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Using Habit Reversal to Decrease Filled Pauses and Nervous Habits in Public Speaking

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Using Habit Reversal to Decrease Filled Pauses and Nervous Habits in Public Speaking

by

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A thesis submitted in partial fulfillment
of the requirements for the degree
Masters of Arts in Applied Behavior Analysis
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ABSTRACT

Public speaking is a challenge faced by people from all walks of life. Research in the area of public speaking has focused on examining techniques to reduce public speaking anxiety. Very little research, however, has focused on the acquisition of public speaking skills. While presenting speeches, many people engage in nervous habits that have the potential to decrease the effectiveness of the speech and their credibility as a speaker. This study evaluated the effectiveness of simplified habit reversal in reducing three of these nervous habits: filled pauses, tongue clicking, and inappropriate use of the word like. Following baseline, participants received simplified habit reversal training that consisted of awareness training and competing response training. During post-intervention assessments all 6 participants exhibited an immediate decrease in all three target behaviors.

CHAPTER ONE:

INTRODUCTION

People of all ages and career levels engage in public speaking, whether it is an oral

presentation in a classroom, a presentation at a professional conference, or even a tribute or toast

at a social function. In the professional world, effective public communication skills are a

valuable asset. Being an engaging and fluent public speaker is one of the keys to successful

public relations (Spohr, 2009). According to Becker and Eckdom (1980), the results of several

studies have shown that in certain situations, public speaking skills are a better indicator of job

success than are specific technical skills. Public speaking is also instrumental in the

dissemination of research in many fields (Tate, 2005). It is crucial that researchers be fluent

public speakers to present their research and its implications in a clear and effective manner.

Thus, being a fluent public speaker has many benefits.

Experiencing anxiety and engaging in nervous habits are the two most common problems

that people experience when making a formal presentation in public. Public speaking anxiety

(PSA) is characterized by physiological arousal, such as an increased heart rate and shallow

breathing, negative covert verbal behavior, such as "I must appear unintelligent," and behavioral

indicators of anxiety, such as trembling hands (Daly, McCroskey, Ayres, Hopf, & Ayres, 1997).

Nervous habits are also commonly manifested during public speaking. They are defined

as repetitive behaviors that have a negative social impact on the individual exhibiting them

(Miltenberger, Fuqua, & Woods, 1998). Examples of nervous habits that occur during public

speaking include shifting weight from one foot to the other (weight shifting), looking at the floor

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or ceiling (eye wandering), decreasing speaking volume and trailing off at the end of sentences (trail offs), making clicking noises with the tongue (tongue clicking), and using filled pauses instead of silent ones (filled pauses) (Spohr, 2009; Tate, 2005; White, 1991).

Despite the importance of competent public speaking, very little research has been conducted in the area of public speaking skill acquisition. A number of studies aimed at reducing PSA examined public speaking skills as a secondary measure however, only a handful of studies have focused solely on skill acquisition. The studies that have examined skill acquisition have examined two main techniques: video feedback and skills training.

Video feedback has been used to increase desirable public speaking behaviors and to decrease behavioral indicators of anxiety. The majority of studies that examined video feedback were conducted in classroom settings (Deihl, Breen, & Larson, 1970; McCroskey & Lashbrook, 1970; Porter & King, 1972). McCroskey and Lashbrook (1970) combined video feedback with both positive and negative teacher feedback. The results showed a positive change in the attitudes of participants towards the course and an improvement in their public speaking skills. Other studies that examined video feedback found similar results, providing further support for its efficacy (Deihl et al., 1970; Porter & King, 1972; Sherman, Mulac, & McCann, 1974).

Video feedback has been used as a tool in skills training, the second technique used to improve public speaking skills. Skills training typically involves instructions, modeling, rehearsal and feedback (Miltenberger, 2012). A number of studies that employed skills training in the reduction of PSA examined public speaking skill improvement as a secondary measure (Bennett, 1984; Fremouw & Zitter, 1978; Hayes & Marshall, 1984). For example, Fremouw and Zitter (1978) found that behavioral rehearsal and video feedback not only were successful in reducing anxiety, but were successful in improving the participants' use of voice inflections,

speaking rate, eye contact, gestures, and overall speech organization. Fawcett and Miller (1975) examined the use of an instructional package combined with behavioral rehearsal and feedback in teaching public speaking behaviors. Participants in this study improved their use of eye contact, gestures, initial speaking behaviors and closing speaking behaviors (Fawcett & Miller, 1975).

Statistics have revealed that public speaking is rated as one of the highest anxiety producing situations that the average American will experience (England et al., 2012). For some people, the thought of public speaking produces more anxiety than the thought of death. As a result, one area that has been explored a great deal with regards to public speaking is anxiety reduction. The treatments for PSA include numerous variations and combinations of cognitive restructuring (CR), cognitive behavioral therapy (CBT), feedback, relaxation training, skills training, self-modeling, acceptance and commitment therapy (ACT) and exposure therapy. Countless studies have examined the effectiveness and accessibility of each of these therapeutic techniques. Systematic desensitization, for example, is one type of exposure therapy that has been studied extensively. There is a large body of research that supports its efficacy in the reduction of PSA (Gatchel, Hatch, Maynard, Turns, & Taunton-Blackwood, 1979; Hemme & Boor, 1976; Kirsch & Henry, 1979; Lent, Russell, & Zamostny, 1981; McCroskey, Ralph, & Barrick, 1970; Meichenbaum, Gilmore, & Fedoravicius, 1971; Paul & Shannon, 1966; Trussell, 1978; Weissberg, 1977; Woy & Efran, 1972; Zemore, 1975). Other types of exposure therapy that have been examined include in vivo desensitization (Gurman, 1973; Kirsch, Wolpin, & Knutson, 1975), flooding therapy (Hayes & Marshall, 1984; Kirsh et al., 1975; Marshall, Parker, & Hayes, 1982), and virtual reality exposure (Harris, Kemmerling, & North, 2002; Heuett & Heuett, 2011; Wallach, Safir, & Bar-Zvi, 2011). Cognitive restructuring (Berman, Miller, &

