulling behaviour and use of alternative, socially appropriate methods of dealing with stress and other emotions like anger and sadness. This study might provide you and your child with a better
awareness about your child’s habits, as well as, a better understanding about the connection between thoughts, feelings, and behaviours.

**What are the potential benefits of this research study to others?**

The benefits for others are that the results may supply more information about possible treatments for Trichotillomania (hair pulling disorder). It may also bring awareness and knowledge about trichotillomania, including the reasons why people may pull their hair, and possible ways to decrease this behaviour. This study will show others how trichotillomania affects individuals physically, emotionally and socially, and it will show the importance of treatment.

**What are the potential disadvantages or risks if your child takes part?**

Risks from taking part in this research study are minimal. The risks could be that the intervention is ineffective and that your child becomes unmotivated to decrease their hair pulling behaviour. There is also the possibility that your child might find the treatment stressful and this might cause them to want to pull their hair more.

**What happens if something goes wrong?**

If anything goes wrong during this study, there is a counsellor and a behavioural therapist on staff. As these sessions will be taking place at Hotel Dieu Hospital, there are many people trained to deal with any crisis. If a crisis were to arise, my placement supervisor, Andrea Roblin-Hanson, will be available to assist the individual with the matter.

**Will the information you collect from me and my child be kept private?**

We will make every attempt to keep any information that identifies you strictly confidential unless required by law. Your child will not be identified by name, age, or gender in any reports or presentations of the research findings. To safeguard the information that is collected, all information collected will be stored on a password protected computer that is in a locked office at Hotel Dieu Hospital. Prior to the raw data being inputted into the computer, it will be stored in a locked filing cabinet in a secure office at Hotel Dieu Hospital. Only my placement supervisor will have the key to this information. Informed consent form will be stored safely at St. Lawrence College for 17 years (10 years after the participants 18th birthday). Research data will be stored for 10 years at Hotel Dieu Hospital on a password protected computer. After 10 years the files on the computer will be prematurely deleted. The results from the research are part of my thesis. These results will be made available at the St. Lawrence College library and presented at the Behavioural Psychology Poster Gala, but no participants will be named or shown.

It is important to note, that because this study will only be using one participant, there is a greater chance of someone being able to identify the participant due to the diagnostic information shared in the report that will be gathered from the intake form. The intake form will be used to gather information about your child’s history with the hair pulling behaviour, age at diagnoses, and any previous treatments used to target the hair pulling behaviour.

**Is my child’s participation voluntary?**

Choosing to allow your child to participate in this study is voluntary. It is up to you to decide whether you would like your child to take part in this research project. If you do consent to allow your child to participate in this study, you will be asked to sign this consent form. If you
choose to stop your child’s participation at a later time, you may do so without giving any reason. Withdrawing your child will not affect any of the services you and your child receive at Hotel Dieu Hospital. If you choose to stop your child’s participation, please speak to me or my supervisor, Andrea Roblin-Hanson. If you choose to withdraw your child, you can ask that your child’s data not used. Due to the time constraints of completing this project, if you choose to withdraw your child’s data you can do so up until two (2) weeks after the completion of the study.

**Contact for further information**

This research project has been approved by the research Ethics Committee for Behavioural Psychology (REC-P) from St. Lawrence College Research Ethics Board (SLC-REB) and Queens University Research Ethics Board. The project was developed under the supervision of Lisa Lynch, my supervisor from St. Lawrence College, and Andrea Roblin-Hanson, my supervisor at Hotel Dieu Hospital. I thank you for your cooperation and if you have any questions, feel free to ask me, Rebecca Seward at rseward28@student.sl.on.ca or you may contact my college Supervisor at LLynch@sl.on.ca. If you have concerns about the way this research is being done or about your rights as a participant, you may contact the St. Lawrence College Research Board (SLC-REB) Chair at REB@sl.on.ca.
Consent

If you consent to allow your child to take part in this research project, please complete the following form and return it to me as soon as possible. A copy of this signed document will be given to you for your own records. The original will be kept at St. Lawrence College.

