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Effects of Imagined Interactions and Rehearsal on Speaking Performance

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Imagined interactions (IIs) constitute a type of social cognition that can reduce fear of communication. Through the mental preparation enabled by IIs, an individual can reduce disfluencies and mitigate the anxiety that arises from a speech. Study 1 indicated that rehearsal influences the reduction of silent pauses but not vocalized pauses. In addition, those who reported higher levels of communication apprehension demonstrated more total disfluencies throughout the speech. Study 2 examined how utilizing mixed modes of imagery can affect the rehearsal process in comparison to visualizing (VIS) an encounter alone. The results indicated that a rehearsal consisting of both II training and the mixed modes of imagery resulted in more overall fluency in speech and in higher self-reported speech evaluations.

Keywords: message production; communication apprehension; fluency; imagined interactions; visualization

Conceptualized as a primary source of the cognitive, affective, and behavioral manifestations of communicative related anxiety, communication apprehension (CA) has been the subject of extensive study within the field of communication. According to McCroskey (1977), CA can be defined as, “an individual’s level of fear or anxiety with either real or anticipated communication with another person or persons” (p. 78). A critical word in this definition is “anticipated,” as the anxiety regarding a future communicative encounter can be as powerful as the real interaction itself. The transitive verb, anticipated, also implies that communicators can convince themselves into avoiding or otherwise limiting communicative encounters. Shepherd and Edelmann (2007) describe how anxiety can be so intrusive prior to a communicative encounter that it can potentially interfere with normal everyday functioning.

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Research by Ayres, Heuett, and Sonandre (1998) found that high CAs in general avoid preparing, use minimal verbal and nonverbal communication, and avoid thinking about interviews (see also Daly, Vangelisti, & Weber, 1995). As such, it is no surprise that many of the remediation techniques forwarded to mitigate the impact of CA involve imagining the encounter, thereby reducing fear of the unknown (for review see Bodie, 2010). One of the more popular methods for treating people with high anxiety is visualization (VIS), in which people are encouraged to picture themselves succeeding in the communication situation (Ayres & Hopf, 1985). While the research on VIS has provided an important tool for educators and practitioners of communication, the technique is rather vague with regard to the role of message planning. A more detailed prescription for how one can remediate the anxiety felt prior to a communicative encounter is important, and this study attempts to explore a method that goes beyond just visualizing success.

A theory that can assist in clarifying and ultimately rendering techniques such as visualization more useful is found in the work on imagined interactions (IIs; for reviews, see Honeycutt 2003, 2008). Imagined interactions (IIs) are defined as the “process of social cognition whereby actors imagine and therefore indirectly experience themselves in anticipated and/or past communicative encounters with others” (Honeycutt, 2003, p. 2). An individual is able to directly effect his or her own anxiety (i.e., CA) by experiencing a future conversation through one’s imagination (i.e., imagined interactions). Practical advantages of II theory include allowing an individual to address the nervousness that may come from an anticipated communicative encounter, to manage and plan for the specific content of a message, and to ensure that the actual performance or delivery of that message is efficient.

Trait CA refers to an innate composition of an individual, which results in that individual characteristically remaining silent due to anxiety from an anticipated communicative encounter (McCroskey, 1977). Beatty and Friedland (1990) assert that the cause of public speaking anxiety (PSA) is primarily attributed to trait CA, and the researchers call for a remediation technique that addresses this factor. Continuing to investigate this phenomenon allows for the development of a more refined method to address PSA and hopefully provide instruction to those who struggle with innate apprehension toward communication. The refinement of one’s speech performance is important throughout an individual’s personal and professional life, and those in the field of instructional communication would benefit from a more developed training program.

The purpose of this study is to test how the rehearsal functions of IIs facilitate stronger speech performance by addressing the anxiety induced by the public speaking component of CA. The first study establishes the connection between the effect of IIs on verbal fluency in relation to CA. The second study examines the unique attributes of imagined interactions. In particular, Study 2 differentiates II rehearsal from VIS in order to determine which method is better for overall speech fluency thereby creating a more positive evaluation of one’s own speech performance.

Study 1: The Role of IIs on Verbal Fluency in Relation to Communication Apprehension

Imagined interaction theory discusses how people prepare for upcoming conversations by creating cognitive scripts for behavioral enactment (Honeycutt, 2008). IIs may be particularly important in coping with CA because of their benefit in helping individuals define situations and reduce uncertainty (Honeycutt, Choi, & Deberry, 2009). Honeycutt (2010) reviews numerous studies detailing how IIs help individuals define views of themselves, others, and situations through the process of rehearsing for future communication interactions.

