

# Treating Public Speaking Anxiety: A Comparison of Exposure and Video Self-Modeling

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## Abstract

The purpose of this study was to examine the relative effectiveness of video self-modeling (VSM) and exposure therapy in treating public speaking anxiety (PSA) in a college student. The study employed a single-subject A-B design with parametric variations. Two phases were utilized in this study: baseline (exposure therapy) and intervention (video self-modeling) with a one-month follow-up. Generalization probes were also employed to assess whether or not decreases in PSA would generalize to other settings. Results of this study indicate a significant decrease in self-report public speaking anxiety from both pre- to post-treatment as well as from baseline to exposure sessions. However, these results may be specific to public speaking anxiety, as other forms of anxiety (i.e., social anxiety) did not result in similar decreases. Results from a post-treatment survey indicated that the participant felt that the treatment was beneficial in reducing public speaking anxiety and increasing confidence, providing additional support for the treatment package.

**Keywords:** public speaking anxiety, exposure, video self-modeling, treatment, social anxiety

## 1. Introduction

### 1.1 Public Speaking Anxiety

Public speaking anxiety is a pervasive clinical issue, with approximately one in five people reporting an excessive degree of anxiety when speaking in public (Leary & Kowalski, 1995). In college student populations, this problem is particularly concerning with approximately one-third of people reporting at least a moderate need for intervention with public speaking anxiety (PSA; Bishop, Bauer, & Becker, 1998). These rates are even higher among individuals who have been diagnosed with Social Anxiety Disorder (SAD), with approximately 97 percent of people reporting feeling distressed by public speaking (Beidel & Turner, 2007). Social anxiety disorder (SAD) is one of the most common anxiety disorders, with approximately seven percent of the United States population reporting current social anxiety (American Psychiatric Association, 2013). Social anxiety disorder is characterized by an intense fear of social situations in which the individual may be judged by others (American Psychiatric Association, 2013). With the typical onset of social anxiety being during adolescence, many individuals may "grow out" of the disorder. However, for those who do not, the disorder tends to be chronic and causes pervasive impairment. This makes the college years a critical turning point for effectively treating the condition.

Although PSA and SAD have similar origins, research suggests that public speaking anxiety is distinct, in that individuals who are nervous about public speaking may exhibit significant PSA while failing to endorse any other symptoms of social anxiety (Blöte, Kint, Miers, & Westenberg, 2009). Further supporting this notion, in terms of overall anxiety, Blöte et al. (2009) found that individuals with PSA are more similar to non-anxious controls than to individuals with SAD. Although public speaking anxiety is more commonly experienced by individuals with social anxiety disorder than non-anxious individuals, individuals who are only experiencing impairment due to PSA are less likely to seek treatment (Blöte et al., 2009). This may be because impairment related to speech anxiety is less widespread than the numerous levels of impairment experienced by individuals with SAD.

There are many factors that may influence speech-anxious individuals that do not necessarily impact the general public in the same way. For example, research suggests that individuals with high levels of public speaking anxiety are more sensitive to the facial expressions of others than individuals with lower levels of PSA (Dimberg &

Thunberg, 2007). This finding is especially important when implementing an exposure-based intervention for speech anxiety. In order to reduce as much audience influence as possible, members should maintain neutral facial expressions in order to avoid influencing the performer.

Measuring public speaking anxiety without the use of self-report measures can be complex. Although there are some tools that measure physiological aspects of PSA, these methods are often too expensive and complex for outpatient or school settings (Antony, Orsillo, & Roemer, 2001). Additionally, there are few well-established means for measuring behavioral manifestations of anxiety. Speech dysfluencies are common behavioral representations of social anxiety, and they can be measured through direct observation. Anxious individuals are more likely to stutter, repeat themselves, make less eye contact, use verbal crutches (i.e., "um," "uh"), implement unnecessary pauses, and have overall poorer communication skills than non-anxious individuals (Leary & Kowalski, 1995). By using direct observation to measure speech dysfluencies, researchers can better understand and track treatment outcomes.

### *1.2 Treatments of PSA*

The treatment of PSA has been thoroughly addressed in the literature. Although a large proportion of the population reports speech anxiety as a concern, most people do not seek treatment (Leary & Kowalski, 1995). However, there are serious implications for not treating PSA, specifically in the college community. For example, many universities require students to take specific classes to develop their speech skills, and many upper-level courses require presentations. Individuals suffering from speech anxiety may face negative consequences including, but not limited to, poorer grades, embarrassment, and challenges in job interview situations when joining the workforce (APA, 2013). Therefore, treating PSA is vital, and doing so earlier in the lifespan can help prevent the negative outcomes often associated with this condition.

