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USING AWARENESS TRAINING TO DECREASE NERVOUS HABITS DURING PUBLIC SPEAKING

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This study evaluated the effectiveness of awareness training for the reduction of three nervous habits that manifest during public speaking: filled pauses, tongue clicks, and inappropriate use of the word "like." Four university students delivered short speeches during baseline and assessment sessions. Awareness training resulted in meaningful reductions in target behaviors for all participants. Booster awareness training sessions were necessary for all participants to achieve further reductions in target behaviors. Generality probes conducted in front of a small audience indicated that treatment effects generally maintained. Social validity scores indicated that the treatment was acceptable, and participants indicated not only decreased use of verbal fillers, but also improved overall public speaking ability posttreatment.

Key words: awareness training, habit reversal, nervous habits

Azrin and Nunn (1973) developed a habit reversal procedure that consisted of four components: awareness training, competing response practice, habit control motivation, and generalization training. In awareness training, the client is made aware of the target behavior and the situations in which it typically occurs. In competing response practice, the client is taught a specific behavior that is incompatible with the behavior targeted for reduction. Habit control motivation involves a discussion between the client and counselor about the inconvenience and suffering the target behavior causes. Social support is also incorporated in the motivation component. Generalization training involves instruction and practice controlling the target behavior in a natural setting or situation. Habit reversal has been used in a variety of ways to decrease the occurrence of nervous habits, motor tics, and other behaviors (Allen, 1998; Azrin & Nunn, 1973; Azrin, Nunn, & Frantz, 1980; Azrin, Nunn, & Frantz-Renshaw, 1980; Azrin & Peterson, 1988, 1989, 1990; Miltenberger, Fuqua, & Woods, 1998; Nunn & Azrin, 1976; Woods, Miltenberger, & Lumley, 1996). Nervous habits are behaviors that may involve manipulation of objects or movements of body parts that occur repeatedly over a period of time and may function to reduce tension or access automatic reinforcement (Miltenberger et al., 1998). Research has demonstrated that awareness training and competing response training are the essential components of habit reversal in decreasing the occurrence of motor tics and nervous habits (Miltenberger et al.,1998; Woods et al., 1996).

There is a small body of behavioral literature that suggests awareness training alone may be successful in reducing habit behaviors. The promising results from studies examining the effectiveness of awareness training on tics and nervous habits suggest that training a competing response may be an unnecessary component of the habit reversal procedure (Ladouceur, 1979; Nelson, Boykin, & Hayes, 1982; Ollendick, 1981; Wiskow & Klatt, 2013; Woods et al., 1996; Wright & Miltenberger, 1987). By determining the essential components of habit reversal, intervention facilitators can ensure that treatment of habit behaviors is both

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effective and efficient. One area in which awareness training alone has not been examined is public speaking.

Good public speaking skills are an important aspect of several professional and academic occupations. For certain positions, being an adept public speaker is not only beneficial, but also essential to effectively communicate ideas to a group (Spohr, 2009). A common nervous habit that manifests in public speaking is the filled pause or filler. Pause fillers may consist of "ums," "uhs," inappropriately used "likes," "you knows," "I means," or other noises (Clark & Fox Tree, 2002; Henderson, 2007). According to Clark and Fox Tree, these fillers may signal that the speaker is experiencing a temporary linguistic problem such as a momentary inability to emit a particular word or phrase. Fillers may also be emitted due to the speaker's motivation to avoid interruption of his or her speech, and therefore maintain control over the fluency of the speech. Filled pauses can make speakers appear unprepared and less knowledgeable about the topics on which they speak and diminish the credibility of their presentations (Bell, 2011; Henderson, 2007). Agarwal (2007) and Henderson (2007) suggest that silent pauses in the place of filled pauses convey clear, conscientious thought processes and more knowledge on the subject of the speech being given. Clark and Fox Tree maintain that filled pauses are not automatic in nature, because speakers have control over their occurrence. This notion of controllability highlights a similarity between verbal fillers and the habit behaviors targeted for reduction in habit reversal studies. The success of habit reversal in helping people control the occurrence of habit behaviors such as tics, nervous habits, and stuttering suggests that similar methodology could be beneficial in treating nervous habits consisting of verbal fillers in public speaking.