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Massman, 1985; Meichenbaum et al., 1971; Wallach et al., 2011) and cognitive behavioral therapy have also been found to be effective in the reduction of PSA (Anderson, Zimand, Hodges, & Rothbaum, 2005; Lent et al., 1981; Meichenbaum et al., 1971; Wallach et al., 2011; Weissberg, 1977). Other studies have examined acceptance and commitment therapy (Block, 2002; England et al., 2012), biofeedback (Gatchel et al., 1979; Gatchel, Hatch, Watson, Smith & Gaas, 1977; Gatchel & Proctor, 1976), self-modeling (Germaine, 1983; Rickards-Schlichting, Kehle, & Bray, 2004), and skills training (Bennett, 1984; Fremouw & Zitter, 1978; Hayes & Marshall, 1984; Marshall et al., 1982). It is clear that extensive research has been conducted to test the effectiveness of various techniques to reduce PSA. Despite the large body of literature dedicated to PSA, very few studies have examined public speaking skills acquisition and the reduction of specific nervous habits that inhibit those skills. Only four studies to date have focused exclusively on the improvement of public speaking skills. Three of those studies examined video modeling (Deihl et al., 1970; McCroskey & Lashbrook, 1970; Porter & King, 1972) while the fourth study examined skills training (Fawcett & Miller, 1975).

Due to their repetitive nature and potential negative social consequences, many undesirable behaviors that occur during public speaking could be considered nervous habits. Habits are defined as repetitive behaviors that have negative physical or social effects on the person who exhibits them (Miltenberger et al., 1998). Examples of habit behaviors include nervous habits such as nail biting, hair pulling, and thumb sucking; tic disorders, both motor and vocal; and stuttering.

In the early 1970s, Azrin and Nunn (1973, 1974) developed habit reversal to reduce these types of habit behaviors. Habit reversal included awareness training, competing response training, motivation procedures, and generalization procedures (Miltenberger et al., 1998). In

1985, Miltenberger, Fuqua, and McKinley examined the efficacy of a simplified habit reversal procedure. This simplified procedure, which consists of awareness training and competing response training only, was found to be effective in the treatment of motor tics. Additional studies of simplified habit reversal have found support for its efficacy in the treatment of tics and nervous habits (e.g., Azrin & Peterson, 1989; Miltenberger et al., 1985; Ollendick, 1981).

Habit reversal has been shown to be effective in the reduction of stuttering. In 1974, Azrin and Nunn developed the regulated breathing approach to treat stuttering. The regulated breathing approach, which originally consisted of all four components of regular habit reversal, has since been simplified to include only awareness training, competing response training and social support (Miltenberger et al., 1998). Numerous studies have shown simplified habit reversal to be effective for stuttering (e.g., Elliott, Miltenberger, Rapp, Long, & McDonald, 1998; Miltenberger, Wagaman, & Arndorfer, 1996; Wagaman, Miltenberger, & Arndorfer, 1993).

There are many similarities between the behaviors treated by habit reversal and those nervous habits that occur during public speaking. For example, stuttering and filled pauses are both types of speech disfluencies that cause a temporary disruption in the flow of speech (Myers, Bakker, St. Louis, & Raphael, 2012). Stuttering involves disfluent speech characterized by repeated words or sounds, prolongation of words, or hesitation (Miltenberger & Woods, 1998; Wagaman et al., 1993). The disfluent speech produced by both stuttering and filled pauses results from a word or word sound being produced when it should not. In the case of stuttering, it can be any word or word sound, while in the filled pause it is typically a nonsense syllable such as "uh," "um," or "er" (Clark & Tree, 2002; Goldman-Eisler, 1968; Maclay & Osgood, 1959). Filled pauses typically have been considered indicators of "preparedness problems." Clark and Tree

(2002) state that a speaker deciding what to say, how to say it, or searching for a word are all examples of these "preparedness problems." Thus, when a filled pause occurs in public speaking it alerts the audience that the speaker is experiencing one of these problems. This can lead to a decrease in the speaker's credibility (Clark & Tree, 2002). As a result of this negative social effect, use of the filled pause is strongly discouraged in public speaking courses as well as in professional public speaking (Agarwal, 2007; Clark & Tree, 2002). Other nervous habits that are common problems in public speaking are similar to those behaviors treated by habit reversal. Tongue clicking, weight shifting, inappropriate use of the word "like," and eye wandering are repetitive behaviors that have negative social effects on the speaker.

The successful treatment of stuttering and other nervous habits through simplified habit reversal suggests that this procedure may successfully reduce filled pauses and nervous habits that occur during public speaking. The following study examined the use of habit reversal in the reduction of filled pauses and other nervous habits that occur during public speaking.

CHAPTER TWO:

METHOD

Participants and Settings

Six participants were recruited to participate in this study. All six participants were female. Each participant expressed a desire to improve her public speaking skills and engaged in the three combined habits at least two times per min during public speaking activities. The six participants consisted of both graduate and undergraduate students from three different departments on campus (See Table 1). Each of whom was enrolled at the University of South Florida at the time of the study. Participants who did not meet the previously stated criteria or who had a medical condition (e.g., Tourette's Syndrome) that had the potential to affect any of the target behaviors were excluded from the study.