By signing this form, I agree that:

- The study has been explained to me.
- All my questions were answered.
- Possible harm and discomforts and possible benefits (if any) of this study have been explained to me.
- I understand that I have the right not to allow my child’s participation and the right to withdraw my child from the study at any time.
- I understand that if I want to withdraw my child’s information from the study that I must do so no later than the second week after the completion of the study.
- I am free now, and in the future, to ask questions I have about the study.
- I have been told that my child’s personal information will be kept private and confidential.
- I understand that no information that would name me or my child will be released or printed without obtaining my consent first.
- I understand that I will receive a signed copy of this consent form.
- I understand that the data from this study will be presented at the St. Lawrence College Behavioural Psychology Poster Gala and may be reported at other conferences or published in a scientific journal. No identifying information will be included in the reports.

I hereby consent for my child to take part.

Name of Participant

Name of Legal Guardian (Printed)   Signature of Legal Guardian   Date

Student Name   Signature of Student   Date
Hi. My name is Rebecca and I am a student at St. Lawrence College. I am doing a research project for my work at school and I was wondering if you would like to help me. Research projects help us learn new things. The first step is we ask a question, then we try and find the answer. If you choose to take part in my research project, you will help me learn about how Habit Reversal Therapy can help people with Trichotillomania pull their hair less, or possibly stop pulling their hair completely. Habit Reversal Therapy is a type of therapy that uses a few strategies that may help you stop pulling your hair.

You do not have to take part in this research project and no one will be upset if you decide that you do not want to take part in this. If you choose to not take part, then you and I will continue doing the work we have been as usual. Your choice will not affect anything you are doing at the hospital. The choice is completely up to you, you can take some time to think about if you want to take part in this study and you can change your mind about participating at any time. If at any time you do not want to participate you may tell me or Andrea who is my teacher.

In this research project, we will be trying out a few different things that may help you stop pulling your hair. If you choose to take part in my research study, you will have to do a few things with me. First, you are going to fill out a form every time you want to pull your hair and/or every time you do pull your hair. This is so that we can keep track of how often you pull your hair before the study and after, so we can see if there is any difference which may tell us if the therapy worked or not. You will also have to complete a Motivational Assessment and an ABC chart with me. The Motivational Assessment will help us find out why you are pulling your hair and the ABC chart will help tell us what is happening before and after you pull your hair. After that, we will meet twice a week for an hour for four weeks. During this time, I will be teaching you new skills like different behaviours that you can do instead of pulling your hair. During these four weeks you will be asked to continue keeping track of how often you pull your hair.

What you say during the time we spend together will not be told to anyone. The only way that I will have to tell others what we discuss will be if you tell me that someone has harmed you or someone else, is going to harm you or someone else, or if you are going to hurt yourself and/or others.

Thank you for listening about my research project. If you choose to take part in this, I will keep your name a secret and everything will be private.

If you ever have any problems and need to talk to someone, you can talk to me, or Andrea my teacher. Again, you do not have to take part in this study and you can change your mind at any time by telling me or Andrea.

Do you have any questions? Do you understand everything that was just explained? Do you understand what we will be doing together? Would you like to begin?
Appendix C: Frequency Recording

<table>
<thead>
<tr>
<th>Time</th>
<th>Place</th>
<th>Did I pull my hair?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date: ______________
### Appendix D: ABC Chart

**ABC Chart**

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Behaviour</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E: Motivation Assessment Scale

Motivation Assessment Scale

Name: ___________________     Rater: _________________       Date: __________________

Description of Behaviour (be specific): Pulling out hair on scalp, eye brows, and/or eyelashes

<table>
<thead>
<tr>
<th>Questions</th>
<th>Never</th>
<th>Almost Never</th>
<th>Seldom</th>
<th>Half the Time</th>
<th>Usually</th>
<th>Almost Always</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Would the behaviour occur continuously if this person was left alone for long periods of time?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Does the behaviour occur following a request to perform a difficult task?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Does the behaviour seem to occur in response to your talking to other persons in the room/area?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Does the behaviour ever occur to get a toy, food, or an activity that this person has been told he/she can’t have?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Would the behaviour occur repeatedly, in the same way, for long periods of time if the person was alone? (e.g. rocking back and forth for over an hour?)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>6. Does the behaviour occur when any request is made of this person?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>7. Does the behaviour occur whenever you stop attending to this person?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>8. Does the behaviour occur when you take away a favorite food, toy or activity?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>9. Does it appear to you that the person enjoys doing the behaviour? (it feels, tastes, looks, smell, sounds pleasing.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>10. Does this person seem to do the behaviour to upset or annoy you when you are trying to get him/her to do what you ask?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
11. Does this person seem to do the behaviour to upset or annoy you when you are not paying attention to him/her? (e.g. you are in another room or interacting with another person)  

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Does this behaviour stop occurring shortly after you give the person food, toy, or requested activity?  

