

## Chapter 9

# Habit Reversal Treatment Manual for Trichotillomania

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### 1. OVERVIEW OF HABIT REVERSAL FOR TRICHOTILLOMANIA

This chapter describes the use of habit reversal for the treatment of trichotillomania in children, adolescents, and adults. Azrin and Nunn developed habit reversal in 1973 for the treatment of a variety of habits including hair pulling (Azrin, Nunn, & Frantz, 1980). A number of studies have shown habit reversal to be an effective procedure for trichotillomania (for a review see Chapter 8 and Elliott & Fuqua, 2000). Habit reversal is comprised of three main treatment components: awareness training, in which the client learns to become aware of each instance of hair pulling; competing response training, in which the client learns to engage in an incompatible behavior contingent on hair pulling or antecedents to hair pulling; and social support, in which a significant other helps the client successfully use the competing response to control the hair pulling (e.g., Rapp, Miltenberger, Long, Elliott, & Lumley, 1998). The protocol outlined below describes the details of habit reversal applied to trichotillomania.

### 2. TREATMENT PROTOCOL

Habit reversal is typically conducted in one or a small number of outpatient treatment sessions. The initial session is devoted to assessment. The habit reversal protocol is then implemented in the second session. The client learns the treatment protocol in session and implements the treatment

procedures whenever hair pulling occurs outside of the sessions. Subsequent sessions (often referred to as booster sessions) are used to review the client's progress, review the treatment protocol, and engage in any problem solving related to the correct use of the procedures.

## **2.1 Session 1**

In the first session, the therapist conducts a functional assessment interview with the client to better understand the nature of hair pulling, its antecedents, and consequences. Standardized assessment instruments may also be used to assess the hair pulling as well as to assess possible comorbid conditions. Finally, the therapist provides self-monitoring instructions for the client to record hair pulling outside of the session.

### **2.1.1 Functional Assessment Interview**

The goal of the functional assessment interview is to derive information from the client about the specific behaviors involved in hair pulling and the overt and covert antecedents and consequences associated with instances of hair pulling (e.g., Miltenberger, Long, Rapp, Lumley, & Elliott, 1998). This information will allow the therapist to better understand the circumstances in which hair pulling occurs, and the possible reinforcing consequences for hair pulling. In the initial interview the therapist will also ask about the onset of hair pulling, events associated with the onset, and the course of hair pulling since its onset.

To assess the specific behaviors involved in hair pulling, the therapist asks the following types of questions:

6

"Please describe how you pull your hair."

"Are there any other ways that you pull your hair?"

"Show me exactly how you pull your hair, without actually pulling one out."

"Show me the behaviors involved in hair pulling from start to finish."

"What do you do with the hair after you pull it?"

The therapist asks such questions until all of the behaviors involved in the hair pulling have been described objectively and demonstrated by the client.

To assess the antecedents of hair pulling, the therapist asks the client to describe the circumstances in which hair pulling occurs (overt antecedents)

and the client's subjective experiences prior to each instance of hair pulling (covert antecedents). Information on the antecedents is important for the correct implementation of treatment. To assess overt antecedents, the therapist asks the following types of questions:

- C "When do you pull your hair?"
- "Where do you pull your hair?"
- "What are you doing when you pull your hair?"
- "In what situations do you pull your hair?"

To assess covert antecedents, the therapist asks the following types of questions:

- S "What are you feeling when you start to pull your hair?"
- "What feelings or emotions do you experience when you start hair pulling?"
- "What are you feeling or thinking when you get an urge to pull your hair?"

Because hair pulling is reported to occur when individuals experience negative emotions such as anxiety, worry, tension, or stress, the therapist should ask questions to assess these experiences.

To assess the consequences of hair pulling, the therapist asks about the reactions of others and the client's own subjective experiences each time hair pulling occurs. Information on how others react to hair pulling will help determine whether hair pulling is being reinforced by attention, escape or avoidance of specific activities, or some other socially-mediated consequences. Information on the client's subjective experiences will help determine whether hair pulling provides relief from some negative experience such as tension or worry or whether hair pulling provides a type of pleasant sensory stimulation. To assess social consequences, the therapist asks the following types of questions.

- C "How do people react to you when you pull your hair?"
- "What do people say or do when they observe you pull your hair?"
- "Do people react to you in any specific way when they see you pull your hair?"

Based on the answers to these types of questions about social consequences of hair pulling, the therapist can form hypotheses about possible social reinforcement for the behavior. For example, if the client receives reprimands or statements of concern each time she pulls her hair,

the therapist may hypothesize that attention is a reinforcing consequence for hair pulling.

To assess the covert consequences of hair pulling, the therapist asks the following types of questions.

5

"How do you feel as you are pulling your hair?"

"You said you were feeling (tense, worried, stressed) before pulling your hair. How do these feeling change as you are pulling your hair?"

"How would you describe the sensation you get from hair pulling?"

Based on the answers to these types of questions about covert consequences of hair pulling, the therapist can form hypotheses about the automatic reinforcing function of the behavior. For example, if the client reports hair pulling when experiencing tension and reports some relief from the tension while hair pulling, the therapist may hypothesize that tension relief negatively reinforces hair pulling.

### 2.1.2 Assessment of Comorbid Conditions

The therapist may decide to employ any of a number of standardized assessment instruments with the client to assess possible comorbid conditions that might influence treatment. The therapist could use a general screening instrument to assess a range of possible comorbid conditions or one or more instruments to assess specific disorders such as depression, generalized anxiety disorder, or obsessive-compulsive disorder (OCD).

### 2.1.3 Homework

Before the first session is finished, the therapist assigns the client a number of assessment activities to be completed and brought to the second session. These include paper and pencil self-report measures of hair pulling and a self-monitoring assignment to record hair pulling that occurs outside of the sessions.

### 2.1.3.1 Self-report Measures

A number of self-report measures have been developed to assess the client's experience associated with hair pulling (e.g., Stanley & Mouton, 1996; Rothbaum, Opdyke, & Keuthen, 1999). These paper and pencil instruments provide a measure of a number of factors such as frequency of urges to pull hair, frequency of hair pulling, ability to resist urges, and distress associated with hair pulling. Two such measures are the Hair Pulling Survey (Stanley, Borden, Bell, & Wagner, 1994) and the Massachusetts General Hospital Hairpulling Scale (Keuthen et al., 1995).

The therapist can assign one or more of these self-report measures for the client to complete and bring back to the second session. The therapist may then have the client complete such measures each week during the treatment period to assess changes associated with treatment.

### 2.1.3.2 Self-Monitoring Instructions

Behavioral assessment of hair pulling is most often accomplished through self-monitoring by the client. Because hair pulling typically occurs when the client is alone, self-monitoring is often the only choice of direct behavioral assessment strategies. The goal of self-monitoring is for the client to record each instance of hair pulling as immediately as possible after it occurs. The client can carry out self-monitoring by writing down each hair pulling incident on a recording sheet or by using some other recording instrument, such as a wrist counter.

The therapist provides the self-monitoring instructions and the recording sheet near the end of the first session. The recording sheet might simply have spaces to record the time involved in the hair pulling incident and the number of hairs pulled. Alternatively, the recording sheet might also have a space for recording the antecedents to hair pulling (e.g., Mouton & Stanley, 1996). The therapist needs to develop a recording sheet to match the ability and motivation of the client to engage in self-monitoring. In most cases, the easier the recording assignment, the more likely the client is to complete the assignment successfully. An example of self-monitoring instructions the therapist might provide follows:

"It is important for us to get an accurate idea of exactly how many hairs you pull each day before we start treatment and during treatment so that we can determine how effective the treatment is. In order to do this, I am going to ask you to record

your hair pulling each day. I have a recording sheet for you to use to record your hair pulling. Each time you pull your hair, write down the time you started, the number of hairs you pulled, and the time you stopped. Keep the recording sheet with you or in the location that you typically pull your hair, so that you can record your hair pulling immediately after you start. Recording immediately is important so that you don't forget or have to rely on your memory to record later."