Table 1. The Student Status and Self-Rating on the Public Speaking Abilities and Confidence Survey (Pre-Habit Reversal Treatment) for the Item: Overall Public Speaking Ability

Participant	Student Status	Overall Public Speaking Ability Score
Amy	Undergraduate	3
Sam	Graduate	2
Laura	Graduate	2
Kate	Graduate	3
Anne	Graduate	3
Jen	Undergraduate	2

Amy was an undergraduate student who indicated that she engaged in the use of fillers very often and felt that her public speaking ability was average. She found the study through the recruitment e-mail sent out by her department. Sam was a graduate student who also indicated that she engaged in the use of fillers very often and rated her overall public speaking ability as below average. Sam specifically indicated that she wanted to participant in the study in order to reduce her use of fillers. Laura was a graduate student at USF who also rated her overall public speaking ability as below average. Both Laura and Sam found the study through a fellow graduate student. Kate was a graduate student who rated her overall public speaking ability as average. Anne was a graduate student who rated her use of fillers and her overall public speaking ability as average. Both Kate and Anne found the study through the recruitment e-mail sent out. Finally, Jen was an undergraduate student who rated both her overall public speaking ability and use of fillers as average. She found the study through the recruitment e-mail sent out. All six participants indicated that they participated in the study in order to improve their overall public speaking ability.

Recruitment flyers that included the contact information of the principal investigator (PI) were placed at various locations on campus. The same flyer was also sent in an e-mail to students on campus. After expressing interest in participating, potential participants were provided with basic information about the study via e-mail. This basic information included the purpose of the study, the time commitment it would require, the estimated start date and length of the study, as well as information on compensation. Participants who expressed further interest in participating met individually with the PI on campus. During this meeting, the PI explained the study, the potential risks and benefits, and answered the potential participant's questions. If he or she

decided to participate informed consent was then obtained. Potential participants were advised that they could leave the study at any time.

All sessions of this study occurred in one of three conference rooms located on the Tampa campus of the University of South Florida. Each conference room contained desks or tables at which the PI and participant could sit.

Target Behaviors

The present study targeted the speech disfluency known as the filled pause and two other nervous habits that often occur during public speaking. Frequency within interval recording was used to collect data on the behaviors listed below.

Filled Pauses

A filled pause occurred when a speaker utters a nonsense syllable. These nonsense syllables included "um," "uh," "ah," and "er." A filled pause was defined as the speaker uttering any of the aforementioned nonsense syllables for any duration of time. Each occurrence of a nonsense syllables was counted as a filled pause, whether the nonsense syllable occurred in isolation, in combination with others, or was repeated.

Tongue Clicking

Tongue clicking was defined as the speaker placing his or her tongue on the roof of the mouth with pressure and then releasing that pressure creating an audible "tsk" or click sound for any duration. Each "tsk" sound was counted as one tongue click.

Likes

Likes were defined as the speaker using the word "like" when it was not grammatically correct. The word "like" was considered grammatically correct if the speaker was making a comparison and "like" could be replaced with "similar to." It was also considered grammatically

correct if the word "like" could be replaced with "such as." In this case; however, the word like had to be preceded with a category and followed by an example of something that would fall into that category. The word "like" was also considered grammatically correct if the speaker used it to indicate enjoyment. The following common phrases were not included as inappropriate use of the word like: "like I said" and "I feel like."

Data Collection and Interobserver Agreement

Data on the target behaviors were collected through watching video recordings of baseline and post-training assessment sessions. Sessions varied in length depending on the phase of the study but all include 3-5-min speeches. Each speech was scored using a frequency within interval recording system (see Appendix H). Intervals were 15 s in length. The rate (responses per minute) of habit behaviors was then calculated for each session.

RAs also collected interobserver agreement (IOA) data. The PI trained RAs using video clips of participants from the baseline phase. The training ended when the RA identified at least 90% of the occurrences of the target behavior correctly across two video clips.

IOA was collected for 33% of all sessions and was calculated using a frequency within interval agreement method. IOA was calculated by dividing the smaller number by the larger number in each interval to calculate a percentage of agreement in each interval, summing the percentages across intervals, and dividing by the number of intervals. Intervals that contained the same number were counted as 100% agreement. IOA was collected on the target behaviors as well as implementation fidelity. There was 87% agreement across all phases and participants. The agreement for Sam ranged from 84%-95% and averaged 87%. The agreement for Jen ranged from 84%-90% and averaged 87.6%. The agreement for Laura ranged from 84%-89% and averaged 86%. The agreement for Anne ranged from 82.4%-100% and averaged 86.6%. The

agreement for Amy ranged from 81.6%-92.5% and averaged 85.2%. The agreement for Kate ranged from 83%-100% and averaged 90.4%.

Speech Topics

Speech topics did not require any specific prerequisite knowledge or research. Topics were general and participants based their speeches on their own experiences or their own personal opinions. The only exceptions to this were the two participants who were current master's students in the Applied Behavioral Analysis (ABA) Program at USF. These two participants presented specific ABA principles that were well known and understood by them. Participants did not present a speech on the same topic more than once.

General Topics. Two topics were selected randomly at the beginning of each session from the following list, and the participant was instructed to choose one on which to speak. Participants were told that they could speak about anything so long as it was related to the topic they chose.

My First Job	If I Could Have Any Job I Wanted
The College Experience	If I Were An Animal
The Most Memorable Moment In My Life Was…	If I Could Speak Any Language
First Relationship	My Favorite Country
If I Could Be Born in Any Decade It Would Be…	My Favorite Movie
If I Could Be Anyone I Would Be	Dogs Are Better Than Cats
My Dream Place to Live	My Favorite Season or Time of Year
If My Life Were a Musical	Ghosts I Would Like To Meet
Favorite Movie	My Favorite Band or Musician
What I Did On Vacation	If I Won The Lottery

What My Life Would Be Like If I Had Superpowers   My Home Town

If I Could Only Have One Food for the Rest of My Life, It Would Be…

A Time When Everything Went Wrong…   Gay Marriage

Favorite Holiday   A Hobby or Pastime

       Applied Behavior Analysis Topics. Two topics were selected randomly at the beginning

of each session from the following list. Participants were instructed to choose one on which to

speak. Only those topics covered in the ABA basic principles class at the time of the assessment

were used.