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. When the behaviour is occurring does this person seem calm and unaware of anything else going on around him/her?  

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. Does the behaviour stop occurring shortly after (1-5 min) you stop working with or making demands of this person?  

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. Does this person seem to do the behaviour to get you to spend some time with him/her?  

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. Does the behaviour seem to occur when this person has been told that he/she can’t do something they wanted to do?  

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensory</th>
<th>Escape</th>
<th>Attention</th>
<th>Tangible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 3</td>
<td>2. 3</td>
<td>3. 0</td>
<td>4. 0</td>
</tr>
<tr>
<td>5. 3</td>
<td>6. 2</td>
<td>7. 1</td>
<td>8. 1</td>
</tr>
<tr>
<td>9. 1</td>
<td>10. 1</td>
<td>11. 1</td>
<td>12. 0</td>
</tr>
<tr>
<td>13. 4</td>
<td>14. 1</td>
<td>15. 1</td>
<td>16. 4</td>
</tr>
</tbody>
</table>

Total Score = 11  
Mean Score = 2.75  
Relative Ranking = 1
Appendix F: Thinking Errors

Unhelpful Thinking Styles

**All or nothing thinking**
- Sometimes called 'black and white thinking'
- *If I'm not perfect I have failed*
- *Either I do it right or not at all*

**Over-generalising**
- *“everything is always rubbish”*
- *“nothing good ever happens”*
- Seeing a pattern based upon a single event, or being overly broad in the conclusions we draw

**Mental filter**
- Only paying attention to certain types of evidence.
- *Noticing our failures but not seeing our successes*

**Disqualifying the positive**
- Discounting the good things that have happened or that you have done for some reason or another
- *That doesn’t count*

**Jumping to conclusions**
- There are two key types of jumping to conclusions:
  - **Mind reading** (imagining we know what others are thinking)
  - **Fortune telling** (predicting the future)
- *2 + 2 = 5*

**Magnification (catastrophising) & minimisation**
- Blowing things out of proportion (catastrophising), or inappropriately shrinking something to make it seem less important

**Emotional reasoning**
- Assuming that because we feel a certain way what we think must be true.
- *I feel embarrassed so I must be an idiot*

**Should must should**
- Using critical words like ‘should,’ ‘must,’ or ‘ought’ can make us feel guilty, or like we have already failed
- If we apply ‘shoulds’ to other people the result is often frustration

**Labelling**
- Assigning labels to ourselves or other people
- *I’m a loser*
- *I’m completely useless*
- *They’re such an idiot*

**Personalisation**
- Blaming yourself or taking responsibility for something that wasn’t completely your fault.
- Conversely, blaming other people for something that was your fault.

---

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Appendix G: Frequency of Hair Pulling Record

<table>
<thead>
<tr>
<th>Time</th>
<th>Place</th>
<th>Did I pull my hair?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>6:23 p.m.</td>
<td>Home</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>Home</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>Home</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>Home</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>Home</td>
<td>Yes</td>
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<tr>
<td>-</td>
<td>-</td>
<td>Yes</td>
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<td>-</td>
<td>-</td>
<td>Yes</td>
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<tr>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>Bathroom</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>Bathroom</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>Bathroom</td>
<td>Yes</td>
</tr>
<tr>
<td>4:43 p.m.</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Yes</td>
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<tr>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>Home</td>
<td>Yes</td>
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<td>-</td>
<td>-</td>
<td>Yes</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
<td>Yes</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td></td>
<td>21</td>
</tr>
</tbody>
</table>

Total number of days between sessions: 7 days

Average frequency per day: \( \frac{21}{7} = 3 \)

<table>
<thead>
<tr>
<th>Time</th>
<th>Place</th>
<th>Did I pull my hair?</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
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<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>Home</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Frequency of Hair Pulling Record

<table>
<thead>
<tr>
<th>Time</th>
<th>Place</th>
<th>Did I pull my hair?</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:34 p.m.</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>4:12 p.m.</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>7:00 p.m.</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Basement</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Yes</td>
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<td>Yes</td>
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<td>Yes</td>
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<td>Yes</td>
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<td>Yes</td>
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<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Total: 25