Many of the treatments for PSA are similar to those common of social anxiety disorder. Specifically, behavior therapy and cognitive-behavior therapy are among the most common interventions. Exposure, a form of behavioral therapy is generally quite effective at reducing anxiety, even when this treatment stands alone (i.e., without any cognitive restructuring; Richman, 1995). In order to extend the effects of treatment, Tsao and Craske (2000) suggest expanding the treatment schedule. This involves scheduling sessions further apart (e.g., 5 days, 7 days, 10 days, etc.) in order to reduce spontaneous recovery of speech anxiety.

Social impact theory posits that speech anxiety can be explained by both social desirability and audience size (Beatty & Payne, 1983). For example, individuals are more likely to experience elevated speech anxiety in the presence of a large audience. Furthermore, an individual who desires approval from the audience is at risk of having higher PSA levels (Beatty & Payne, 1983). Although an individual's desire for social approval cannot be directly adjusted as an independent variable, audience size can be modified in order to diminish anxiety levels.

Although there is some discord among researchers as to which type of therapy is most effective in treating PSA, Sefchick, (1987) found that cognitive behavioral therapy, is more effective than both exposure therapy and cognitive restructuring on their own. Some other aspects that may enhance therapy include peer feedback, positive thinking, and skills training (Ayers, 1988; Hayes & Marshall, 1984; Lawm, Schwartz, Houlihan, & Cassisi, 1994).

### *1.3 Video Self-Modeling*

Video self-modeling (VSM) is defined as, "the behavioral change that results from the observation of oneself on videotape that show only desired target behaviors" (Dowrick & Biggs, 1983, p. 105). The theoretical support for VSM is embedded in Bandura's social learning theory. Reciprocal determinism, the basis of social learning theory, posits that the individual's behavior influences the environment and that the environment influences the individual's behavior (Bandura, 1977). One key element of observational learning that makes modeling more likely to occur is that the model and the observer are similar (Bandura, 1977). Because the model and observer are the same person, VSM exemplifies the similarity between the model and observer, thus making the observer more likely to reproduce the desirable behaviors that the model originally produced (Dowrick & Biggs, 1983).

According to Dowrick and Biggs (1983), self-modeling is an effective technique, but there are steps that researchers and clinicians should take when implementing VSM. The major concern to address in VSM is the use of edited video. Because having participants watch themselves make mistakes can be detrimental to the therapeutic process (thereby reducing self-confidence), videos should be edited to remove speech dysfluencies (e.g., stuttering, unnecessary pauses) and other potentially problematic physiological reactions (e.g., blushing, heavy breathing). The edited videos exemplify a major aspect of treatment of social anxiety disorder: cognitive change. By individuals observing only positive aspects of their performances and being unable to negatively evaluate their behavior, which is a major maintaining factor in SAD, cognitive change is occurring (Beidel & Turner, 2007).

However, it is important to have the video seem realistic, so obvious editing should be discouraged (Dowrick & Biggs, 1983).

#### *1.4 History of Use with PSA*

The use of VSM to treat public speaking anxiety is still in its infancy, and results of the research to date are mixed. Kruger (2013) failed to find significant decreases in self-report anxiety between exposure and VSM conditions. Likewise, the results of behavioral manifestations of PSA were mixed with only one participant showing significant decreases in speech dysfluencies while the results from the other participant demonstrated an increase in speech dysfluencies.

Contrary to Kruger' findings, Poppenga (1996) found significant decreases in self-reported public speaking anxiety from baseline to intervention conditions. Poppenga found further support for VSM treatment through reductions in state anxiety and subjective discomfort. Results of behavioral manifestations of PSA were mixed, with some participants demonstrating improvement and other demonstrating stability or deterioration. Although the data demonstrate improvement from pre-treatment to post-treatment, it does not seem that VSM plays a role in the reductions. Rather, it appears as though exposure was the primary cause for reductions in self-report anxiety scores due to the lack of change in score trajectory.