Reinforcement	Schedules of Reinforcement
Punishment	Stimulus Control
Motivating Operations	Respondent Conditioning
Operant Conditioning	Shaping
Chaining	Prompting
Fading	Token Economies
Behavioral Contracts	Relaxation Training
Systematic Desensitization	In Vivo Desensitization
Cognitive Behavioral Modification	Functional Behavioral Assessment
Behavioral Skills Training	Differential Reinforcement
Extinction	Generalization and Discrimination

Implementation Fidelity

       Implementation fidelity data were collected for all three phases of this study. RAs

collected data on implementation fidelity by examining the videotaped sessions from baseline,

intervention, and post- intervention assessment. RAs scored the sessions using a checklist

provided to them by the PI. The checklist outlined each implementation step and the research assistant circled either "yes" or "no" to indicate if the step was implemented or not. The percentage of correct steps during each session was then calculated by dividing the number of steps completed correctly by the number of steps in the checklist. The checklists for baseline and post-intervention assessment were identical (see Appendix B), while the checklist for habit reversal contained the specific steps involved in the habit reversal procedure (see Appendices C and D). Implementation fidelity was assessed for 33% of sessions during each phase. Implementation fidelity was 100% across participants and phases.

Incentives

Participants were provided with a monetary incentive for their participation in the study. For every two weeks that participants attended all of their scheduled sessions they received $10.00.

Social Validity

Social validity data were collected at two points during this study: before the habit reversal training session and at the completion of the last assessment session. At these times, participants completed a questionnaire on which they rated their public speaking abilities and their comfort level while engaging in public speaking (see Appendix E). At the completion of the last assessment session participants also completed a questionnaire that evaluated the acceptability, satisfaction and ease of implementation of the intervention (see Appendix F). For two participants the social validity questionnaire on public speaking abilities was not completed during baseline. These two participants instead completed a modified questionnaire at the end of the last assessment session (see Appendix G).

Social validity of the outcomes of the intervention was evaluated by rating speech samples from baseline and post-intervention assessments. Research assistants (RAs) who were blind to the phase of the study scored videotaped sessions from baseline and post-training assessments. They scored these sessions using a questionnaire with a 5-point Likert-type scale. The questionnaire was created using a number of items from the *Timed Behavioral Checklist for Performance Anxiety* (Paul, 1966) and *The Checklist of Appropriate Speaking Behaviors* (Marshall & Barbaree, 1988). The checklist examined public speaking behaviors such as fluency, volume, and confidence (see Appendix A).

Design

The present study included two phases: baseline and post-intervention assessment. A multiple baseline across participants design was used to evaluate the effectiveness of habit reversal in reducing filled pauses and nervous habits in public speaking.

Procedure

Baseline

During baseline sessions (and post-intervention assessment sessions) participants met individually with the PI at the conference room on campus. Each meeting began with the PI providing the participant with two topics from which to choose. After choosing a topic, the participant was told that he or she had 10 min in which to prepare and create an outline for a 5-min speech. Paper and writing utensils were available for the participant to use. For the two participants from the Applied Behavior Analysis program, a copy of the textbook *Behavior Modification: Principles and Procedures* (Miltenberger, 2012) was also provided during speech preparation. The PI did not provide any guidelines for the speech outline. Speech preparation ended either when 10 min had elapsed or when the participant indicated that he or she was ready

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to begin. The participant then presented his or her speech to the PI. Each participant was allowed to use his or her outline, but was encouraged to reference it as infrequently as possible while presenting. At 4 min, the PI held up a white 8 ½ x 11 inch piece of paper to signal that the participant had 1 min left to speak. When 5 min had elapsed the PI raised a red 8 ½ x 11 inch piece of paper to signal the end of the speech. If the participant attempted to end the speech before 3 min had elapsed or stopped speaking for more than 15 consecutive s, the PI prompted her by saying, "Please continue." Speeches ended when 5 min had elapsed, or when at least 3 min had elapsed and the participant ended the speech. No feedback was provided during or after the speech. The PI attended to the participant, but did not attend to any of the target behaviors. Data was not collected while the participant presented her speech. Following the completion of the speech, the PI thanked the participant and allowed the participant to leave.

Habit reversal

Intervention occurred in the same conference room as baseline sessions. During habit reversal training, participants met individually with the PI. Intervention included the two components of simplified habit reversal: awareness training and competing response training.

Awareness Training. Awareness training included response description and response detection. During response description, the participant and PI discussed the topography of the target behaviors. During response detection the participant first practiced detecting the target behaviors in a video clip. Each participant watched a 3-min clip of one of his or her baseline speeches and practiced identifying the target behavior in the video. Next the participant practiced identifying the target behaviors while giving a speech. Speech preparation was identical to baseline procedures. Before beginning the speech; however, the PI instructed the participant to raise his or her right hand each time he or she engaged in any of the target behaviors. The PI also

instructed the participant to raise his or her left hand when becoming aware that he or she was about to engage in any of the three target behaviors. The PI also raised her hand each time the participant engaged in any of the target behaviors to aid in the participant's awareness. At 4 min, the PI held up a white 8 ½ x 11 inch piece of paper to signal that the participant had 1 min left to speak. When 5 min had elapsed the PI raised a red 8 ½ x 11 inch piece of paper to signal the end of the speech. If the participant attempted to end his or her speech before 3 min had elapsed or stopped speaking for more than 15 consecutive s, the PI prompted her by saying, "Please continue." Speeches ended when 5 min had elapsed, or when at least 3 min had elapsed and the participant ended the speech. The participant presented the same speech multiple times with an optional 2-min break between presentations. Awareness training ended when the participant identified 100% of the occurrences of the target behaviors in one speech or when the participant identified at least 85% of the occurrences of the target behaviors in two consecutive speeches. At the completion of awareness training the PI offered the participant a 5 min break.