Mancuso and Miltenberger (2016) evaluated the effect of a simplified habit reversal procedure for reducing filled pauses, tongue clicks, and inappropriately used "likes" in public speaking with university students. The simplified habit reversal procedure consisted of awareness training and competing response training. All six participants showed an immediate decrease in the occurrence of the target behaviors following the initial habit reversal session. The results indicate that the simplified habit reversal was an effective, efficient, and socially valid method of decreasing these nervous habits in public speaking. Interestingly, the authors reported that the participants greatly decreased the nervous habits during awareness training even before the competing-response training component of habit reversal was implemented. Based on their observations, the authors suggested that awareness training may be a sufficient intervention on its own for decreasing undesirable nervous behaviors in public speaking. Considering the effectiveness of awareness training in research on habit behaviors and the findings reported by Mancuso and Miltenberger, the purpose of the current study is to evaluate the effectiveness of awareness training alone for the reduction of nervous habits in public speaking.

METHOD

Participants and Setting

Four students attending the University of South Florida participated in this study. The principal investigator (PI) determined whether the potential participants met the participation criteria through an interview including questions about motivation to improve their public speaking skills and frequency of using verbal fillers when speaking in public. Potential participants also delivered a speech using the procedures described for baseline sessions. Participants were included in the study if the rate of their target behaviors amounted to at least two habits per min. Participants were not deceived about the nature of the study. Baseline and training sessions, postintervention assessments, and generality probes took place in a

conference room located in the Department of Child and Family Studies at the University of South Florida, Tampa campus. Participants received $1 for every session they attended.

Karen was a first-year graduate student who expressed interest in improving her public speaking skills to give better presentations in her classes and reported frequently using verbal fillers and speaking very quickly and quietly. Karen's target behaviors included filled pauses (specifically "um" and "uh") and inappropriate use of the word "like." Jasmine was an undergraduate student who expressed interest in improving her public speaking skills to better communicate with others and to improve communication in her classes and occupation. She reported occasional use of verbal fillers during speeches in addition to swaying, poor eye contact, and awkward hand gestures. Jasmine's target behaviors in this study included filled pauses ("um," "uh,"), "likes," and tongue clicks. Tyler was a fourth-year undergraduate student who expressed interest in improving his public speaking skills for his career. He reported frequent use of verbal fillers, specifically the word "like," in addition to poor eye contact while speaking in public. Tyler's target behaviors included filled pauses ("um" and "uh") and "likes." Michelle was a fourth-year undergraduate student who expressed interest in improving her public speaking skills in preparation to present research at national conferences. She reported frequently using verbal fillers in addition to being "terrified" of speaking in public and desired help managing her "nervous energy" while presenting. Michelle's target behaviors included filled pauses ("um" and "uh") and "likes."

Target Behaviors

The behaviors of concern in this study were three nervous habits occurring during public speaking: filled pauses, tongue clicks, and inappropriate uses of the word "like."

Filled pauses. A filled pause was defined as any occurrence of a speech sound or word such as "um" or "uh" that had no semantic meaning in a sentence. Occurrences of filled pauses were scored upon the ending of each speech sound.

Tongue clicks. Tongue clicks were defined as the speaker emitting a click sound with his or her tongue that could be heard from at least 3 m away. Occurrences of tongue clicks were scored upon the discrete ending of each click sound. Only Jasmine engaged in tongue clicks.

Likes. Likes were defined as any occurrence of the word "like" in speech that did not follow correct grammatical, semantic, or syntactical form. This definition could include the speaker saying "like" before describing what someone said (e.g., "She was like, 'I need to leave.") or saying "like" before describing an approximation of a number, size, event, feeling, or cognition (e.g., "I had like, 20 homework assignments."). This definition did not include the speaker saying "like" to express interest (e.g., "I like ice cream.") or similarity between two items (e.g., "I am a lot like her mother.").