Rickards-Schlichting, Kehle and Bray (2004) also found significant decreases in self-reported speech anxiety from the baseline to intervention phase. However, because this study employed an A-B design as opposed the multiple baseline design used by Kruger (2013) and Poppenga (1996), there are issues related to internal validity (e.g., the role of participant history and external events) that need to be addressed. Although the results of this study are not necessarily robust, a major advantage of this study is the population studied. Although most research on the topic of PSA involves young college students (e.g., Kruger, 2013 & Poppenga, 1996), Rickards-Schlichting et al. established generality by using participants who were in high school, suggesting that VSM treatment of public speaking anxiety can successfully be implemented with younger populations.

The majority of treatment targets of VSM research included increasing appropriate classroom behaviors (e.g., sharing, hand-raising, on-task behavior; Hitchcock, Dowrick, & Prater, 2003). However, VSM has been used to effectively treat more complex tasks including improving swimming performance, math skills, and reading fluency (Dowrick & Dove, 1980; Dowrick & Power, 1998; Dowrick, Power, Ginsburg-Block, Kim-Rupnow, & Manz, 2000; Schunk & Hanson, 1989; Woltersdorf, 1992). Using VSM to treat public speaking anxiety is a growing area of interest; however, the studies done in this area are replete with issues bringing the validity of their results into question.

#### *1.5 The Current Study*

The current study was devised to determine if exposure therapy and video self-modeling effectively treat public speaking anxiety. First, we hypothesize that participants' SIAS scores will decrease from pre-treatment to post-treatment. This hypothesis will be used to determine if the combination of treatments (exposure and VSM) effectively reduce the participant's level of social anxiety, which is commonly associated with public speaking anxiety. Second, we expect to see a decrease in the participant's PRCS-12 scores from pre-treatment to post-treatment. The purpose of this hypothesis is to determine if the treatment package effectively reduces public speaking anxiety. Third, we hypothesize that PRCS scores will be significantly lower in the intervention (VSM) phase than in the baseline (exposure) phase. This hypothesis is being used to verify the effectiveness of VSM at treating public speaking anxiety in comparison to exposure. Fourth, we expect to see that the participant's SUDS scores will be significantly lower in the intervention (VSM) phase than in the baseline (exposure) phase. The issue of concern with this hypothesis is if VSM is more effective than exposure at reducing anxiety levels immediately prior to giving speeches. Finally, we anticipate that the participant's direct observation scores (intervals indicative of PSA) will be significantly lower in the intervention (VSM) phase than in the baseline (exposure) phase. The purpose of this hypothesis is to determine if VSM is more effective than exposure in reducing behavioral manifestations of anxiety.

## **2. Method**

### *2.1 Participants*

Flyers were posted throughout the community advertising a free treatment for public speaking anxiety. Thus, participants were recruited from various locations throughout a Midwestern community. Interested individuals were instructed to contact the researchers with provided contact information and were invited to attend a screening session to determine if the individual met inclusion criteria for the study.

Individuals who were interested in treatment were administered the Personal Report of Confidence as a Speaker-Short Form (PRCS-12; Hook, Smith, & Valentiner, 2008) in an initial screening session. The PRCS-12 was used as the primary screening measure. Because there is no agreed upon cutoff score, a score in the 67th percentile (a score of 8 out of 12) was used as the inclusion criterion to ensure that the individuals screened were truly suffering from public speaking anxiety.

Three individuals attended screening sessions and met inclusion criteria. However, two of the participants dropped out of the study for personal reasons, yielding a single participant. The participant was a 19-year-old female attending school at a mid-sized Midwestern university. She endorsed significant public speaking anxiety, scoring 10 out of 12 on the PRCS in the screening session.

## 2.2 Instruments

At the first and final sessions, the Social Interaction Anxiety Scale (SIAS) was administered. The SIAS is a 19-item self-report scale that measures social anxiety. Two of the items on this scale are reverse coded. This scale was developed by Mattick and Clarke (1998) by combining social anxiety inventories and newly created items based on information obtained from clinical interviews with individuals with SAD. The most predictive 19 items from the original 164 items were selected for use. The SIAS demonstrates high internal consistency ( $\alpha=.90$ ) and fair convergent validity ( $r = .41-.72$ ; Brown et al., 1997; Osman, Gutierrez, Barrios, Kopper, & Chiros, 1998). Sample items include, "I am tense mixing in a group," and "I find it difficult to disagree with another's point of view."