Competing Response Training. After a participant reached the mastery criterion of awareness training, he or she received competing response training. The competing responses for the target behaviors were described and then modeled for the participant. The participant then practiced engaging in each competing response. Subsequently, the participant prepared his or her speech. Two new topics, different from those in awareness training, were provided from which the participant could choose. Speech preparation was identical to the procedures outlined for the baseline phase. The participant then presented his or her speech to the PI. Prior to starting the speech, the participant was instructed to use the competing response contingent on the target behavior. The competing responses for each target behavior were as follows: the competing response for filled pauses was a 3 s silent pause; the competing response for tongue clicking

involved the participant placing his or her tongue so that it contacted the inside of the bottom front teeth in their mouth and the participant held this position for 3 s contingent on the target behavior; the competing response for saying "like" involved the participant beginning the sentence again with an appropriate phrase (e.g., "for example," "such as") or simply without the inappropriate "like." The PI prompted the participant by saying, "Use your competing response" if he or she exhibited one of the target behaviors, but did not engage in the competing response within 2 s. At 4 min, the PI held up a white 8 ½ x 11 inch piece of paper to signal that the participant had 1 min left in which to speak. When 5 min had elapsed the PI raised a red 8 ½ x 11 inch piece of paper to signal the end of the speech. Competing response training ended when the participant presented a speech and exhibited an 80% reduction in the target behavior(s) from his or her average baseline assessments.

Post-Intervention Assessment. The first post-intervention assessment took place no more than 3 days following intervention for each participant. Assessment procedures were identical to those previously described in the baseline section. At the completion of the final assessment session, the PI debriefed the participant and had her complete the social validity questionnaire.

Booster Sessions. If a participant did not exhibit at least a 75% decrease in the target behavior during two consecutive assessment sessions the PI provided a habit reversal booster session. Booster sessions were identical to habit reversal training in all aspects except that the participant did not practice identifying the target behaviors in a video clip during awareness training.

CHAPTER THREE:

RESULTS

The results revealed habit reversal very effectively reduced all three of the target behaviors targeted in this study. Prior to habit reversal training all six participants exhibited a moderate to high rate of interfering speech behavior (baseline mean= 7.38/min). Immediately following habit reversal training, participants exhibited the target behavior(s) at a low frequency (post-intervention assessment mean= 1.43/min) (see Figure 1). These results maintained at a 2-to-5 week follow up for all six participants. For Amy the target behaviors decreased from a mean of 13.4 in baseline to a mean of 2.68 in post-intervention assessment and maintained at 2.4 at a 3-week follow-up. For Sam the target behaviors decreased from a mean of 6.56 in baseline to a mean of 1.42 in post-intervention assessment and maintained at 1.6 at a 3-week follow-up. For Laura the target behaviors decreased from a mean of 12.46 in baseline to a mean of 2.26 in post-intervention assessment and maintained at 3.43 at a 5-week follow-up. For Kate the target behaviors decreased from a mean of 8.29 in baseline to a mean of 0.95 in post-intervention assessment and maintained at 0.66 at a 2-week follow-up. For Anne the target behaviors decreased from a mean of 3.31 in baseline to a mean of 0.93 in post-intervention assessment and maintained at 0.29 at a 2-week follow-up. For Jen the target behaviors decreased from a mean of 5.28 in baseline to a mean of 0.7 in post-intervention assessment and maintained at 0.94 at a 3-week follow-up.

The social validity measures also yielded positive results. With regards to public speaking abilities, participants rated their abilities higher during post-intervention assessment

than they did during the baseline phase (BL M= 2.26, PI Assessment M= 2.97) (See Table 2).

The two items on this questionnaire that improved the most were "comfort level" and "use of

fillers," both of these items increased by over 1 point during post-intervention assessment. On

the questionnaire related to the habit reversal training, participants indicated that they liked the

procedures, found them acceptable and found them to be somewhat to very effective in reducing

their use of fillers (See Table 3). The only item that did not receive an average score of 4 or

higher was "difficulty to participant." The average score for this item was 3.5 indicating that

participants found it somewhat difficult to participate in the habit reversal procedures. The

results of the social validity assessment from evaluation of baseline and post-intervention videos

showed little to no change for 11 of the 12 items listed on the questionnaire (See Table 4).

Research assistants did rate post-intervention videos higher for one item: use of fillers (BL

Mean= 1.75, PI Mean= 3.7).

Table 2. Mean (Range) for Each Item on the Social Validity Scale: Participant's Self Ratings
Public Speaking Abilities and Confidence

Item	BL	Post-Intervention Assessment
Comfort Level	1.83 (1-3)	2.7 (1-4)
Overall Ability	2.67 (2-3)	3.3 (2-4)
Confidence Level	2.6 (1-3)	2.7 (2-4)
Use of Fillers	2.2 (1-3)	3.2 (3-4)
Anxiety Level	2.0 (1-4)	2.5 (2-3)
Overall Score	2.26	2.88

Table 3. Mean and Range for Each Item on the Social Validity Scale: Habit Reversal Treatment

Item

	M	Range
Acceptability	4.5	4-5
Willingness to Participate	4.7	4-5
Possible Disadvantages	4.3	3-5
Difficulty Participating	3.7	2-4
Liked the Treatment	4	3-5
Thought It Was Effective	4	3-4

Table 4. Mean (Range) for Each Item on the Social Validity Scale: Public Speaking Abilities (External Rater)