Data Collection and Interobserver Agreement

The PI collected data on the occurrences of target behaviors using video recordings of assessment sessions. Frequency within 15-s interval recording was used to collect data on the target behaviors during speeches. Frequency data were recorded separately for each type of target behavior; however, the figure only reports combined habits per min.

Trained research assistants (RAs) also collected data on the target behaviors. RAs were trained to accurately and reliably identify occurrences of the target behaviors using baseline videos of the participants. Interobserver agreement (IOA) was calculated for 33%-36% of sessions across participants. The numbers of occurrences of the target behaviors recorded by two independent data collectors were compared. In each interval, the smaller number of

recorded observations was divided by the larger number of recorded observations to yield a decimal agreement. Equal intervals were scored as 100%. The decimal agreements of each interval were then added together and the resulting number was divided by the total number of intervals. The outcome was then multiplied by 100 to yield a percentage of agreement. Mean IOA across participants and phases was 94%. Mean agreement was 87% (range, 81% to 92%) for Karen, 97% (range, 92% to 100%) for Jasmine, 99% (range, 97% to 100%) for Tyler, and 96% (range, 91% to 100%) for Michelle.

Treatment Fidelity

Data on treatment fidelity were calculated for at least 33% of sessions in each phase of this study. RAs watched video-recorded sessions from each phase of the study and scored implementation steps (see supporting information). The number of steps scored as "yes" was divided by the total number of implementation steps for each list, which yielded a percentage of treatment fidelity. Items scored as "not applicable" were not included in the total number of implementation steps. Treatment fidelity was 100% across all phases and participants.

Social Validity

Participants completed questionnaires that assessed the acceptability and efficiency of the intervention, satisfaction with their individual treatment outcomes, and perception of their individual public speaking abilities and confidence via a 1–5 Likert-type rating scale using only whole number options (see supporting information). Participants completed the questionnaire addressing public speaking abilities and confidence during baseline and following their final assessment.

An RA provided additional social validity data by completing a questionnaire about each speaker's public speaking skills based on one randomly selected video from his or her baseline phase and one randomly selected video from his or her postawareness training (AT) assessment phase (see supporting information). This external rater was different from the other RAs who collected data on target behaviors and treatment fidelity and was not informed of the phases in which the speeches occurred or the behaviors targeted for reduction.

Design

This study used a multiple baseline design across participants. Each participant experienced a baseline and postawareness training phase.

Procedure

Baseline. The sequence of events during baseline proceeded as follows: participants chose a topic on which to speak, used a maximum of 10 min to make notes, and delivered a 3- to 5-min speech. Participants were given a choice between two topics on which to speak. Research was not necessary to develop a speech on these topics. Examples of speech topics include the following: My First Job, If I Could Be Born in Any Decade, and My Favorite Vacation. The speech topics did not differ greatly in terms of familiarity or complexity to the participants, as they were primarily based on personal opinions or experiences. The PI ensured that each participant was given different topics to choose from for each speech so that a topic was not repeated. The PI set a timer for 10 min and told the participant he or she could use the time to organize his or her speaking points and make notes or an outline if desired. The participants were allowed to use a notecard containing brief speaking notes (i.e., incomplete sentences or bullet points) during the speech. When the participant indicated that he or she was ready to begin the speech or when the timer went off, the PI instructed the participant to stand at the front of the room and deliver his or her speech. The

PI sat at a table directly across from the participant. The PI and the participant were the only individuals present in the room for the speech delivery during this phase. The PI initiated recording and provided a vocal count down to the beginning of the participant's speech (i.e., "3, 2, 1, start"). The PI set a timer for 5 min and pressed start at the same time she said, "Start." The PI raised a blank, white sheet of paper when there was 1 min remaining. The PI raised a blank, red sheet of paper when 5 min had elapsed and the timer went off. The video recording was stopped upon completion of the speech. The PI prompted the participant to continue speaking if he or she either discontinued the speech for 15 s or attempted to terminate the speech before 3 min had elapsed. The PI maintained a natural affect and facial expressions during the speech and did not provide feedback about the speech or target behaviors to the participant.