At each session, the PRCS-12 was administered. The PRCS-12 is a 12-item self-report measure that assesses speech anxiety. The 12-item version of this scale, developed by Hook, Smith, and Valentiner (2008), was derived from the 30-item scale to include the 12 most predictive items. The PRCS-12 demonstrates respectable internal reliability ( $\alpha=.85$ ) and acceptable convergent validity ( $r = .15-.54$ ; Hook, Smith, & Valentiner, 2008).

The Subjective Units of Discomfort Scale (SUDS; Shapiro, 1995) was completed immediately prior to giving each speech. In this study, we used a 0-10 rating scale to measure self-report distress, with a zero indicating a complete absence of anxiety, a four indicating anxious thoughts/feelings that cause distraction, an eight indicating that the participant is so anxious they are unable to concentrate, and a ten indicating the highest level of anxiety the participant has ever felt. SUDS scores have been found to be significantly negatively correlated with patients' global assessment of functioning scores, ( $r = -0.439$ ; Tanner, 2012). SUDS scores have also been found to be related to MMPI scores, showing a significant relationship between SUDS and the neurotic index of the MMPI (Tanner, 2012). The SUDS has also been found to effectively track treatment outcomes, with results demonstrating reduction in SUDS scores after 3 months of psychotherapy (Tanner, 2012).

Direct observation was used to record speech dysfluencies during each session. Although the literature suggests using momentary time sampling, some of the behaviors measured relied upon duration measures. As a result, momentary time sampling was considered inappropriate, so partial interval recording was used to measure speech anxiety. Behaviors indicative of speech anxiety are presented in Table 1. Approximately 30 percent of observations were rated by two observers in order to assess inter-observer agreement. Ten-second intervals were utilized in this study, and using partial interval agreement, inter-observer agreement was moderate, with an agreement rate of 86.2%.

Table 1.

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### *Behaviors Indicative of Public Speaking Anxiety*

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Speaking too fast (the recorder cannot understand the speaker)

Speaking too softly (the recorder cannot clearly hear the speaker)

Stammering (unintentional repetition of words or letters within a word, i.e., not for emphasis)

Using verbal crutches (e.g. "um" "uh")

Extensive pauses (5 or more seconds without speaking)

Heavy breathing (i.e. gasping, evidenced by the recorder able to hear the breathing of the participant)

Lack of eye contact (5 or more seconds)

Fidgeting (unnecessary movement of hands/fingers/papers, [i.e., not for emphasis or page-turning])

Motionlessness (10 or more seconds with no movements or gestures)

Swaying (the shifting of weight from one leg to the other and back)

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Note. All of these behaviors were removed during the editing process except lack of eye contact.

In order to address the participant's perception of treatment, a short self-report survey was given at the final session of treatment. This questionnaire included items to assess perception and utility of treatment and any variables that may have served as anxiety-inducing or anxiety-reducing confound.

### 2.3 Design

An experimental A-B design with parametric variations was utilized in this study, with "A" indicating baseline or exposure therapy and "B" indicating intervention or video-self modeling. Because VSM is a type of learning, a withdrawal design would not be appropriate for determining the effects of the intervention. Both baseline and intervention length were randomly assigned after the screening session, with possible length for baseline ranging from 3-7 sessions and intervention ranging from 5-9 sessions. Random number generation was used to select a session within each phase that would be used as a generalization probe.

### 2.4 Sampling Procedure

#### 2.4.1 Exposure Intervention

During the baseline phase, the participant first completed the PRCS and SUDS. Upon completion of these measures, the participant was allowed five minutes to review a pre-written speech. After the five-minute review period, the participant performed a 6-8 minute videotaped pre-written speech that was randomly selected from a speech bank. The participant was allowed the transcript and any notes she wrote during her preparation period. Speech topics were over a range of general knowledge topics such as fast food consumption, tourist attractions, and social networking. Speeches were recorded using a Canon Power Shot ELPH 300 HS digital camera. These video recordings were used for direct observation analysis and were edited as part of the VSM treatment package. Immediately after performing the speeches, the participant was reminded of his/her right to withdraw from treatment. In addition, a debriefing session was conducted in order to alleviate any temporary anxiety that the participant may be experiencing. Imagery training and progressive muscle relaxation were implemented as a part of the debriefing sessions.

#### 2.4.2 Video Self-Modeling Intervention

The only change from baseline to intervention phase was that, in the intervention phase, the participant watched an edited videotape of the speech performed in the last session prior to completing self-report anxiety measures. Speeches were edited with the software CyberLink PowerDirector, in order to remove any speech dysfluencies. Speech dysfluencies removed are listed in Table 1. These videos were between 2-5 minutes, as suggested by Dowrick and Biggs (1983).