#### **2.1.3.3 ABC Recording**

In addition to recording the number of hairs pulled each day, it is also valuable for the client to periodically conduct recording of the antecedents and consequences of hair pulling. Recording antecedents and consequences (ABC recording) will help confirm the information received during the interview or provide new examples not disclosed in the interview. Because ABC recording is more time consuming than recording the frequency of hair pulling, the therapist will instruct the client to conduct ABC recording on a periodic basis such as once a day or a few times per week. To conduct ABC recording, the client writes down the overt and covert antecedents that were present when hair pulling occurred along with the overt and covert consequences of hair pulling. The therapist will provide the following type of instructions for ABC recording:

"In addition to recording the number of hairs you pull each day, I also want you to record other experiences at the time you pull your hair. I want you to record what you are experiencing before and after hair pulling to better understand the factors that may contribute to your hair pulling. Because this type of recording will take more time, I am asking you to do it just once each day. During one hair pulling episode each day, I want you to record the situation in which you are pulling your hair. I also want you to record your thoughts and feelings just before you start to pull your hair. For example if you are alone in the living room with the TV on and you are worrying about an upcoming event, write this information down in this space under antecedents (therapist points to the space on the recording sheet). I also want you to record what you experienced after pulling your hair. For example, if you felt less worried or experienced some relief from stress, write this information down in the space under consequences."

#### **2.1.4 Identifying the Social Support Person**

Before the client leaves the first session, the therapist informs the client that the habit reversal treatment to be implemented in the second session involves the assistance of a social support person. The therapist asks the

client to identify a social support person who can help the client implement the treatment. The therapist then indicates that the social support person should accompany the client to the next session. The client must choose a relative or friend who has frequent daily contact with the client. For a child, the social support person is typically a parent, and possibly an adult relative or older sibling living in the home. Sometimes, a teacher may serve as a social support person for the child at school. For an adult, the social support person may be a spouse, partner, or roommate. In some cases, a coworker may serve as a social support person. If the social support person does not already know about the client's hair pulling, the client must be comfortable disclosing the problem with hair pulling and asking the person to participate in the treatment. The social support person must be willing to assist in ways described below.

## **2.2 Session 2**

In the second session, the therapist reviews the client's recording homework and begins implementing the habit reversal procedures with the client.

### **2.2.1 Collect and Review Homework Data**

The therapist starts by providing the client with an overview of the session to let the client know they will first review the recording assignments and will then begin treatment. Review of the client's homework emphasizes the importance of assessment in the therapy process. The therapist first reviews the self-report measures with the client by going through each questionnaire, reviewing the client's responses and asking the client if there are any questions. The therapist then reviews the client's self-monitoring of the number of hairs pulled each day. The therapist asks the client if there were any problems carrying out self-monitoring and whether the recording occurred at the time of hair pulling or at some later point in time. The therapist may ask the client questions about the circumstances in which hair pulling occurred and the client's experiences before and after hair pulling each day in order to complement the information on antecedents and consequences obtained in the interview. The therapist then graphs the number of hairs pulled each day so the client can see the results. Graphing further emphasizes the importance of accurate self-monitoring. Finally, the

therapist reviews the client's ABC recording to gather further information on antecedents and consequences of hair pulling.

### **2.2.2 Implement Habit Reversal Procedures**

Once the review of homework is complete, if the behavioral assessment results do not indicate any social function for hair pulling, the habit reversal procedures are implemented. If a social function is identified, the therapist would implement the habit reversal procedures in conjunction with contingency management procedures described in section 4.1. The therapist starts by providing an overview of the habit reversal treatment components and then implements each treatment component in sequence.

#### **2.2.2.1 Inconvenience Review**

Habit reversal starts with an inconvenience review as a way to motivate the client to comply fully with the treatment protocol in an attempt to eliminate the behavior. Inconvenience review simply involves the therapist asking the client to identify all of the ways in which the hair pulling has caused embarrassment, inconvenience, or distress, thus negatively impacting his or her life. For example some clients are embarrassed when others see the areas of hair loss resulting from their hair pulling. Some are inconvenienced on a daily basis as they spend substantial time fixing their hair or wearing hats in an attempt to cover the areas of hair loss. Some are distressed by their inability to control the behavior as they pull hair even though they want to stop. In most cases, the client will describe a variety of ways in which the hair pulling causes embarrassment, inconvenience, or distress. After this information is disclosed, the therapist helps the client see how life will improve after hair pulling is decreased or eliminated.

#### **2.2.2.2 Awareness Training**

The goal of awareness training is to help the client identify each instance of hair pulling or the antecedents to hair pulling so he or she can successfully carry out the competing response component of habit reversal.



#### **2.2.2.2.1 Rationale**

The therapist must provide a rationale for the importance of awareness training to increase the likelihood that the client will comply with the procedure. A sample rationale for awareness training is provided below.

"Because you report you are often not aware you are pulling your hair until after you have already pulled out a number of hairs, teaching you to become aware of the behavior is important in helping you control the behavior. I will be teaching you an alternative behavior to replace hair pulling and to use this strategy successfully, you must be aware each time you pull a hair or you are about to pull a hair. The success of this treatment depends on your awareness of each occurrence of the behavior."

#### **2.2.2.2.2 Describing Hair Pulling**

After providing a rationale for awareness training, the next step in the process is to have the client describe the hair pulling. Because the client has already described the behavior in detail in the initial assessment interview, the therapist simply reviews the description of the behavior at this time. It is important for the therapist to understand all of the ways in which hair pulling occurs and the precursor behaviors to hair pulling (for example stroking or playing with hair before pulling). The client has an opportunity to add any further information after the therapist reviews the information obtained in the first interview.

#### **2.2.2.2.3 Describing Preceding Sensations and Situations**

In addition to describing the hair pulling and precursor behaviors, the client is asked to describe any covert experiences (sensations, feelings, thoughts) that may precede hair pulling. At this time, the therapist will review any information obtained in the first interview or from the self-monitoring and ask the client for confirmation or additional information about covert antecedents. The therapist also reviews the situations in which hair pulling occurs and asks for any further details to help the client understand all of the situations in which hair pulling is most likely. The therapist asks about covert and overt antecedents so that the client can become aware of thoughts and feelings (or other experiences) or situations that can serve as warning signs that hair pulling is likely to occur.

#### 2.2.2.2.4 Simulating Hair Pulling Movements

After the client has fully described the hair pulling movements and the sensations that precede the behavior (response description), the next step in awareness training is to practice detecting each occurrence of hair pulling (response detection). Because clients are not likely to pull their hair in presence of the therapist in the session, the client must simulate the behavior in the session. The therapist informs the client that simulating the hair pulling movements a number of times in session will make the client more aware of the behavior when it occurs outside of the session. The therapist then asks the client to act out an instance of hair pulling from start to finish in the exact way it typically occurs. After the client engages in the hair pulling movements, the therapist asks if there are any other ways in which the behavior occurs. If so, the client is asked to simulate the behavior to illustrate the different ways hair pulling might occur.

After the client has simulated the full range of hair pulling movements, including the precursor behaviors, the therapist will have the client simulate different situations in session and demonstrate how hair pulling occurs in those situations. For example, the client will sit at a desk with elbows on the table and hands touching the face and simulate the behavior from this position. The client may then sit back in a chair with hands in lap as if watching television and simulate the behavior in this position. By simulating the hair pulling in as many different situations as possible, the client is more likely to be aware of the start of the hair pulling behavior when those situations arise outside of the session.

The therapist will also ask the client to simulate covert antecedents to hair pulling and initiate the hair pulling movement. For example, if the client pulls her hair in response to thinking negative thoughts, the therapist will ask the client to engage in that pattern of thinking and begin the hair pulling movement. Likewise, if the client engages in hair pulling when experiencing certain feelings, the therapist will ask the client to imagine those feelings and begin the hair pulling movement. The point of this exercise is to increase the client's awareness of the covert antecedents to hair pulling in the hope that the client will recognize them when they occur outside of the session.

While the client is simulating the hair pulling movements, the therapist will instruct the client to stop at various points in the movement to notice the sensations involved in the behavior. For example as the client first touches her hair with her fingertips, the therapist will have her stop and notice the

sensations of her hair on her fingers. The therapist may tell the client to stop when the hand is just lifted off of the lap and have the client notice the feeling of the movement as the behavior is just starting. By stopping the hair pulling movements at many different points in time, the client should become more aware of the movement as soon as it starts, and thus be able to more successfully implement the competing response before a hair is actually pulled.

### **2.2.2.3 Competing Response Training**

Once awareness training is complete, the therapist implements competing response training. The goal of competing response training is to teach the client to engage in an incompatible behavior (the competing response) contingent on the occurrence of hair pulling or antecedents to hair pulling.