Awareness training (AT). During this phase, the PI implemented the response description and response detection components of awareness training in the context of a speech delivered by the participant. Response description involved a discussion about each participant's behaviors that were targeted for reduction including their unique topographies and operational definitions. The PI then showed the participant a video from the recorded baseline sessions and identified occurrences of each target behavior; this step was response detection. The participant then chose a topic on which to speak and prepared it for 10 min as he or she did in baseline. During the speech delivery, the participant raised his or her right hand contingent on the occurrence of a target behavior. The PI also raised her right hand contingent on the occurrence of a target behavior throughout the beginning of the speech. After the first five behaviors, the PI only raised her hand to prompt the participant if he or she failed to detect an occurrence of a target behavior within 2 s. The participant delivered a speech on the same topic until 100% of target behaviors were accurately identified in one presentation or until 90% were identified across two consecutive presentations. Awareness training was terminated upon meeting this criterion or after the participant exhibited little to no improvement in identifying his or her behaviors after three consecutive speeches. Karen gave four speeches during awareness training (total duration 42 min). Jasmine gave six speeches during awareness training (total duration 51 min). Tyler gave three speeches during awareness training (total duration 22 min). Michelle gave five speeches during awareness training (total duration 36 min). The mean number of speeches delivered during awareness training was 4.5 and the mean duration of awareness training sessions (including response description, response detection, speech preparation, and speech delivery) was 38 min.

Post-AT assessment. The sequence of procedures for the post-AT assessments was the same as baseline.

Booster sessions. If a participant's nervous habits did not decrease by 80% during the first post-AT assessment compared to his or her average baseline level, or if the data indicated an increasing trend, he or she completed a booster-AT session. The procedure for the booster session was the same as awareness training. Following the booster session, the participant completed a post-AT assessment at least a day later. Booster sessions were implemented until the data stabilized during post-AT assessments. Karen gave three speeches during her booster session (total duration 37 min). Jasmine gave three speeches during her booster session (total duration 25 min). Tyler participated in two booster sessions, during which he gave an average of 3.5 speeches (mean duration 30 min). Michelle gave three speeches during her booster session (total duration 23 min).

In Jasmine's first post-AT assessment, she attempted to end the speech before 3 min had elapsed. Upon receiving the prompt to continue

speaking, she engaged in a high frequency of verbal fillers, which increased the overall rate of habits per min for the session and did not reflect an 80% reduction from her baseline mean. Instead of participating in a booster session, she then completed a second post-AT assessment, which indicated an increasing trend in her data. Jasmine then completed a booster session following this second post-AT assessment.

Generality probes. One generality probe per participant was conducted in this study. Generality probes occurred following the participant's final postintervention assessment. Participants were given a choice between two novel speech topics (chosen from the same list) that they had not previously presented. Speech procedures were identical to those described in baseline; however, an audience of five individuals (i.e., the PI and four other individuals) was assembled for the speech delivery. The audience members varied in age and ethnicity. Identifying information of the participant was not revealed to the audience. The audience was not informed of any details about the study such as target behaviors and assessment phases. The audience was instructed to refrain from providing feedback to the participant during and after the speech.