#### 2.4.3 Generalization Probes

In order to test generalization, only the researcher was present for speeches. However, for two of the twelve sessions, a larger audience, ranging from three to four people served as probes in order to ensure that treatment was able to generalize to a different audience. To further examine generalization, a follow-up session was conducted one month after treatment completion.

## 3. Results

Overall, the results indicate that treatments were effective at reducing self-reported public speaking anxiety. However, results regarding other forms of anxiety (e.g., social and momentary distress) were mixed.

### 3.1 Social Interaction Anxiety Scale

Prior to treatment, the participant endorsed a score of 25 out of 95 on the SIAS, suggesting the lack of presence of social anxiety disorder. At post-treatment, the participant again endorsed a score of 25. This lack of change indicates that the treatment was unsuccessful at treating PSA, failing to provide support for the first hypothesis.

### 3.2 Personal Report of Confidence as a Speaker

Prior to treatment, the participant endorsed a score of 8 out of 12 on the PRCS. At post-treatment, the participant endorsed 4 out of the 12 items on the PRCS. We used a 50% reduction in symptoms to signify a clinically significant decrease in anxiety symptomatology (Palermo, 2012). The 50% decrease in anxiety symptoms, indicates a significant decrease in PSA from pre- to post- treatment, thus, providing support for the second hypothesis. In addition, VSM did appear to be effective at reducing public speaking anxiety beyond the effects of exposure alone. These reductions suggest that the treatment was fairly effective, with PND = 71.4% (points of non-overlapping data;

Scruggs, Mastropieri, Cook, & Escobar, 1986) providing support for hypothesis 3. These results are maintained, as suggested by results of the follow-up session. These results are presented in Figure 1.

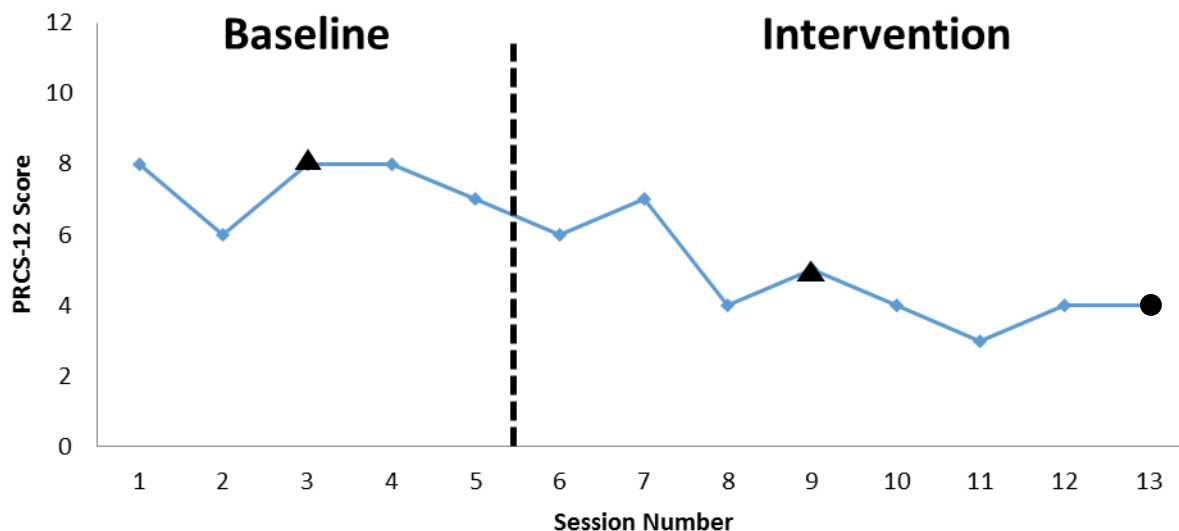


Figure 1. Participant scores on the Personal Report of Confidence as a Speaker. Triangles indicate generalization probes with larger audience size, and the circle indicates one-month follow-up.

3.3 Subjective Units of Discomfort Scale

VSM did not appear to be effective at reducing discomfort associated with public speaking anxiety. Statistical results suggest that this treatment was unreliable at reducing SUDS score, with PND = 14.2%. Although there is a decrease in SUDS scores and this decrease is maintained, these results ultimately fail to support the fourth hypothesis (See Figure 2).