#### **2.2.2.3.1 Rationale**

The first step in implementing competing response training is to provide a rationale so the client understands and is motivated to comply with the procedure. An example of a rationale follows:

"Now that we have completed awareness training exercises, the hope is that you will be aware of each instance of hair pulling as soon as you begin to engage in the behavior outside of the session. In this next phase of treatment I am going to teach you to engage in a competing response to take the place of hair pulling. The competing response is a simple behavior involving your hands that is incompatible with hair pulling. If you engage in the competing response as soon as you catch yourself starting to pull your hair or before you actually pull a hair, then the use of the competing response will prevent hair pulling. Essentially, you replace hair pulling with this new behavior. First we will choose one or more competing responses and then practice the use of the competing response in the session until you are comfortable using it."

#### **2.2.2.3.2 Choosing the Competing Response(s)**

To choose a competing response, the therapist tells the client that they need to decide on a behavior involving the hands that the client can carry out for about one minute wherever hair pulling typically occurs. The competing

response should be easy to carry out, physically incompatible with hair pulling, and inconspicuous so that it does not draw attention to the client. Examples of competing responses include making a fist and holding the hand down at the side, folding the hands in the lap when sitting, grasping an object that is naturally found in the situation (e.g., a pencil for a student, a small toy for a child, the remote control for a person watching television), or putting the hands in pockets. The client may choose more than one competing response to be used in different situations. If the client pulls hair with only one hand, then the competing response will involve only that hand. If hair pulling occurs with either hand, then a competing response will involve both hands.

#### 2.2.2.3.3 Practicing the Competing Response

After the client has chosen one or more competing responses, the therapist has the client practice the use of the competing response in the session contingent on simulated hair pulling.

"Now that you have chosen some competing responses to prevent your hair pulling, I am going to have you simulate hair pulling and practice using the competing response in session. I will have you simulate a variety of situations in which hair pulling occurs, start the hair pulling movements, and then immediately use the competing response instead. The point of this exercise is to catch yourself as you start to pull your hair, stop, and start the competing response to replace hair pulling. By practicing a number of times in session, it will become more natural for you, and you will be more likely to catch yourself outside of the session as you start to pull hair, stop, and use the competing response immediately to replace the behavior."

The therapist then describes a typical hair pulling situation for the client to simulate (e.g., sitting at a table reading a magazine) and has the client begin the hair pulling movement and use the competing response as soon as the client's hand touches her hair. The therapist will repeat this process by having the client simulate other situations (as indicated in the assessment interview), begin hair pulling movements, and use the competing response. In each practice, the client should use the competing response for about one minute to simulate how long the competing response should be used outside of the session.

As the practice exercises continue, the therapist will have the client stop the hair pulling movements earlier and use the competing response. For example, the therapist will tell the client to stop as her hand is near her head but not yet touching it and use the competing response. In subsequent

practice the therapist will have her stop as her hand is raised to her shoulder, as her hand is raised off of her lap, and finally before her hand even moves off of her lap after she thinks about starting to pull her hair. In each case, the client uses the competing response contingent on these incipient hair pulling movements.

Continued practice of the competing response will occur in response to overt and covert antecedents to hair pulling. For example, if reading a magazine is an antecedent to hair pulling, the therapist will have the client practice the competing response while reading the magazine before any hair pulling movements occur. If worrying is an antecedent to hair pulling, the therapist will have the client think specific worrisome thoughts and then engage in the competing response for about one minute before any hair pulling movements occur.

After the client has practiced the use of the competing response contingent on hair pulling, incipient hair pulling movements, and antecedents to hair pulling, the therapist provides instructions for the client to use the competing response outside of the session just as it was practiced in session. The therapist reminds the client that the success of the procedure in decreasing or eliminating hair pulling depends on the consistent use of the competing response outside of the session.

#### **2.2.2.4 Social Support Training**

The purpose of social support is to enlist the assistance of a significant other to help the client use the competing response successfully outside of the session. The social support person reminds the client to use the competing response when hair pulling is observed, praises the client for correctly using the competing response, and praises the client for successfully refraining from hair pulling. After the therapist completes the competing response training component of habit reversal, the therapist asks the social support person to join the client in the therapy session. In some cases, the social support person may be present for the entire session. For example, if the client is a child, a parent may function as the social support person and be present in the entire session.

#### **2.2.2.4.1 Rationale**

The rationale for the use of social support is that the client will be more successful using the competing response to control hair pulling if a significant other in the client's life can provide assistance. The therapist explains that the client may forget to use the competing response on occasion or may find it difficult if urges to engage in hair pulling are strong. In such cases, reminders from the social support person can help the client use the competing response more consistently. Furthermore, praise and approval from the social support person can motivate the client to continue using the procedures.

#### **2.2.2.4.2 Practicing Social Support**

After providing the rationale for social support, the therapist tells the social support person how to implement the procedures and then asks the support person to practice the procedures with the client in session. At this point, the therapist asks the client to simulate hair pulling but fail to use the competing response so that the social support person has a chance to remind the client to use the competing response. Next, the therapist asks the client to simulate hair pulling, but to stop the behavior and use the competing response so that the social support person can practice praising the client for using the competing response. The therapist will also have the client simulate a situation in which hair pulling usually occurs and have the client refrain from hair pulling. This provides an opportunity for the social support person to praise the client. The therapist will have the client and social support person repeat this process a number of times so that the social support person gets practice delivering each of the components of social support approximately ten times. As they are practicing, the therapist will praise the social support person for correctly delivering social support and will provide corrective feedback when social support is not delivered correctly.

#### **2.2.2.5 Homework**

After the therapist has provided awareness training, competing response training, and social support training in the session, the therapist will deliver the homework assignment. Homework consists of two components;

instructions to use the habit reversal procedures outside of the session and continued self-recording.

The therapist tells the client to work on identifying the occurrence of hair pulling movements as soon as they occur in all situations outside of session. The therapist also tells the client to be vigilant of antecedents to hair pulling, both covert antecedents (thoughts and feelings) and overt antecedents (situations or precursor behaviors). The therapist further tells the client to use the competing response whenever hair pulling movements occur, an urge to pull hair occurs, or any of the antecedents to hair pulling occur outside of the session. The therapist emphasizes the importance of catching hair pulling before it occurs and replacing it with the competing response. Finally, the therapist tells the social support person to consistently deliver reminders and praise at the appropriate time to help the client use the competing response successfully.

Lastly, the therapist instructs the client to continue self-monitoring hair pulling as the client did between the first and second sessions. The therapist will provide the client with a new recording sheet for use in the upcoming week and will tell the client to bring the completed self-monitoring sheet to the next session. The therapist will also give the client the self-report questionnaires that the client completed previously. The therapist tells the client to complete these self-report instruments and return them at the next session. The therapist emphasizes the importance of the recording assignments for evaluating progress as the client is using the habit reversal procedures in the upcoming week.

## **2.3. Session 3 - X**

Session 3 and beyond are booster sessions in which the therapist reviews the client's progress, reviews and practices treatment procedures, and engages in any needed problem solving with the client.

### **2.3.1 Collect and Graph Data**

At the beginning of Session 3 (and each subsequent session), the therapist collects the client's homework recording assignments and reviews the data with the client. The therapist will compare the self-report questionnaire results with results of the questionnaires completed previously and discuss progress with the client. The therapist will also review the daily recording of

hair pulling with the client and graph the number of hairs pulled each day using the graph from Session 2. At this point, the therapist discusses the client's self-recording, asking questions about the recording process and about the results. It is important for the therapist to identify any problems the client may be having carrying out the recording assignments so they can be fairly certain the client is recording consistently and presenting an accurate picture of the hair pulling. As the therapist and client review the results of self-recording, the therapist can identify any difficulties the client had in controlling the hair pulling. They will then discuss ways to address any difficulties the client may have experienced.

### **2.3.2 Review of Treatment / Problem Solving**

After reviewing the homework assignments, the therapist will review the habit reversal treatment components with the client (and possibly the social support person). After reviewing the procedures, the therapist will have the client simulate hair pulling and demonstrate the procedures in session a few times. The therapist will then ask the client (and social support person) to describe how she is implementing the procedures on a day-to-day basis and whether there are any difficulties implementing the procedures successfully. The therapist will ask questions such as:

"Are you using the competing response each time you start to pull your hair?"

"What are the circumstances in which you don't use the competing response consistently?"

"Are there any situations or circumstances in which you don't catch yourself pulling your hair until you have already pulled out some hairs?"

"Do you ever find that you catch yourself pulling your hair but fail to use the competing response immediately?"

"I noticed on (specific day) that you pulled many more hairs than on the other days. Tell me what was happening on (specific day) when you pulled your hair. Tell me what you were thinking or feeling on this day when you pulled your hair."