RESULTS

The effects of awareness training on the rate of habit behaviors of the four participants are shown in the figure. Following high levels of target behaviors in baseline, all four participants exhibited a decrease in target behaviors in post-AT assessments. To achieve further reduction, three participants needed one booster AT session and one participant needed two booster AT sessions. Karen's habit behaviors in baseline averaged 12.9 per min and decreased to an average of 2.0 per min in post-AT assessment (range 0.9 - 2.9 per min). Jasmine's habit behaviors in baseline averaged 7.1 per min and decreased to an average of 2.2 per min in post-AT assessment (range 0.9 - 4.6 per min). Tyler's habit behaviors decreased from an average of 6.7 per min in baseline to an average of 1.6 per min in post-AT assessment (range 0.2 - 4.0 per min). Michelle's habit behaviors decreased from an average of 9.3 per min in baseline to an average of 1.7 per min in post-AT assessment (range 0.3 - 1.6). Generality probe data remained well below baseline levels for all four participants, although slightly above the final post-AT data point for three participants (Karen = .9 per min, Jasmine = 2.3 per min, Tyler = 1.1 per min, Michelle = 1.7 per min). In baseline and post-AT assessment, all participants engaged in filled pauses with the highest frequency followed by likes. Jasmine was the only participant who engaged in tongue clicks. A proportionate decrease was observed across the two or three target behaviors for each participant with filled pauses remaining slightly higher than likes (note that these data are not depicted in the figure). The mean duration of speeches changed by no more than .8 min for any participant, suggesting that the rate of speech was mostly consistent across baseline and the post-AT assessment.

In the self-report questionnaire about the participants' public speaking abilities and confidence, participants reported improved scores across all measures. The average scores for comfort level, overall speaking ability, confidence level, use of fillers, and anxiety level improved by 1.5 points or more (see Table 1). The questionnaire about the participants' public speaking abilities completed by an external rater also indicated improvement across all measures from baseline to post-AT assessment (see Table 1). Use of fillers improved by 3 points, the most substantial improvement of all the items scored. Participants rated the awareness training procedures favorably. Karen, Jasmine, and Tyler found the intervention to be acceptable, likeable, easy to participate in, and effective in reducing their verbal fillers. Michelle indicated that the intervention had many possible

Table 1
Mean (Range Across Participants) and Change in Score for Each Item on the Social Validity Scales

Item	BL	Post-AT	Δ
		Public speaking abilities and confidence (self-rating)	
Comfort level	2 (1–3)	3.5 (2–5)	1.5
Overall ability	1.75 (1–2)	3.75 (3–5)	2
Confidence level	1.75 (1–3)	3.5 (2–5)	1.75
Use of fillers	2 (1–3)	4.0	2
Anxiety level	1	3.0 (2–4)	2
		Public speaking abilities (external rating)	
Comfortable appearance	2.25 (2–3)	2.75 (2–3)	.5
Voice projection	2.75 (2–4)	3.5 (2–4)	.75
Speaking rate	2.5 (2–4)	3.25 (3–4)	.75
Eye contact	2.75 (2–4)	3 (2–4)	.25
Speech fluency	2.25 (1–3)	3.5 (3–4)	1.25
Nervous appearance	2	3	1
Use of movements	2	3.25 (2–5)	1.25
Out of breath appearance	2.5 (1–4)	4.25 (4–5)	1.75
Use of gestures	2.5 (2–3)	3.5 (3–4)	1
Use of fillers	1.25 (1–2)	4.25 (4–5)	3
Confidence	2	3.25 (3–4)	1.25
Overall ability	2.25 (2–3)	3.25 (3–4)	1

Note. BL = baseline; AT = awareness training; Δ = change in score.

disadvantages; however, based on her other scores it is believed this was a mistake in scoring due to confusion with the reverse scoring of this item.

DISCUSSION

The results of this study showed that awareness training reduced filled pauses, tongue clicks, and use of the word "like" in public speaking with further decreases after booster training sessions. All four participants exhibited a substantial decrease in their habit behaviors in post-AT assessment sessions compared to their baseline levels with no overlap with baseline. All participants required at least one booster session to achieve a further reduction. Generality of decreased rates of habit behaviors was also evident in probes conducted in front of an audience. For Karen, the generalization probe was the lowest data point in post-AT assessment. For the other three participants, the rate of habit behaviors increased slightly from the final individual assessment, but still were substantially below baseline levels. All participants indicated increased feelings of nervousness and anxiety prior to delivering their speech to the audience, which may approximate more natural conditions in which presentations typically occur. It can be speculated that this reported increase in anxiety contributed to the slight increase in the rate of habits for three participants. Future research might incorporate group speeches into assessment and intervention sessions to help participants not only decrease nervous habit behavior, but also the anxiety that might arise when speaking to a group.