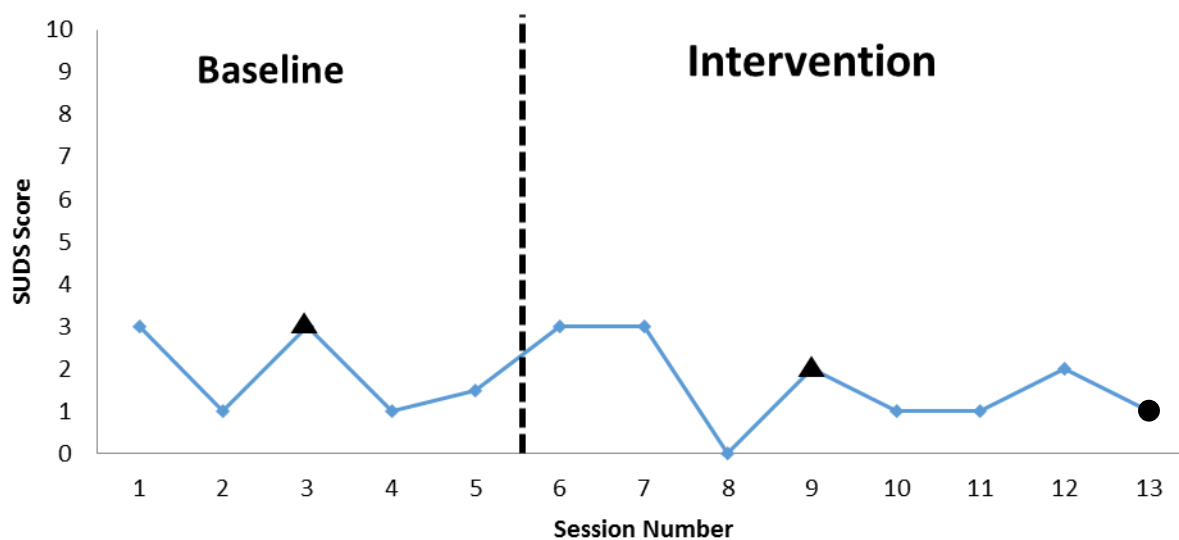


Figure 2. Participant scores on the Subjective Units of Discomfort Scale. Triangles indicate generalization probes with larger audience size, and the circle indicates one-month follow-up.

### 3.4 Direct Observation

Treatment was ineffective at reducing behavioral manifestations of public speaking anxiety, with PND = 0.0 %. In addition, these results are maintained, as indicated by the follow-up session (See Figure 3).

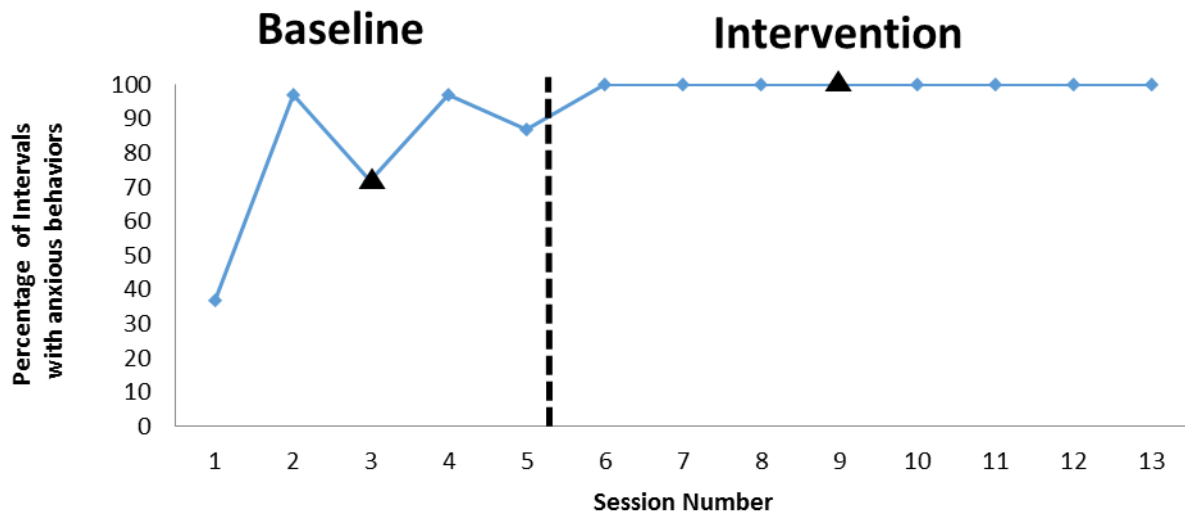


Figure 3. Participant percentage of intervals indicative of anxiety as measured by direct observation. Triangles indicate generalization probes with larger audience size, and the circle indicates one-month follow-up.