"I noticed on (specific day) that you didn't pull any hairs. Tell me what was happening on this day that may have contributed to your success."

"Are there any situations in which the urge to pull hair is too strong to resist?"

(To social support person) "Are you having any difficulties providing praise for using the competing response or reminders to use the competing response as we had discussed?"



Depending on the answers to these and other questions, the therapist will help the client identify difficulties with the implementation of the competing response and social support procedures and will work with the client to find solutions.

### **3. THERAPIST CHECKLIST**

A checklist of the habit reversal procedures for use by therapists implementing the procedures with clients with trichotillomania is provided in Appendix A.

### **4. ANCILLARY PROCEDURES/CONCERNS**

In addition to the use of the habit reversal procedures described above, the therapist may choose to address other issues or implement a number of ancillary procedures as dictated by the needs of the particular client.

#### **4.1 Focus on ABC's of Hair Pulling**

Information on antecedents and consequences of hair pulling is gathered from the functional assessment interview and the client's ABC recording. Information on the antecedents is incorporated into the habit reversal treatment as the client learns to become aware of the overt and covert antecedents and implement the competing response in those situations to prevent hair pulling. Information on the consequences may also be incorporated into treatment as an adjunct to the habit reversal treatment.

If the therapist hypothesizes that some form of social reinforcement (i.e., attention, escape) is contributing to hair pulling, then procedures would be implemented to eliminate or attenuate this source of reinforcement. For example, if it appears that a parent is responding to a child's hair pulling with attention, then the therapist will instruct the parent to withhold attention following hair pulling and provide attention at other times (consistent with social support instructions). On the other hand if it appears that hair pulling is allowing the child to avoid or escape from some tasks or activities, the therapist will instruct the parent to require the child to engage in the task or activity regardless of the presence of hair pulling (thus eliminating the reinforcing consequence for hair pulling).

If it appears that the client's hair pulling is being maintained by the sensory stimulation to the fingers (e.g., Rapp, Miltenberger, Galensky, Ellingson, & Long, 1999), then the therapist may implement procedures to mask the stimulation in an attempt to produce sensory extinction. For example, the therapist may have the client wear small adhesive bandages on the fingers involved in hair pulling in order to mask the stimulation arising to the fingers during hair pulling. Likewise, the therapist might instruct the client to manipulate another socially appropriate object to produce the same type of stimulation to the fingers produced by hair pulling. For example, a recent twelve-year old client who pulled his eyebrow and eyelash hair during school wore a name tag around his neck on a string (as required by the school) and manipulated the name tag as a competing behavior to hair pulling.

## **4.2 Relaxation Training**

Relaxation training may be a useful adjunct to habit reversal treatment for trichotillomania, especially when the client reports the presence of tension or anxiety as an antecedent to hair pulling. If the tension or anxiety can be alleviated through relaxation training, then the client will not need to pull her hair to produce relief from the tension or anxiety. The therapist should assess the role of tension or anxiety in the initial assessment and in the client's ongoing data collection to determine whether relaxation training appears warranted. There are a number of relaxation training approaches that the therapist can choose for use with the client, including progressive muscle relaxation, visualization exercises, breathing exercises, or attention focusing exercises (e.g., Miltenberger, 2001).

## **4.3 Compliance Issues**

Although research has shown that habit reversal can be an effective treatment for trichotillomania, some research has shown that it may be ineffective with younger children or individuals with mental retardation (Long, Miltenberger, Ellingson, & Ott, 1999; Long, Miltenberger, & Rapp, 1999; Rapp, Miltenberger, Galensky, Roberts, & Ellingson, 1999; Rapp, Miltenberger, & Long, 1998). In such cases, the ineffectiveness of habit reversal is likely due to the failure of the client to implement the competing response consistently. Noncompliance with the instructions to use the

competing response may be due to a lack of motivation or inability to carry out the procedure. In such cases, ancillary procedures are warranted. One type of ancillary procedure is to provide additional social support in the form of contingencies for the correct use of the competing response. For example, Long and colleagues (Long, Miltenberger, Ellingson, et al., 1999; Long et al., 1999) used token reinforcement for the correct use of the competing response and for the absence of hair pulling with a young child and with adults with mental retardation after habit reversal failed to produce lasting decreases in hair pulling. Furthermore, Long and colleagues used a response cost procedure in which a token was removed whenever hair pulling was observed. The combination of reinforcement and response cost procedures produced lasting decreases in hair pulling. Finally, we have found that, when working with children who pull their hair while alone, the parents' use of social support can be enhanced if they frequently drop in on the child. Parents are instructed to make frequent unannounced checks on their child to record hair pulling and to provide praise and prompts as needed.

#### **4.4 Awareness Enhancement**

In addition to the use of ancillary procedures that address the function of hair pulling, one other complementary treatment is to enhance the client's awareness of the hair pulling. If the client is acutely aware of each instance of hair pulling, then the use of the competing response is more likely to be successful. There have been two approaches to enhancing awareness. One approach involves the use of an awareness enhancement device that sounds an alarm each time the client reaches up to pull hair. Rapp et al., (1998) developed an electronic awareness enhancement device consisting of a unit worn near the neck and a unit worn on each wrist. When the client raised her hand to pull her hair, the proximity of the wrist unit to the neck unit activated an alarm in the neck unit. The alarm did not stop until the arm was lowered and the two units were no longer in close proximity. This device has been found to be effective in eliminating hair pulling exhibited by one woman with mental retardation (Rapp, Miltenberger, & Long, 1998) and thumb sucking exhibited by three children (Ellingson, et al., 2000, Stricker et al., 2000). Risvedt and Christenson (1996) utilized another approach to awareness enhancement. They applied a topical cream (capsaicin) to the scalp of a woman with trichotillomania. Capsaicin increased the sensitivity to the woman's scalp, thus increasing her awareness of each instance of hair

pulling After finding that habit reversal was not effective, the use of capsaicin led to the elimination of hair pulling.

#### 4.5 School Settings

Habit reversal treatment for hair pulling may be more difficult to carry out for children in the school setting. The student may not be aware of some instances of hair pulling because he or she is concentrating on the teacher or on school work. Furthermore, social support cannot be implemented in the school setting if the parent is the sole social support person. In an attempt to overcome these difficulties, the therapist can have the student practice the competing response following hair pulling or antecedents to hair pulling in a variety of simulated school situations in the session. The therapist can also have the student enlist the assistance of a peer or the teacher as a social support person at school. Care must be taken to choose a peer that is reliable and sensitive to possible embarrassment that could result from disclosure of the student's hair pulling. If a teacher agrees to serve as a social support person, the therapist would ask the teacher to provide praise or prompts in an unobtrusive manner so that attention was not drawn to the student.

#### 4.6 Self-Monitoring

As indicated above, self-monitoring is typically used as a form of data collection so that changes in hair pulling can be documented over the course of treatment. In addition to self-monitoring the number of hairs pulled each day, the client could also monitor outcomes such as hair re-growth. For example, the client who pulls his eye brow hair could rate degree of fullness of the eyebrows using a 5 point rating scale (1=no hair at all, 5=hair completely filled in). A 12-year old client currently in treatment who pulls hair from his eyebrows and eyelashes is using such a scale on a daily basis. He and his mother complete the 5 point scale independently each evening after they both observe his eyebrows and eyelashes in the mirror. Their ratings have never varied by more than 1 point, suggesting that they are using the rating scale reliably. The client reports that he is less likely to pull his hair because he knows that he will be rating the appearance of his eyebrows and eyelashes every day. Thus self-monitoring can serve a motivational function as well as a data gathering function.

## 4.7 Depression/Anxiety Disorders/OCD in Persons with Trichotillomania

Because depression, anxiety disorders, and OCD are common comorbid conditions associated with trichotillomania (Christenson, 1995; Swedo & Leonard, 1992), a therapist providing treatment for trichotillomania may also need to provide treatment (or a referral) for one of these conditions as well. Fortunately, there is substantial empirical support for behavioral treatments for depression, anxiety disorders, and OCD (e.g., Barlow, 1993; Watson & Gresham, 1998). Although descriptions of behavioral treatments for depression, anxiety disorders, and OCD is beyond the scope of this book, the therapist is encouraged to be vigilant for symptoms of these (and possibly other) disorders and provide appropriate treatment or referral as needed. In many cases, the therapist may uncover the client's problem with hair pulling after the client has sought treatment for another psychological disorder. However, in some cases, the client may present with trichotillomania and the therapist may identify the presence of depression, anxiety disorders, OCD, or some other disorder in the process of providing treatment for trichotillomania. Concurrent treatment for the other identified disorder(s) is then warranted.