Previous findings have revealed that using IIs for emotional catharsis is specifically associated with CA in the context of public speaking (Honeycutt et al., 2009). Catharsis is a function of IIs that helps individuals relieve anxiety, tension and uncertainty. Trait apprehension toward communication is a common problem of students in public speaking courses (for a review, see Bodie, 2010), and in some circumstances this type of social phobia can lead to detrimental behavior (Shepherd & Edelmann, 2007). Remediating the anxiety felt toward communication should benefit an individual's psychological well-being and positively enhance verbal delivery.

Rehearsal and Specificity in Verbal Fluency and CA

Study 1 examines the effect of IIs on verbal fluency in relation to CA. In regard to the delivery of the words spoken during an interaction, studies have indicated that verbal fluency plays a significant factor in the judgment of speakers as competent, attractive, and trustworthy (Greene, 1984; Sellnow, 2004). Variations in two components of fluency—vocalized and silent pauses—seem to contribute heavily to these perceptions. Miller and Hewgill (1964) defined a vocalized pause as an utterance of the “uh” sound between two words within a sentence. Variations of this sound such as “um” and “ur” are also included within the definition. Silent pauses refer to breaks of vocalization in the middle of sentences (Miller & Hewgill, 1964).

Goldman-Eisler (1968) found that hesitation demonstrates the speaker is in the process of thinking about what to say next and that the effects of this cognitive load leads to longer speech on-set latencies. This uncertainty can be overcome through the specificity found within a planned imagined dialogue. Even when obstacles and details are not addressed, the foundation formed by rehearsal increases the participant's ability to regroup and administer variations of contingencies (Berger, 1997). In other words, rehearsal and specificity should have independent effects on fluency, but they should also interact in its prediction.

The functions of IIs have the ability to manage the anxiety attributed to message delivery and can increase verbal fluency. Berger, Karol, and Jordan (1989) describe fluency as being a direct result of mindfulness. When individuals are given time to think before they speak, arguments and strategies can be formulated, resulting in a more fluent style. It is important to note, however, that overly specific plans hinder a speaker's fluency due to multiple options and cognitive load. Berger et al. (1989) explained that

when plans become overly complex, the uncertainty that results from a number of contingencies can potentially increase the hesitation found in disfluent speech.

Regarding CA, a highly apprehensive person feels more obtrusive levels of anxiety in communicating and anticipating communication than those who have less CA (McCroskey, 1977). The concept of CA can be linked to the construct of “reticence,” which signifies a much broader category. Reticence is, “... the most global of the constructs in that it refers to a trait of an individual which results in that individual characteristically remaining silent rather than participating in communication” (McCroskey, 1977, p. 79). CA is actually considered to be a subconstruct of reticence. The predisposition of a reticent individual is caused by a number of different reasons including both situational factors (state) and innate apprehension toward communication (trait).

The characterization of a person with apprehension about public speaking is limited to mean those who avoid this type of communication strictly as a result of an internal fear and/or anxiety. Since the levels of the trait, public-speaking CA, differ significantly from person to person, the initial amount of trait anxiety plays a factor when trying to improve one’s communication skills. Public-speaking CA may have a significant influence on speech performance, and more disfluency should thus be found in the communication of highly apprehensive individuals.

H1: Public-speaking CA is positively associated with disfluency in message delivery.

There seems to be a unique advantage of utilizing IIs to prepare for an important communicative encounter. IIs should help an individual address nervousness and anxiety and ensure that the actual performance or delivery of that message is efficient. Previously, Allen and Honeycutt (1997) found that IIs resulted in fewer nonverbal expressions of anxiety in a health communication context while individuals were devising plans for convincing a friend with a drinking problem to seek help. In general then the rehearsal function of IIs should facilitate stronger speech performance.

H2: The highest number of silent pauses occurs when there is no rehearsal.

H3: The highest number of vocalized pauses occurs when there is no rehearsal.

H4: The highest number of total disfluencies occurs when there is no rehearsal.

IIs allow a speaker to manage and plan for the specific content of a message. Specificity is an attribute or characteristic of IIs that refers to the level of detail and distinction of images contained within the imagined sequence (Honeycutt, 2003). Specificity aids in greater recall of the II and can contain visual (scene of the II) and verbal imagery including descriptive contexts and distinct wording. Observations reported by Honeycutt, Zagacki, and Edwards (1993) revealed that the level of detail in IIs positively predicted several dimensions of conversational sensitivity including the ability to detect meanings in another’s messages, conversational memory and

conversational alternatives. Since the specificity of plans implies more time, thought, and cognition preparing for the interaction, specificity should correlate negatively with public-speaking CA.

H5: Specificity is negatively associated with public-speaking CA.