Results from social validity measures in this study indicate that awareness training is an acceptable, likeable, and effective intervention, based on participant self-report. All four participants also reported increased comfort, confidence, and improvement in overall public speaking ability in addition to reductions in anxiety and use of verbal fillers on the self-rating scale. It should be noted that although social validity results were generally positive, the requirement of booster sessions might have negatively impacted the results if it had been

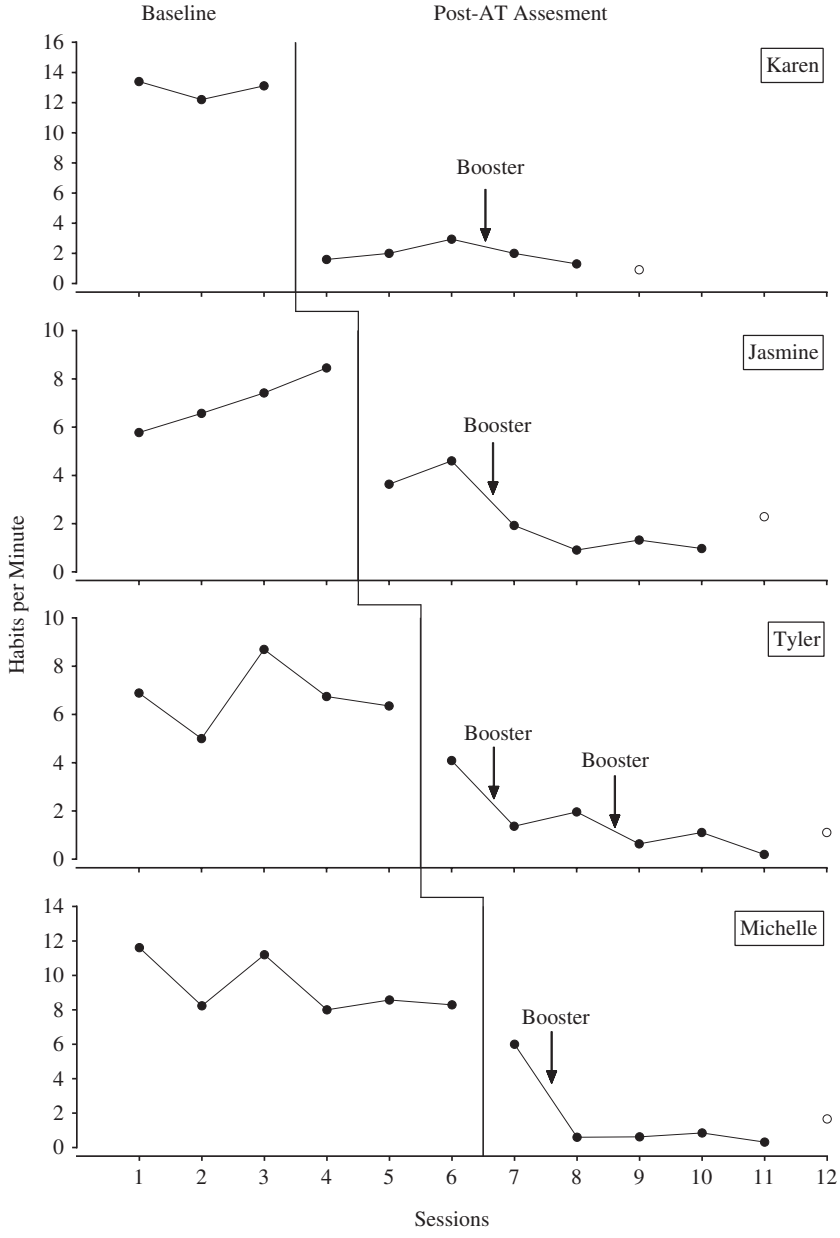

Figure 1. Rate of public speaking habit behaviors for four participants across sessions. Arrows indicate booster-AT sessions. The open data point is the generality assessment.