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## 6. APPENDIX A

### Habit Reversal Checklist for Trichotillomania

#### SESSION 1

- ☐ Functional assessment interview
- ☐ Describe and demonstrate hair pulling movements
- ☐ Identify overt and covert antecedents
- ☐ Identify overt and covert consequences
- ☐ Assessment of comorbid conditions
- ☐ Homework
  - ☐ Trichotillomania questionnaires
  - ☐ Self-monitoring instructions
  - ☐ ABC recording
- ☐ Identify the social support person

#### SESSION 2

- ☐ Collect and review homework data
- ☐ Review trichotillomania questionnaires
- ☐ Review the numbers of hairs pulled each day
- ☐ Graph the number of hairs pulled each day



\_\_\_ Review ABC recording

\_\_\_ Implement habit reversal procedures

\_\_\_ Inconvenience review

\_\_\_ Awareness training

\_\_\_ Provide rationale

\_\_\_ Have client describe and demonstrate hair pulling

\_\_\_ Have client describe preceding sensations and situations

\_\_\_ Have client simulate hair pulling movements

\_\_\_ Competing response training

\_\_\_ Provide rationale

\_\_\_ Have client choose the competing response(s)

\_\_\_ Have client practice the competing response

\_\_\_ Social support training

\_\_\_ Provide rationale

\_\_\_ Have social support person practice social support

\_\_\_ Homework

\_\_\_ Instruct client to continue self-recording

\_\_\_ Instruct client to implement habit reversal

## SESSION 3-X

- ☐ Collect and graph data
- ☐ Review treatment
- ☐ Practice treatment components
- ☐ Problem solving

## Chapter 8

# Behavioral Interventions for Trichotillomania

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## 1. INTRODUCTION

Trichotillomania (TCM) is a disorder characterized by chronic hair pulling. The initial conceptualization of TCM as a severe psychiatric disturbance (Hallopeau, 1889), guided treatment of the disorder for many decades and remains relatively common today. It was not until the 1970's that this notion was challenged with a behavioral approach. The behavioral approach to treating hair pulling focused on environmental influences and used empirically derived principles of behavior as the foundation for clinical interventions. This paper will provide a review of the behavioral treatments found effective in treating hair pulling, as well as a brief synopsis of the literature behind the medical management of TCM.

Overall, literature on the treatment of TCM has been highly variable with respect to clinical presentation and prognosis. This variability can make interpretation of the research difficult and confusing. The current psychiatric literature characterizes TCM as a complex psychopathological disorder that is relatively resistant to treatment (see Graber & Arndt, 1993), whereas behavioral researchers tend to conceptualize TCM as a habit, without reference to an underlying psychopathology (Friman, Finney, & Christophersen, 1984). It has been suggested that the divergent treatment outcomes and conceptualizations reported across disciplines reflect different subject populations, with the more severe cases represented in the psychiatric literature (Friman et al., 1984). Although this theory remains

untested, the self-selection of subjects to different treatment facilities cannot be ignored.

## 2. PHARMACOLOGICAL INTERVENTIONS FOR TRICHOTILLOMANIA

Pharmacological interventions for TCM typically target biological mechanisms found responsible for disorders believed to be related to TCM. Among these treatments, antidepressants have been the most thoroughly researched (Christenson & O'Sullivan, 1996), because of the presumed relationship between TCM and Obsessive Compulsive Disorder (OCD). In a double-blind cross-over study, Swedo et al., (1989) reported significant improvements in self-report and physician ratings of TCM severity with clomipramine but not with desipramine, an antidepressant that does not affect obsessional activity (Swedo et al., 1989). A long-term follow-up to this study indicated that seven of the thirteen subjects were receiving clomipramine 4.3 years later, with only one showing a complete remission after medication was withdrawn (Swedo, Lenane, & Leonard, 1993).

Stimulated by the positive results of the clomipramine study, open and controlled trials on the class of drugs known as selective serotonin reuptake inhibitors (SSRI) were conducted. Because OCD had proven responsive to SSRIs (e.g., fluoxetine; Mavissakalian, Turner, Michelson, & Jacob, 1985), it was hypothesized that TCM should respond in a like manner. Mixed results have been obtained with fluoxetine as some studies showed positive effects (e.g., Koran, Ringold, & Hewlett, 1992; Stanley, Bowers, Swann, & Taylor, 1991; Winchel, Jones, Stanley, Molcho, & Stanley, 1992), and others failed to document any effect (Christenson, Mackenzie, Mitchell, & Callies, 1991; Streichenwein & Thornby, 1995). The two studies that failed to show treatment results used self-monitoring procedures as the primary outcome measures (e.g., Christenson et al., 1991; Streichenwein & Thornby, 1995), whereas the studies reporting significant results used clinician-completed outcome measures; thus raising concerns about the adequacy of outcome measures.

Attempts have also been made to improve treatment responsiveness to SSRI's with the addition of a neuroleptic medication, namely risperidone and pimozide (Stein, Bouwer, Hawkridge, & Emsley, 1997; Stein & Hollander, 1992). One study identified five nonresponders to SSRI

treatment and augmented that treatment with risperidone (Stein et al., 1997). Results indicated that of the five individuals, 3 reported significant clinical improvement, however, only 2 maintained this improvement while still on the medication regimen. The third individual had to discontinue the risperidone due to adverse side effects (Stein et al., 1997). Another study of seven individuals diagnosed with TCM and a variety of comorbid conditions showed greater responsiveness to pharmacological management as measured through self-report when pimozide was added to SSRI treatment (Stein & Hollander, 1992).

Most recently, clomipramine was compared to cognitive-behavior therapy in a 9-week, placebo-controlled, randomized trial to treat TCM (Ninan, Rothbaum, Marsteller, Knight, & Eccard, 2000). Efficacy was evaluated using the Trichotillomania Severity Scale, the Trichotillomania Impairment Scale, and the Clinical Global Impressions-Improvement Scale, which were administered by an independent assessor blinded to the treatment condition. Twenty-three patients entered the study, with 16 completing it. Cognitive-behavior therapy with habit reversal resulted in statistically significant reductions on the outcome measures, while both clomipramine and placebo produced non-significant reductions (Ninan et al., 2000). The cognitive-behavioral treatment package used in this study to treat TCM will be discussed later in this chapter.

### **3. BEHAVIORAL INTERVENTIONS FOR TRICHOTILLOMANIA**

The development of behavioral interventions for TCM can be traced to Azrin and Nunn's (1973) landmark paper outlining habit reversal, a multi-component treatment protocol for habit disorders. They reported a case study in which eyelash picking (a common site for hair pulling) was dramatically decreased after only a single session of habit reversal. Although there were many methodological flaws in this early work, the importance of the work cannot be understated as it inspired many future studies of TCM treatment.

Behavioral interventions typically rely on the manipulation of one or more environmental factors in an effort to reduce or eliminate hair pulling. Many of the interventions are characterized by the arrangement of a contrived consequence (e.g., some type of "aversive" event or an effortful behavior)

for instances of hair pulling. Others manipulate those events that seem to set the stage for higher levels of hair pulling or seek to develop skills and behaviors to displace the hair pulling. Over recent years, an impressive array of research has emerged demonstrating the validity of a behavioral approach to treating hair pulling. Positive results have been found with many behavioral interventions, however, habit reversal has the strongest empirical support (Elliott & Fuqua, 2000; Friman et al., 1984).

### **3.1. Punishment Procedures**

Punishment procedures have been used primarily to treat chronic hair pulling in both children and adults with developmental disabilities. A number of aversive consequences have been used to decrease hair pulling, including electric shock, topical cream application (to increase pain sensitization), the snap of a rubber band and response blocking/interruption. Again, most of the research in this area consists of single-subject designs.

Studies have reported successful treatment of hair pulling when a mild electric shock was administered contingent on the hand movements involved in pulling hair (Corte, Wolf, & Locke, 1971; Crawford, 1988; Deshpande & Mehta, 1989). Two of these studies used self-monitoring data with normally functioning adults and found that contingent shocks in the clinic were sufficient to reduce hair pulling outside of the clinic setting (Crawford, 1988; Deshpande & Mehta, 1989). Generalization proved more elusive in a study evaluating the effects of contingent shock on hair pulling in an individual with mental retardation (Corte et al., 1971). In this study, it was necessary to implement the treatment protocol in various settings by different people to promote generalization.