Item

	BL	Post-Intervention Assessment
Speaker Appeared Comfortable	3.42 (2-5)	3.2 (1-4)
Voice Projection	4.50 (4-5)	4.25 (3-5)
Speaking Rate	3.75 (1-5)	3.83 (2-5)
Eye Contact	3.58 (2-5)	3.25 (1-5)
Speech was Fluent	3 (1-5)	3.5 (1-5)
Speaker Appeared Nervous	3.25 (2-5)	3.33 (1-5)
Use of Movements	3.7 (2-5)	3.7 (2-5)
The speaker was Out of Breath	4.7 (4-5)	4.7 (2-5)
Use of Gestures	3.6 (2-5)	3.7 (2-5)
Use of Fillers	1.75 (1-4)	3.7 (2-5)
Speaker's Confidence	3.3 (1-5)	3.25 (1-4)
Speaker's Overall Ability	2.7 (1-5)	3.1 (2-4)

Speech Disfluencies
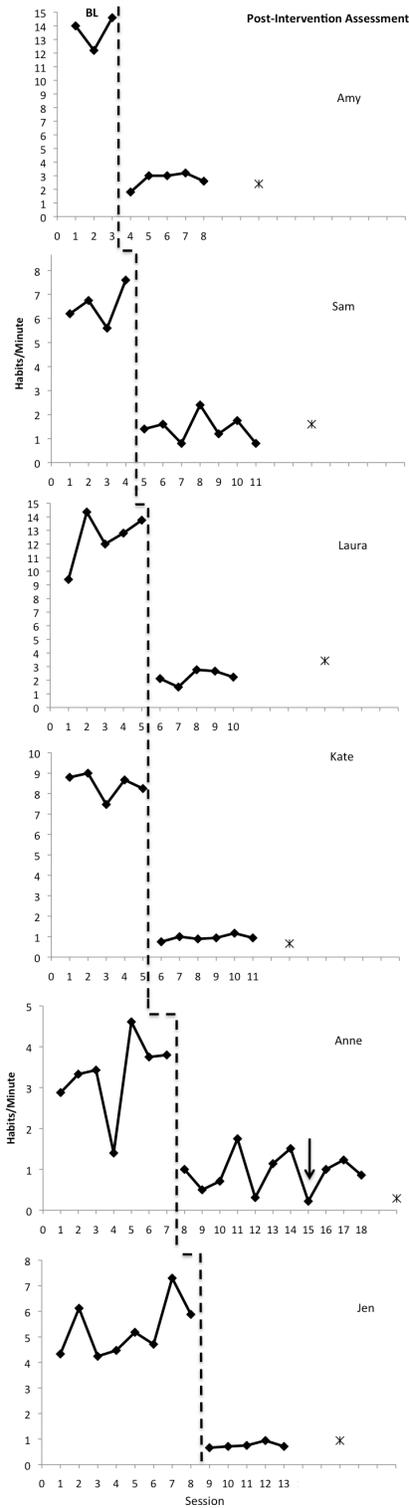
Figure 1. The responses per minute of speech disfluencies across participants during baseline and post-intervention assessment. The downward arrow represents sessions conducted after a participant received a booster session. The asterisk represents a 3-5 week follow-up session.

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CHAPTER FOUR:

DISCUSSION

The results of this study provide strong evidence for the effectiveness of habit reversal to reduce the use of fillers during public speaking. During baseline assessments, participants exhibited a considerably higher rate of behavior than they did during post-intervention assessments. Habit reversal was not only effective but also extremely efficient. All six participants exhibited a decrease in the target behaviors immediately following habit reversal training. For five out of the six participants, a single habit reversal session was sufficient to decrease the target behaviors for the duration of the study. Only one participant received a booster session, after which the rate of all three target behaviors decreased and remained at low levels for the duration of the study. The low level of behavior exhibited during the post-intervention phase was maintained by all six participants at a 2-to-3 week follow-up session. One participant, who was not able to meet for the 2-to-3 week follow-up, exhibited a low level of behavior at a 5-week follow-up.

These results were also reflected in the social validity measures. RAs' ratings of the item "use of fillers" changed a full point from baseline to post-intervention assessment. While this was the only item on the public speaking abilities scale that showed positive change, it was also the only area targeted by the intervention. As well, the other items on the public speaking abilities rating scale were already at or above average/neutral during baseline. Participants' ratings of their own public speaking abilities suggest that the intervention also had a positive effect on their public speaking confidence. Finally, the social validity of this study was also

reflected in the ease of participant recruitment. The PI received an overwhelming response to the recruiting flyers and e-mails. It is clear that the improvement of public speaking abilities is an issue relevant to students of both graduate and undergraduate status.

Not only was simplified habit reversal effective in reducing public speaking habits, but also incredibly efficient. Habit reversal sessions lasted anywhere from 60-90 mins. The booster session conducted lasted a total of 25 min.

The present study adds to the vast amount of research that has been conducted in the area of habit reversal. The efficacy of habit reversal has been demonstrated across numerous behaviors and populations (Miltenberger et al., 1998) including tic disorders (Azrin, Nunn, & Frantz, 1980b; Azrin & Peterson, 1989; Finney, Rapoff, Hall, & Christophersen, 1983; Miltenberger & Fuqua, 1985; Ollendick, 1981), Tourette's disorder (Azrin & Peterson, 1988, 1990) and nervous habits including oral habits, nail biting, thumb sucking, and hair pulling (Azrin, Nunn, & Frantz-Renshaw, 1980; Azrin, Nunn, & Frantz, 1980a; Azrin, Nunn, & Frantz, 1980c; Azrin, Nunn, & Frantz-Renshaw, 1982; Delprato, Aleh, Bambusch, & Barclay, 1977; Miltenberger & Fuqua, 1985; Nunn & Azrin, 1976; Rosenbaum & Ayllon, 1981). Habit reversal has also been used to effectively treat stuttering (e.g., Elliott et al., 1998; Miltenberger et al., 1996; Wagaman et al., 1993). Similar to the results of previous studies on habit reversal, the behaviors targeted in this study all decreased following awareness training and competing response training. These results provide further evidence that simplified habit reversal can be used to reduce a wide variety of habit behaviors.