### 3.5 Perception of Treatment

The participant indicated that the treatment was effective at reducing public speaking anxiety while also increasing participant confidence while giving speeches. In addition, the participant indicated that she would recommend the treatment to others experiencing public speaking anxiety. Overall, the participant's satisfaction with treatment was high which may have increased the effectiveness of treatment in general.

In addition, a secondary purpose of the perception of treatment survey was to measure any variables that may be influencing treatment outcomes. The participant indicated that there were no other factors that had influenced treatment outcomes. However, the participant did indicate that she had given a speech for a class (prior to session 8), and reductions in anxiety are apparent (see Figures 1 and 2).

## 4. Discussion

Results of this study suggest that public speaking anxiety may be treated with both behavioral and cognitive-behavioral interventions. In addition, results indicate that including cognitive change provides added benefits in treatment that are unlikely to occur from exposure alone. In addition, results were maintained at a one-month follow-up, suggesting that treatment provides long-term decreases in public speaking anxiety. However, these results are specific to public speaking anxiety as the only outcome measure that indicated decreases was the PRCS. Overall, the participant's satisfaction with treatment was high, suggesting that this treatment should be used in the future to treat individuals in a variety of settings who experience anxiety associated with giving speeches.

Although this study does support the hypothesis that VSM provides additional benefits in comparison to exposure alone, research in this area is mixed. Furthermore, these results were only significant with one measure, the PRCS-12. More research needs to be conducted comparing VSM to other interventions in order to determine its effectiveness. In addition, other types of statistical analyses should be conducted to determine significance. For example, split middle or celeration line techniques should be used. These methods are able to test treatment effectiveness when considering the current course of behavior. This is an important consideration because with exposure therapy, the participant generally continues to improve even when another component is added to treatment. By using split middle or celeration line, it can be determined if the additional component provides benefits that would not be elicited by the initial treatment.

### 4.1 Limitations and Future Research

This study has some noteworthy limitations. First, this study has a small sample size, and thus, the options for study design are limited. This study employed an A-B design that lacks the experimental control that would be

provided in a multiple baseline design or a reversal design. Results could be enhanced through replication with other subjects over time. In addition, future research should contain larger sample sizes, in order to potentially produce robust results.

Using video self-modeling to treat public speaking anxiety is a novel method of treatment, and, thus far, only single-subject designs have been used to determine its effectiveness. Future research should include larger, randomized controlled trials to determine treatment effectiveness. By utilizing a larger sample size, statistical power will be increased, and the implications of such a study would be strengthened. Another major limitation of this study is the lack of sensitivity in some of the measures. The SUDS used in this study was an 11-point measure, and the participant scored within a small range on this measure (0-3). In addition, the PRCS is only a 12-point measure. Although the participant did exhibit a larger range of scores (3-10, including screening session), this measure is also fairly insensitive to change. Although some measures utilized in this case did indicate changes in scores, these changes were limited. In order to produce more meaningful and significant results, more sensitive scales should be developed to measure public speaking anxiety.

The debriefing session conducted at the end of each of session may have influenced results. Since relaxation skills were taught in this session, the participants may have utilized these techniques beyond the session which may have confounded the results. This may in fact be the case, as there is a notable decrease in PRCS and SUDS scores from the first to second session. Future research should be conducted without these debriefing sessions.

The major concern with this type of research is the trade-off between internal and external validity. Although an aim of this study was to capitalize on internal validity by implementing controls wherever possible, this results in a lack of external validity that can result in data that are not meaningful. One area within this trade-off is the treatment setting. The participant gave speeches to a small audience, which is atypical of most presentation settings. Furthermore, because the speeches were pre-written, the participants were likely to read the speeches as opposed to performing the speeches. This may aid in explaining why the participant demonstrated higher levels of speech anxiety, as indicated through direct observation data, as treatment progressed.

Future research should be done in a more naturalistic setting. For example, recording sessions in classroom setting in which individuals already give speeches may produce more meaningful results. Because public speaking anxiety is a clinical issue, it is important that results from research are able to be generalized. Thus, it is important for future research to highlight the potential external validity of research.

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