Aromatic ammonia (Altman, Haavik, & Cook, 1978) and facial screening (Barmann & Vitali, 1982) have also been used as consequences of hair pulling for children and adolescents with developmental disabilities. The aromatic ammonia procedure involved placement of an ammonia capsule (i.e., smelling salts) under the nose of a four year-old with severe mental retardation (Altman et al., 1978) contingent on hair-pulling. The facial screening procedure involved covering the subject's face with a terrycloth bib contingent on hair pulling (Barmann & Vitali, 1982). Each of the three children in this study reportedly spent time looking at and manipulating the hair after it was pulled, therefore, the facial screening was an attempt to systematically remove visual sensory reinforcement: a sensory extinction

procedure (Barmann & Vitali, 1982). Whether the facial screening procedure also operated on the basis of punishment principles through the response contingent presentation of stimuli presumed to be "aversive" (e.g., the physical contact and restraint associated with facial screening) cannot be ascertained from the study.

Another study systematically evaluated various treatment techniques to decrease hair pulling and hair manipulation based on functional analysis data suggesting the hair pulling was maintained by automatic reinforcement (Rapp, Miltenberger, Galensky, Ellingson, & Long, 1999; Rapp et al., 2000). Selected treatments were designed to increase the effort involved in pulling hair (wearing wrist weights), produce sensory extinction of digital-tactile stimulation (the subject wore a glove during the day and hand splints at night), and response interruption plus differential reinforcement of other behaviors. Neither the wrist weights nor the glove wearing during high risk times resulted in sustained decreases in hair pulling and manipulation across sessions. Sustained decreases were found with the combination of response interruption and differential reinforcement of the manipulation of objects other than hair. Although this study is limited by potential treatment ordering effects, it stresses the importance of measuring treatment effectiveness across time (Rapp et al., 2000).

Punishment procedures have also been utilized when hair pulling occurred primarily outside of awareness and was not responsive to a commonly used self-management strategy, habit reversal. Ristvedt and Christenson (1996) had a subject apply an over-the-counter topical capsaicin cream to the scalp. Capsaicin cream makes the skin more sensitive, thereby increasing the pain associated with hair pulling. At a 4-month follow-up, the subject reported a significant decrease in her hair pulling (Ristvedt & Christenson, 1996). Despite the limitation of applying the cream daily, this intervention represents a novel use of an over-the-counter drug to facilitate awareness and management of hair pulling. Rapp, Miltenberger, and Long (1998a) also used an awareness enhancing device consisting of an alarm that sounded when the wrist came within a certain distance from the head of a developmentally delayed adult. This device was successful in decreasing hair pulling that had been unresponsive to other behavioral techniques.

Contingent response prevention (Maguire, Piersel, & Hansen, 1995; Sanchez, 1979) has also been successful in reducing hair pulling in persons with developmental disabilities. Maguire et al. (1995) placed mittens on a 46-year-old female with profound mental retardation contingent on hair pulling. Ratings of photographs by individuals blind to the phase of

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treatment revealed a steady increase in hair growth. Although this treatment program took 3 years for its effects to become apparent, it systematically reduced hair pulling which had been previously resistant to treatment. This program was also rated as highly effective by the group home staff (Maguire et al., 1995). In a variation on the response prevention strategy, Barrett and Shapiro (1980) described parents who shaved the head of their 7-year-old girl with severe mental retardation who exhibited chronic hair pulling and trichophagia. Hair pulling decreased while the girl's hair was short but returned to baseline levels as the hair grew. An overcorrection procedure that required the girl to brush her hair for two minutes contingent on each hair pull (termed positive practice) decreased hair pulling but the effects did not maintain after the intervention was discontinued. Eventually, the inclusion of a verbal warning plus positive practice was successful in eliminating the hair pulling completely (Barrett & Shapiro, 1980).

The above studies document the efficacy of a variety of punishment procedures for chronic hair pulling with children and adults with developmental disabilities. However, fewer studies have been done using punishment procedures with typically developing adults, thus raising concerns about the acceptability and generality of the treatment protocols. Only two studies have collected acceptability information on the use of a punishment procedure to decrease hair pulling (Barmann & Vitali, 1982; Rapp et al., 2000). The acceptability information on the use of a facial screening procedure to decrease hair pulling was collected from parents and care providers. These data indicated they were generally in support of the procedure, particularly with respect to its ease of use. Rapp et al. (2000) received treatment acceptability ratings from the mother of the individual receiving treatment and high ratings were obtained for both the hand splints and the combination of response interruption and differential reinforcement of other behaviors. However, further information regarding the treatment acceptability and treatment integrity of punishment procedures would be beneficial in making predictions about subject attrition and treatment adherence. There are also many ethical questions regarding the use of intrusive and restrictive procedures for a problem that is not an immediate threat to physical health (Elliott & Fuqua, 2000). However, trichophagy (ingestion of pulled hair) presents a significant health concern and may be a potential indicator for use of a punishment procedure. Therefore, punishment procedures may need to be considered as part of a treatment package which includes a reinforcement component or as a back-up



treatment if a reinforcement-based procedure proves ineffective in alleviating hair pulling (e.g., Crawford, 1988).

### 3.2. Hypnosis/Relaxation Procedures

Habits have often been conceptualized as being maintained by negative reinforcement, because they reportedly produce reductions in tension, anxiety, or some aversive condition experienced by the individual (see Miltenberger, Fuqua, & Woods, 1998). One potential treatment avenue for decreasing tension involves training in relaxation procedures. This training may take the form of progressive muscle relaxation (e.g., DeLuca & Holborn, 1984) or a combination of relaxation and hypnotic suggestions. This latter technique has been referred to as hypnbehavioral treatment (Robiner, Edwards, & Christenson, 1999). Although the exact mechanisms underlying hypnosis are unclear, hypnbehavioral treatment for hair pulling often uses relaxation to relieve tension along with suggestions for behavior change (Fabbri & Dy, 1974; Galski, 1981; Rodolfa, 1986). The studies investigating the efficacy of hypnosis in treatment of hair pulling consist primarily of uncontrolled case studies without reports of quantifiable data. However, despite these limitations, the studies do document the success of hypnosis in reducing hair pulling in primarily normal functioning adults.

Hypnotic induction has been used to both help increase awareness of instances of hair pulling, as well as perceptions of associated pain (Friman & O'Connor, 1984; Hall & McGill, 1986; Rodolfa, 1986). Hypnbehavioral techniques typically focus on normally-functioning adults and given the verbal nature of the techniques, they may be limited to use with those who exhibit highly developed verbal repertoires. Three studies investigating the use of hypnosis have reported rapid decreases in self-reported hair pulling with maintenance of these improvements over 2 (Fabbri & Dy, 1974; Friman & O'Connor, 1984), 6 (Hall & McGill, 1986), and 8 months (Rodolfa, 1986). These reports of treatment maintenance are impressive and have led some to speculate on the mechanisms by which maintenance might occur. Fabbri and Dy (1974) suggested that even if posthypnosis suggestions persist for only a limited time, this disruption in behavioral patterns may allow more adaptive patterns to develop.

Unfortunately, most of aforementioned hypnosis studies relied exclusively on clinician or participant ratings and employed case study methodology. In the one hypnosis study to use a product measure to assess treatment

effectiveness (hair length), more conservative results were reported (Barabasz, 1987). This study used hypnosis as the primary treatment intervention with 4 adult hair pullers (aged 19 to 34 years) and three of the 4 subjects were free of hair pulling at a 12-month follow-up session (Barabasz, 1987). Although these results are quite positive they suggest hypnosis techniques may not be effective for all individuals with chronic hair pulling.

Although hypnosis may be a viable alternative to pharmacological and other behavioral approaches, it may also be a potential augmenting strategy when other treatment methods produce only partial improvements (Robiner et al., 1999). Relative to other treatments, hypnosis requires little response effort and may be well accepted by some individuals. Currently, the usefulness of hypnosis in treating hair pulling is hindered by a poor understanding of the underlying mechanisms of action, lack of guidelines for determining which individuals might be most responsive to this intervention, inadequate descriptions of hypnotic procedures, and a lack of controlled research in this area (Robiner et al., 1999). Future well-designed research is needed to explore the potential use of hypnosis both as a primary intervention for hair pulling and as a supplement to enhance awareness of hair pulling to facilitate the application of other response contingent interventions (e.g., habit reversal).