There are two limitations of the present study. The first limitation is that speeches were not presented in front of an audience. A second limitation is that no generalization probes were conducted. Due to the impromptu nature of the speeches, however, these are presumed to be only

minor limitations. In the current study participants were given a choice of two topics and only 10 min to prepare a speech. In a natural setting, speeches are often rehearsed and prepared well in advance. Thus, it is hypothesized that the results of this study would generalize to a more natural setting in front of an audience without issue. Future research should aim to replicate the present study and examine generalization to a more natural setting. Although the results of this study maintained during the follow-up sessions, this finding is not necessarily an indication that the intervention produced permanent or even long-lasting change. The majority of behaviors that have been effectively treated by simplified habit reversal are behaviors that can be engaged in at any time or location (e.g. nail biting). With these behaviors, the person has the opportunity to practice using the competing response on a regular basis. Although the behaviors targeted in this study can occur at any time, habit reversal was only administered for speeches. If participants did not give a speech for an extended period of time, more than likely, they would not practice the competing response. Furthermore, they might continue to use filled pauses and insert the word "like" in their everyday conversations and therefore these behaviors would be exhibited regularly without intervention. Thus, further investigation should be conducted on the long-term effectiveness of simplified habit reversal intervention on public speaking habits.

The present study employed both components of simplified habit reversal: awareness training and competing response training. During habit reversal training; however, four out of the six participants exhibited an 80% decrease in the target behaviors during the very first speech they gave in competing response training. This finding suggests that for some people, awareness training alone may be sufficient for decreasing habit behaviors. Thus, future research in the area of habit reversal should conduct a component analysis and examine the effectiveness of awareness training alone.

Filled pauses, tongue clicking, and overuse of the word "like" are three of the most common vocal habits in which speakers engage. However, there also are a number of specific motor movement habits in which speakers engage. These habits include weight shifting, unnecessary or excessive gesturing, trailing off, and eye wandering (Spohr, 2009; Tate, 2005; White, 1991). Research should examine the use of simplified habit reversal in reducing these behaviors during public speaking.

This study also adds to the small body of literature that has been conducted in the area of public speaking skills. Although decreasing inappropriate or interfering speech behaviors is important, future research in this area should also focus on methods to improve the overall skills of the speaker including eye contact, posture, voice projection, and use of inflections. In this way, effective speech practices would be strengthened while interfering behaviors would be weakened. Another area of research might also include a component analysis of the treatment package used by Fawcett and Miller (1975). This treatment package used behavioral rehearsal, feedback and an instructional package to improve eye contact, gestures, initial speaking behaviors and closing speaking behaviors. However, not all three of these components may have been necessary to produce a change in the target behaviors. A component analysis should be conducted to determine which of these components are most effective and necessary to effect positive change in public speaking behaviors.

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APPENDICES

Appendix A: Public Speaking Ability Rating Scale (External Rater)

Participant: _____   **Session Number:** _____

Please score each item by circling the number that best indicates how you feel about the speaker's public speaking ability based on the speech you just viewed.

1. The speaker appeared comfortable.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

2. The speaker's voice projection was acceptable.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

3. The speaker spoke at an appropriate rate.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

4. The speaker made eye contact with the audience.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

5. The speaker's speech was fluent.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

6. The speaker appeared nervous.

1	2	3	4	5
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

7. The speaker's use of movements was appropriate.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

8. The speaker sounded out of breath.

1	2	3	4	5
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

9. The speaker's use of gestures was appropriate.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

10. The speaker used fillers, such as um, ah or er.

1	2	3	4	5
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

11. The speaker appeared confident.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

12. How would you rate the speaker's overall public speaking ability?

1	2	3	4	5
Poor		Average		Excellent

Appendix B: Implementation Fidelity Checklist- Baseline and Assessment

Participant: _____   **Session Number: _____**

1. Was the participant given a choice between two topics?	Yes No
2. Was the participant given 10 min to prepare the speech?	Yes No
3. Were materials (writing utensils and paper) and resources (textbook) provided?	Yes No
4. Did the PI raise the white 8 ½ by 11 inch piece of paper after 4 min had elapsed?	Yes No
5. Did the PI raise the red 8 ½ by 11 inch piece of paper after 5 min had elapsed?	Yes No
6. If the participant stopped speaking for more than 15 s or attempted to end his or her speech before 3 min had elapsed did the PI use the prompt, "Please continue?"	Yes No
7. Was the speech at least 3 min in length?	Yes No

Appendix C: Treatment Fidelity Checklist- Awareness Training

Participant: _____

1. Did the participant and PI discuss the topography of the target behavior?	Yes No
2. Did the participant practice identifying the target behaviors in a video clip before giving a speech?	Yes No
3. Was the participant given a choice between two topics?	Yes No
4. Was the participant given 10 min to prepare the speech?	Yes No
5. Were materials (writing utensils and paper) and resources (textbook) provided?	Yes No
6. Did the PI raise her hand each time the participant engaged in the target behavior?	Yes No
7. Did the PI raise the white 8 ½ by 11 inch piece of paper after 4 min had elapsed?	Yes No
8. Did the PI raise the red 8 ½ by 11 inch piece of paper after 5 min had elapsed?	Yes No
9. If the participant stopped speaking for more than 15 s or attempted to end his or her speech before 3 min had elapsed did the PI use the prompt, "Please continue?"	Yes No
10. Was each speech at least 3 min in length?	Yes No
11. Did the participant identify 100% of occurrences of the target behavior in one speech or 85% in two consecutive speeches before awareness training ended?	Yes No