highlighted in the questionnaires. An external rater who viewed videos of the participants' speeches and was blind to the target behaviors and phase in which speeches occurred indicated that not only did the participants decrease their use of fillers substantially from baseline to intervention (with an improvement of 3 points on a 5-point scale), but they also improved in all other areas with increases ranging from .5 to 1.75.

To gain more insight into the function of awareness training and the possible mechanisms

responsible for behavior change, the participants were asked why they thought the intervention was effective at reducing their use of verbal fillers. The three participants that responded spoke to the effectiveness of response description, particularly knowing which words they used as fillers, and response detection, watching themselves on video and raising their hands contingent on the behaviors, which helped them realize the extent to which they used verbal fillers. Tyler said that raising his hand each time he engaged in a filler prompted him to "take his time to think" about what he was going to say. Tyler's response suggests the action of raising his hand and thinking before speaking may have been akin to a competing response because the competing response for a filled pause is a silent pause (Mancuso & Miltenberger, 2016). It seems as if he may have engaged in a competing response without being told to do so. It was clear in the post-AT assessment sessions that the participants were indeed aware of their behaviors. Upon engaging in a target behavior in a posttreatment speech, participants sometimes exhibited a novel response indicating that they were aware of the behavior that just occurred. These behaviors included eye rolls, sighing, and other gestures that indicated they caught themselves engaging in a behavior they were trying to avoid.

One limitation of the current study is that it contrived presentation opportunities and used impromptu speeches. University students are likely to give speeches on subjects related to their courses of study rather than impromptu speeches, and are likely to use several opportunities to prepare and rehearse their speech before presenting it to an audience. It is also a limitation that baseline performance in front of an audience was not assessed. Although the generality probes allowed us determine acceptable habit rates for speeches presented to an audience, it is still unknown whether treatment effects would generalize to a naturalistic speech environment. Future research may evaluate the use of awareness training or habit reversal on conversational speaking behaviors. Future research may also (a) investigate the effects of awareness training or simplified habit reversal on other nervous habits that occur during public speaking or on untargeted behaviors, (b) evaluate the function of awareness training to identify the behavioral mechanism responsible for decreasing undesirable behaviors and promotion of competing behaviors, and (c) assess the effects of awareness training over time and in different speaking contexts as this study did not evaluate long-term follow-up or performance in different contexts. It may also be interesting to include listening to a recording of oneself giving a speech as a method of increasing awareness in addition to or in place of watching oneself in a video.

One interesting difference between this study and Mancuso and Miltenberger (2016) is that all participants in this study required booster sessions to achieve reductions in the habit behaviors commensurate with the reductions reported by Mancuso and Miltenberger. Repeated exposure to awareness training in booster sessions may have functioned to further establish the aversiveness of engaging in the habit behaviors and reinforce alternative responses or competing responses that avoided those habit behaviors. Although the purpose of evaluating awareness training alone was to determine if AT was efficacious in the absence of competing response training (CRT), the need for booster training sessions suggests that awareness training alone may not be as efficient as AT plus CRT. Mancuso and Miltenberger achieved immediate and substantial decreases in filled pauses in public speaking using one training session consisting of awareness training and competing response training. The current study required two to three sessions of awareness training per participant.

Based on the effects demonstrated in Mancuso and Miltenberger (2016) compared to this

study, we can conclude that the time and effort needed to train a competing response is minimal enough to warrant inclusion of the competing response component in the training process; excluding competing response training may not save time. However, this study still adds value to the literature on habit reversal and awareness training by showing that awareness training alone is an effective intervention for these participants. More research is needed to establish the robustness of this finding.

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