### **3.3. Habit Reversal**

Habit reversal, a multi-component treatment for habit behaviors, has been identified as the most efficacious treatment for TCM to date (Elliott & Fuqua, 2000; Friman et al., 1984) and is listed as a "probably efficacious" treatment for habits on the American Psychological Association's list of empirically validated treatments (Chambless et al., 1998). Habit reversal, as originally conceptualized by Azrin and Nunn (1973), contains 4 phases comprising a total of thirteen components. Generally, the 4 phases are categorized as awareness training, competing response training, motivation enhancement, and generalization training (see reviews by Miltenberger et al., 1998; Woods & Miltenberger, 1995; 1996). A number of variations of habit reversal have been used to treat hair pulling, including the original protocol, simplified versions, and group formats. Although the majority of studies have employed a small number of subjects, they have typically used appropriate small N experimental designs, characterized by relatively objective measures of the dependent variable for comparison across baseline

and intervention phases. In the only group comparison study of habit reversal, Azrin, Nunn, and Frantz (1980) reported that individuals with TCM who used habit reversal decreased hair pulling by 91%, compared with a 50% decrease for a negative practice group. The individuals in the habit reversal group were also more likely to maintain these results at a 3-month follow-up (Azrin et al., 1980).

The number of habit reversal components has also been manipulated, with successful outcomes documented using the complete habit reversal package (e.g., Tarnowski, Rosen, McGrath, & Drabman, 1987), as well as simplified packages (e.g., Rapp, Miltenberger, Long, Elliott, & Lumley, 1998b). In most research studies, the simplified treatment packages typically consist of awareness training, competing response training, and social support (e.g., Rapp et al., 1998b; Rosenbaum, 1982; Tarnowski et al., 1987). In a component analysis of habit reversal for motor and vocal tics, one study found equivalent results between groups, with one group receiving the entire package and another receiving only awareness and competing response training (Miltenberger, Fuqua, & McKinley, 1985). However, it has been speculated in a treatment study for stuttering in children that the social support component of habit reversal may be a necessary component to enhance motivation and promote generalization of treatment results, particularly in children (Elliott, Miltenberger, Rapp, Long, & McDonald, 1998). The necessity of each treatment component has yet to be studied in reference to chronic hair pulling.

In many cases, very little therapy time was needed to achieve significant reductions in hair pulling (Friman & O'Connor, 1984; Rapp et al., 1998b; Rosenbaum, 1982). One case study treated a 7-year-old boy in a pediatric outpatient clinic in one 20-min session, with telephone follow-up sessions at 3, 12, and 18 months (Rosenbaum, 1982). Although this report is limited by the use of only one subject, its efficient application of habit reversal in a pediatric outpatient setting is novel. Obviously, these results may not be replicable with some individuals, but they do demonstrate the potential cost-effectiveness of habit reversal in eliminating hair pulling in children.

Maintenance of treatment effects has also been addressed in several studies. To help maintain treatment effects, Rapp et al. (1998b) administered booster sessions contingent on increases in hair pulling behaviors as shown in follow-up data. The contingent application of booster sessions may help to minimize the physical and psychological effects of relapse on the individual. Being able to administer timely booster sessions may be

particularly beneficial when working with hair pulling, because a brief hair pulling binge can result in a rapid return to baseline levels of hair loss.

Habit reversal has also been documented effective in decreasing hair pulling in individual therapy (e.g., Rapp et al., 1998b) and group therapy (Mouton & Stanley, 1996). Using a group therapy format, Mouton and Stanley (1996) reported improvements for 4 of 5 adult subjects, with 2 experiencing a minor relapse at a 6-month follow-up. Although this study is limited by the exclusive use of self-report measures to determine treatment effectiveness, it demonstrates a time- and cost-effective format for habit reversal. Follow-up sessions to help avoid or minimize relapse may have augmented the long-term effectiveness of the treatment (Mouton & Stanley, 1996).

In general, habit reversal appears to be effective in decreasing and even eliminating chronic hair pulling in both children and adults. Follow-up data indicate that treatment effects can be long-standing, but active attempts to prevent or minimize relapse are necessary for some individuals. Although many studies achieved or maintained zero levels of hair pulling at follow-up (e.g., Tarnowski et al., 1987), not all individuals have responded to habit reversal in such a manner (Long, Miltenberger, & Rapp, 1999; Mouton & Stanley, 1996; Rapp et al., 1998a; Vitulano, King, Scahill, & Cohen, 1992). Further research is needed to discern the reasons why some fail to respond to habit reversal interventions. Once researchers have ruled out treatment integrity problems (i.e., failure to implement the habit reversal components, especially the response contingent competing response), then efforts should be made to identify circumstances in which the use of habit reversal would be the most promising and situations where its application would be contraindicated.

Adjuncts to habit reversal have also been used to enhance treatment outcome. In one study, a 49-year-old woman was having difficulties remaining compliant with the treatment protocol (Rogers & Darnley, 1997). She reportedly derived much pleasure from manipulating and pulling hair. A self-identified contingent exercise component was added where she would do ten sit-ups each time she stroked or pulled a hair. Although self-monitoring and habit reversal significantly decreased her hair pulling, the addition of contingent exercise helped to eliminate the behavior.

Although habit reversal has the most empirical support, there is much work left to be done in the area. For example, one area for future research may be further delineation of approximate time intervals for follow-up/booster sessions. As with most behavioral therapies, generalization and

maintenance of treatment effects are of concern. Furthermore, systematic attempts should be made to conduct the necessary research to meet the qualifications for habit reversal to be considered for the American Psychological Association's list of empirically validated treatments (Chambless et al., 1998).

### **3.4. Multi-Component Procedures**

Hair pulling has been treated with other behavioral procedures consisting of multiple components. These procedures are comprised of numerous interventions implemented simultaneously making it difficult to isolate the efficacy of individual techniques (Elliott & Fuqua, 2000). An example of such a treatment package was used by Blount and Finch (1988), who successfully decreased hair pulling in a 3-year-old by having the parents differentially reinforce non hair pulling behaviors, interrupt the behavior chain as soon as a hair pull was discernable, and apply a delayed aversive consequence (time-out) if it became noticeable that the child had pulled hair when alone. At a 12 month follow-up, the child was no longer pulling hair according to parental reports (Blount & Finch, 1988). In this study, the differential attention decreased hair pulling in the presence of another person, but the punishment aspect was needed to eliminate hair pulling when the girl was alone.

Blum, Barone, and Friman (1993) also used differential reinforcement combined with other treatment techniques to treat hair pulling in 2 children. For one child, the treatment protocol included an increased number of positive interactions between the parents and child, time-out contingent on a hair pull, and placement of socks on the child's hands if she continued to pull hair in the time-out chair. Treatment for the second child also included increased positive interactions during high-risk times for hair pulling, verbal reprimands contingent on hair pulling, and an incompatible response contingent on a hair pull. As indicated by parental observations, both children had no hair pulling at 1- and 2-year follow-up sessions (Blum et al., 1993). Although these studies report dramatic results, it is unclear which components were the most effective.

### 3.5. Cognitive-Behavioral Procedures

In the past decade, an emergence of cognitive-behavioral conceptualizations and treatments for hair pulling have emerged. The emergence of cognitive-behavioral models is likely a reflection of a movement with mainstream psychology, but also concerns regarding the universal use of the habit reversal treatment package. Concerns specifically targeted the heterogeneity of individuals with hair pulling (Mansueto, Golomb, Thomas, & Stemberger, 1999), the lack of attention habit reversal gives to cognitive variables such as maladaptive thoughts (Stanley, 1999), as well as the overall acceptability of the procedure to adolescents and adults (Keuthen, Aronowitz, Badenoch, & Wilhelm, 1999; Robleck, Detweiler, Fearing, & Albano, 1999). Although the only data supporting these concerns resides in case studies and anecdotal reports (e.g., Robleck et al., 1999), recently published cognitive-behavioral conceptual models (Mansueto et al., 1999) and treatment manuals (Rothbaum & Ninan, 1999) have targeted the potential role of maladaptive thoughts and feeling states as triggers for hair pulling.

The cognitive-behavioral treatment model proposed by Mansueto et al. (1999) includes four general phases, comprising a total of ten different steps. This model encourages the use of a functional assessment to help identify "triggers" for hair pulling that could be altered, avoided, or responded to with a more adaptive behavior, thus reducing hair pulling. The second phase divides the functional assessment information into five different modalities: cognitive, affective, motoric, sensory, and environmental. After the information has been categorized in such a way, the most prominent modalities are identified and treatments targeting those modalities are implemented in phase three (Mansueto et al., 1999). According to this model, most habit reversal components (e.g., awareness and competing response training) are relevant to the motor modality. The final phase of treatment is to evaluate treatment progress through self-monitoring. Relapse prevention strategies are also discussed, with an emphasis on a gradual fading of therapist support (Mansueto et al., 1999).