Appendix D: Treatment Fidelity Checklist- Competing Response Training

Participant: _____

1. Did the PI describe and model the competing response?	Yes No
2. Did the participant practice the competing response five times before preparing and presenting a speech?	Yes No
3. Was the participant given a choice between two topics?	Yes No
4. Was the participant given 10 min to prepare the speech?	Yes No
5. Were materials (writing utensils and paper) and resources (textbook) provided?	Yes No
6. If the participant engaged in the target behavior, but did not use the competing response within 3 s did the PI use the prompt "Use your competing response?"	Yes No
7. Did the PI raise the white 8 ½ by 11 inch piece of paper after 4 min had elapsed?	Yes No
8. Did the PI raise the red 8 ½ by 11 inch piece of paper after 5 min had elapsed?	Yes No
9. If the participant stopped speaking for more than 15 s or attempted to end his or her speech before 3 min had elapsed did the PI use the prompt "Please continue?"	Yes No
10. Was each speech at least 3 min in length?	Yes No
11. Did the participant exhibit at least an 80% decrease in the target behavior before the session ended?	Yes No

Appendix E: Social Validity Scale: Participant's Self-Rating Public Speaking Abilities and Confidence

Participant: _____   **Session Number:** _____

Please score each item by circling the number that best indicates how you feel about public speaking.

1. How comfortable are you when engaging in public speaking?

1	2	3	4	5
Not comfortable		Somewhat comfortable		Very Comfortable

2. How would you rate your overall ability as a public speaker?

1	2	3	4	5
Poor		Average		Excellent

3. How confident do you feel when engaging in public speaking activities?

1	2	3	4	5
Not confident at all		Somewhat confident		Very confident

4. How often do you use fillers, such as um, ah or er, during public speaking?

1	2	3	4	5
Very often		Sometimes		Not at all

5. While public speaking, how anxious are you?

1	2	3	4	5
Very anxious		Somewhat anxious		Not anxious at all

Appendix F: Social Validity Scale- Habit Reversal Treatment

Participant: _____

Please score each item by circling the number that best indicates how you feel about the habit reversal intervention.

1. How acceptable was the habit reversal intervention?

1	2	3	4	5
Not at all acceptable		Somewhat acceptable		Very acceptable

2. How willing were you to participate in the intervention?

1	2	3	4	5
Not at all willing		Somewhat willing		Very willing

3. To what extent do you think there might have been disadvantages in the intervention?

1	2	3	4	5
Many likely		Somewhat likely		None likely

4. How difficult was it to participate in the habit reversal procedures?

1	2	3	4	5
Very difficult		Somewhat difficult		Not difficult

5. How much did you like the habit reversal intervention?

1	2	3	4	5
Do not like it at all		Neutral		Liked it very much

6. How effective was the intervention in terms of reducing your use of fillers or nervous mannerisms?

1	2	3	4	5
Not effective		Somewhat effective		Very effective

Appendix G: Modified Social Validity Scale- Public Speaking Abilities

Participant: _____   **Session Number:** _____

Please score each item by circling the number that best indicates how you feel about public speaking.

1. How comfortable did you feel when engaging in public speaking BEFORE the habit reversal training?

   1   2   3   4   5
   Not comfortable   Somewhat comfortable   Very comfortable

2. How comfortable did you feel when engaging in public speaking NOW?

   1   2   3   4   5
   Not comfortable   Somewhat comfortable   Very comfortable

3. How would you rate your overall ability as a public speaker BEFORE the habit reversal training?

   1   2   3   4   5
   Poor   Average   Excellent

4. How would you rate your overall ability as a public speaker NOW?

   1   2   3   4   5
   Poor   Average   Excellent

5. How confident did you feel when engaging in public speaking activities BEFORE the habit reversal intervention?

   1   2   3   4   5
   Not confident at all   Somewhat confident   Very confident

6. How confident do you feel NOW when engaging in public speaking activities?

   1   2   3   4   5
   Not confident at all   Somewhat confident   Very confident

7. How often did you use fillers, such as um, ah or er, during public speaking before the habit reversal training?

1	2	3	4	5
Very often		Sometimes		Not at all

8. How often do you use fillers, such as um, ah or er, during public speaking NOW?

1	2	3	4	5
Very often		Sometimes		Not at all

9. While public speaking, how anxious were you before the habit reversal training?

1	2	3	4	5
Very anxious		Somewhat anxious		Not anxious at all

10. While public speaking, how anxious are you NOW?

1	2	3	4	5
Very anxious		Somewhat anxious		Not anxious at all

Appendix H: Data Sheet

Participant: _____   **Session Number:** _____

Phase (circle one): Baseline   Post-Intervention Assessment

Target Behavior (circle): Filled Pauses   Saying "Like"   Tongue Clicking

1.	2.	3.	4.	5.
6.	7.	8.	9.	10.
11.	12.	13.	14.	15.
16.	17.	18.	19.	20.

Total number of speech disfluencies: _____

Appendix I: IRB Approval

USF
UNIVERSITY OF
SOUTH FLORIDA

RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
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July 5, 2013

Carolyn Mancuso ABA-Applied Behavior Analysis Tampa, FL 33612
RE: Expedited Approval for Initial Review
IRB#: Pro00013609
Title: Using Habit Reversal to Decrease Filled Pauses and Nervous Habits in Public Speaking

Study Approval Period: 7/5/2013 to 7/5/2014

Dear Ms. Mancuso: On 7/5/2013, the Institutional Review Board (IRB) reviewed and **APPROVED** the above application and all documents outlined below.

Approved Item(s):
Protocol Document(s):
Using Habit Reversal to Decrease Filled Pauses and Nervous Habits in Public Speaking (ver 1 6-27-13)

Consent/Assent Document(s)*:
Consent Form (ver 1 6-27-13).docx.pdf

*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent document(s) are only valid during the approval period indicated at the top of the form(s).

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review category:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

John Schinka, Ph.D., Chairperson
USF Institutional Review Board