Total number of days between sessions: 8 days

Average frequency per day: $\frac{25}{8} = 3.13$

**Date:** Sept 25 – Oct 3rd 2018
### Frequency of Hair Pulling Record

**Date:** Oct. 3rd – 30th 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Place</th>
<th>Did I pull my hair?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>8:32 p.m.</td>
<td>Home</td>
<td>Yes</td>
</tr>
<tr>
<td>7:53 p.m.</td>
<td>Home</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
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<tr>
<td></td>
<td></td>
<td>Yes</td>
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<td>Yes</td>
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<td>Yes</td>
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<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Total number of days between sessions:** 8 days

**Average frequency per day:** $27 \div 8 = 3.38$
### Frequency of Hair Pulling Record

**Date:** Oct. 30\(^{th}\) – Nov. 6\(^{th}\) 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Place</th>
<th>Did I pull my hair?</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>6:28 p.m.</td>
<td>Home</td>
<td>Yes</td>
</tr>
<tr>
<td>9:47 p.m.</td>
<td>In the bathroom at home</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>8:14 p.m.</td>
<td>Home</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Total:* 7

*Total number of days between sessions: 7 days*

*Average frequency per day: 7 / 7 = 1*

### Frequency of Hair Pulling Record

**Date:** Nov. 6\(^{th}\) – Nov. 13\(^{th}\) 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Place</th>
<th>Did I pull my hair?</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:26 p.m.</td>
<td>Basement at home</td>
<td>Yes</td>
</tr>
<tr>
<td>6:54 p.m.</td>
<td>Home (in basement)</td>
<td>Yes</td>
</tr>
<tr>
<td>9:47 p.m.</td>
<td>Basement</td>
<td>Yes</td>
</tr>
<tr>
<td>7:00 p.m.</td>
<td>Bathroom at home</td>
<td>Yes</td>
</tr>
<tr>
<td>4:50 p.m.</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Total:* 6

*Total number of days between sessions: 7 days*

*Average frequency per day: 6 / 7 = 0.86*

### Frequency of Hair Pulling Record

**Date:** Nov. 13\(^{th}\) - 20\(^{th}\) 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Place</th>
</tr>
</thead>
</table>

*Did I pull my hair?
### Frequency of Hair Pulling Record

<table>
<thead>
<tr>
<th>Time</th>
<th>Place</th>
<th>Did I pull my hair?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:27 p.m.</td>
<td>Home</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:27 p.m.</td>
<td>Home</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:23 p.m.</td>
<td>Home</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:58 p.m.</td>
<td>Home</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:49 p.m.</td>
<td>Home</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Total number of days between sessions: 7 days
Average frequency per day: $5/7 = 0.71$

### Frequency of Hair Pulling Record

<table>
<thead>
<tr>
<th>Time</th>
<th>Place</th>
<th>Did I pull my hair?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:40 p.m.</td>
<td>Home</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00 p.m.</td>
<td>Home</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Total number of days between sessions: 7 days
Average frequency per day: $2/7 = 0.28$
Appendix H: Calculations

**Calculations for Percentage of Improvement**
Percentage of Improvement = intervention level mean – baseline level/baseline level x 100
\[= \frac{0.60 - 3.17}{3.17} \times 100\]
\[= -81.07\%\]

**Calculations for Stability**
Median of average frequency of hair pulling per day during baseline = 3.13
3.13 x 0.125 = 0.39
3.13 + 0.39 = 3.52
3.13 – 0.39 = 2.74
So, the range equals 2.74 to 3.52. This means that 3 out of 3 data points fall within the stability range. Therefore, the data is considered stable.

Median of average frequency of hair pulling per day during intervention = 0.73
0.73 x 0.125 = 0.09
0.73 + 0.09 = 0.82
0.73 – 0.09 = 0.64
So, the range equals 0.64 to 0.82. This means that 2 out of 6 data points fall within the stability range. This indicates that the data is not stable.

**Calculations of data points exceeding the median**
Baseline median was 3.13. Number of data points below the median is 6 out of 6. This indicates 100% PEM score.
Appendix I: Graph with Trendlines

Figure 2: Average frequency of hair pulling behaviour with trend lines.
Appendix J: Graph with PEM Line

Figure 3: Average frequency of hair pulling behaviour with PEM line