In the only controlled empirical work on the efficacy of cognitive-behavior therapy to decrease hair pulling, Ninan et al. (2000) compared cognitive-behavior therapy to clomipramine and a pharmaceutical placebo. The cognitive-behavioral treatment package included components such as habit reversal, stimulus control, coping skills training, cognitive restructuring, and relapse prevention techniques. The cognitive-behavioral

treatment package was demonstrated to be significantly more effective than either clomipramine or placebo. There was not a statistically significant difference between clomipramine and placebo. Efficacy of treatment outcome was measured by self-report ratings of severity and impairment, as well as clinician ratings of treatment improvement which were completed by a clinician blinded to the treatment condition.

These results represent the first published account demonstrating the superiority of cognitive-behavioral techniques over pharmacotherapy to decrease hair pulling. However, the first treatment utilized in this cognitive-behavioral treatment package was habit reversal, therefore, the active components of the entire package cannot be easily delineated. The necessity of including additional treatment components to habit reversal has not been empirically verified. Although dissatisfaction with the acceptability and generality of habit reversal has been reported, it has not been demonstrated that additional cognitive components affect either of these variables. Furthermore, there is no evidence that cognitive variables cause, contribute to, or maintain hair pulling. Empirical work demonstrating that the addition of cognitive techniques to habit reversal significantly enhances outcome is necessary before adoption of these techniques can be recommended.

### **3.6. Treatment of Comorbid Thumb sucking**

Successful elimination of hair pulling has also been achieved by targeting treatment on a concurrent habit behavior, namely thumb sucking. Three studies examined the effects of applying an aversive taste treatment to the thumb and all obtained substantial decreases in both thumb sucking and hair pulling in children (Friman & Hove, 1987; Knell & Moore, 1988; Yung, 1993). Watson and Allen (1993) reported similar covariation between thumb sucking and hair pulling, noting a simultaneous reduction after the contingent application of a thumb splint.

Although thumb sucking and hair pulling may reside in the same response class, this is not true for all individuals. In one study, a 6-year-old girl's thumb sucking was decreased to near zero levels with differential reinforcement and response cost procedures, but only a modest decrease was noted in her hair pulling (Long et al., 1999). Once the hair pulling was targeted directly, it also rapidly decreased to near zero levels (Long et al., 1999). Further research to clarify the nature of the observed response covariation is needed.

There are many potential explanations of why hair pulling may decrease even when it is not the primary target of treatment. Friman and Hove (1987) speculated that the covariation between hair pulling and thumb sucking may be explained by both behaviors belonging to the same response class or as part of the same behavioral chain. Given this, one would expect that both behaviors would respond to the same deceleration techniques, as well as increase in response to the same exacerbating conditions (Elliott & Fuqua, 2000). Alternatively, interventions used to decrease thumb sucking may simultaneously increase the response effort necessary to pull hair (e.g., thumb splints). Finally, it is also possible that for some individuals, tactile stimulation (e.g., rolling the hair between fingers) is the primary sensory consequence that maintains hair pulling. Some of the interventions designed to reduce thumb sucking (application of a sticky substance to the thumb) may alter the sensory consequences for hair pulling, thus resulting in a decrease in both behaviors.

Little is known about the effects of other comorbid conditions on decreasing hair pulling. Much of the work in this area has focused on pharmacological treatment of other diagnoses, such as Obsessive Compulsive Disorder. Further work on the effects of behavioral treatments targeting comorbid conditions, such as anxiety or depressive syndromes, would help elucidate any potential relationships between diagnostic categories as well as priorities for treatment planning.

#### **4. FUNCTION-BASED TREATMENTS**

Selecting treatment strategies based on the presumed function of the target behaviors is a hallmark of behavioral approaches to treatment. However, there have been few reports of functional analyses of hair pulling in the literature. One study systematically manipulated conditions of social disapproval, demand, alone, and control with two hair pullers (Miltenberger, Long, Rapp, Lumley, & Elliott, 1998). During the alone condition, both individuals engaged in more hair pulling and were observed to manipulate hair after they pulled it, which suggests the behavior was maintained through automatic reinforcement by sensory stimuli (Miltenberger et al., 1998).

Rapp et al. (1999) conducted a similar functional analysis and determined that hair pulling and hair manipulation occurred only when the participant, a 19 year old with mental retardation, was alone. Because hair manipulation



always followed hair pulling. Rapp et al. hypothesized that the digital stimulation arising from hair manipulation was the reinforcing consequence for hair pulling. To test this hypothesis, Rapp et al. first provided previously pulled or cut hair for the participant to manipulate and then placed a latex glove on the participant's hand to attenuate the stimulation that resulted from hair manipulation. When hairs were available, the participant manipulated these hairs and did not pull her own hair. When the glove was worn, the participant ceased all hair pulling and hair manipulation. The results of this study demonstrated that hair pulling was maintained by digital stimulation arising from hair manipulation. Furthermore, the functional analysis conditions provide an avenue for two different functional treatments; the provision of alternative sensory stimulation to compete with hair pulling and the use of gloves to produce sensory extinction.

Thus far, habit reversal has proven efficacious across a wide range of individuals, some of whom presumably had different controlling variables for hair pulling. This generality of treatment effectiveness could be a result of three processes. First, if treatment failures were not submitted or published in scholarly journals, then we might derive an inflated sense of the efficacy and generality of an intervention such as habit reversal. Second, for the vast majority of TCM cases, especially those treated with habit reversal, hair pulling may fall within the same functional response class (although this is seldom empirically tested in the treatment literature) thus producing reliable results. The limits of habit reversal would be discovered if it failed to produce treatment gains when applied to hair pulling that was maintained by contingencies that deviated from those found in past reliable research. Finally, it may also be the case that habit reversal is analogous to a punishment procedure that is superimposed over a set of unanalyzed contingencies maintaining the hair pulling. The latter situation would be a serious problem if 1) treatment effects were seldom maintained after termination of the habit reversal procedure thus suggesting that whatever contingencies were maintaining hair pulling prior to treatment were still operational or 2) if habit reversal were judged to be a highly intrusive intervention thus accentuating the need for less intrusive alternative treatments based on the function of the hair pulling.

## 5. CONCLUSIONS

Based on the literature, hair pulling appears to be responsive to behavioral interventions, with habit reversal as the most promising intervention. Habit

reversal has been shown to be effective with children and adults of varying levels of severity, but the limits of this treatment intervention have yet to be established. Some have questioned the generality and acceptability of the procedure and have suggested supplementing the procedure with additional treatment components (Rothbaum & Ninan, 1999). The necessity of these additional components has not been demonstrated empirically.

The literature base on TCM is growing, however, the limitations of the majority of studies qualify the conclusions that can be drawn from this body of research. Attempts should be made to use direct observation or response product measures as the primary dependent variables whenever possible. Furthermore, the need for larger-scale clinical outcome trials is great. Although this type of research is difficult, given the prevalence of TCM, it should be considered a high priority.

The next frontier for TCM research should be increased movement towards functional assessment and treatment of hair pulling. Information on the function of hair pulling could relate to prevention, early intervention, and matching treatment to various functional classes of hair pulling. This type of information could also answer questions about the underlying nature of TCM. In particular, questions about whether the disorder should be conceptualized along a continuum of severity or if distinct subtypes of hair pulling exist.

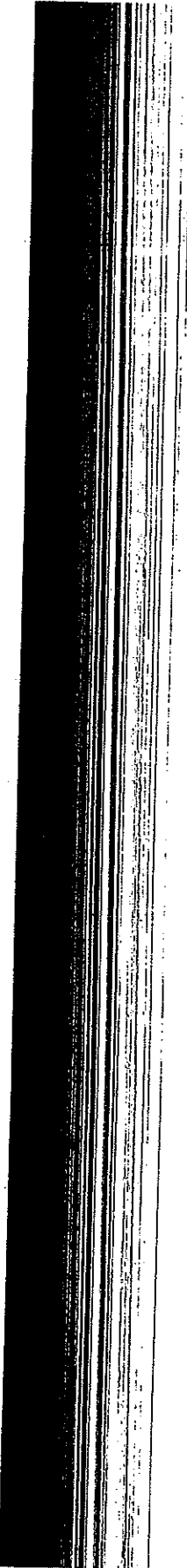
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