Methods

Participants. Participants ($N = 95$) for this experiment were enrolled in introductory communication courses at a southeastern university who completed the study as part of course research participation requirements. IRB informed consent was gathered, and participants were divided into two groups: rehearsal and no rehearsal. The rehearsal group consisted of 48 participants, and the no rehearsal group included 47 participants. The sample consisted of approximately 48% female ($n = 46$) and 52% male ($n = 49$) participants who were proportionally divided among both groups. Their age ranged from 18 to 25 ($M = 20$, $SD = 1.61$). Participants were sampled individually and were told that the experiment was a study on small group communication in order for the individual's speech to be emphasized. Before verbal evaluations began, the PRCA-24 was administered in order to identify the trait communication apprehension levels of participants.

Procedure. The sample was randomly divided into the rehearsal and no rehearsal groups. Participants in the rehearsal group listened to a short 4-min training session on IIs that reviewed techniques for rehearsal such as repetition and mentally imagining the successful outcome of a speech in which the audience applauded and gave sincere, positive feedback. The training video included the definition, examples, and procedural steps in IIs. Benefits of this concept were also explained to encourage the use of IIs as rehearsing for anticipated encounters including speeches. The goal of the training was for the subjects in the rehearsal group to prepare for their speeches properly.

After receiving the II training, the subjects were given a predetermined topic that was pertinent to this particular southeastern university. Participants in the rehearsal condition were given 4-min to read over and prepare with their set of notes and then were asked to present their speech. Members of the no rehearsal group did not partake in the training, but were given the same set of predetermined notes. During the 4-min time period, those in the no rehearsal group were given a distracter task to ensure that rehearsal did not take place before they spoke. Those in the control group were asked to list as many words as they could with the letters found in the term "public speaking." This task was used in a similar study evaluating planning's effect on verbal fluency (Allen, 1990). A manipulation check was used to check differences in rehearsal between the two groups (see below).

Coding of the videos. The investigation dealt with two categories of disfluency found in speech: vocalized and silent pauses. In order to assess the frequency of disfluency

in each speech, two coders were trained in a computer program, NONVERB (Honeycutt, 1987). The first 60 s of each speech was videotaped, and both the frequency and the total hesitation time were measured in milliseconds. To measure duration, a key was pressed at the onset of a hesitation and depressed at its offset. Silent pauses with durations of at least two-tenths of a second or longer were measured with the computer program. Our measurements of the hesitation durations utilized the procedures of Thomason and Hopper (1992) and required that our transcribers receive training to listen to the speeches and use NONVERB to code the occurrence of pauses. Additionally, we computed a durational measure of disfluencies in which silent and vocalized pauses were combined. Reliability was assessed by having the two coders cross check with each other on 10 randomly selected speeches. There was a high level of coder reliability (intraclass $r = .87$) for coding the frequencies and duration of disfluency.

Instrumentation. Two separate surveys were necessary for the completion of this experiment. The PRCA-24 (McCroskey, 1982) measures CA in four contexts: public, dyadic, group and meeting CA, and the overall CA is reflected by summing across the contexts. The alpha reliabilities of the overall scale were acceptable, including public-speaking CA: group discussion CA (.84), meetings CA (.88), dyadic CA (.88), public-speaking CA (.87), and overall CA (.94).

A postexperiment survey was constructed using the rehearsal and specificity items from the Survey of Imagined Interactions (SII) (Honeycutt, 2010). The SII was used as a manipulation check to identify whether or not members of both the no rehearsal and rehearsal groups engaged in any type of rehearsal behavior before the exercise began. Individuals in the no rehearsal group who were not given II training may actually have planned on their own accord while those given the training in the rehearsal group may in fact have disregarded rehearsal.

Rehearsal items (e.g., "While preparing my speech, I participated in mental preparation") were adapted to public speaking and were measured using 5-point Likert scaling. Additionally, specificity items were included (e.g., "The plans I formulated before I spoke were very detailed"). The reliability of the items testing rehearsal was .81, whereas the alpha for specificity items was .80.

Results

Manipulation check. A t-test between the no rehearsal and rehearsal groups was significant, $t(93) = -6.25$, $p < .001$, $r^2 = .30$, indicating that the II training produced more rehearsal ($M = 3.47$, $SD = .51$, than the no rehearsal group ($M = 2.63$, $SD = .75$, $CI \Delta [-1.10, -0.57]$) based on the 95% confidence intervals around the mean differences. Furthermore, the rehearsal group reported more specific IIs ($M = 3.01$, $SD = .68$) than the no rehearsal group ($M = 2.13$, $SD = .57$; $CI \Delta [-1.14, -.63]$; $t(93) = -6.83$, $p < .001$, $r^2 = .33$).

Test of hypotheses. The first hypothesis sought to examine whether higher trait CA scores (indicating more anxiety) would predict more disfluency within a speech.

Table 1 Descriptive Statistics and Correlations Between Public-Speaking CA and Disfluencies

Variable	<i>M</i> (<i>SD</i>)	1	2	3	4	5	6	7
1. PSA	13.62 (3.96)	1						
2. Silence	8.48 (3.94)	.10	1					
3. Vocalizations	5.61 (4.49)	.19	.02	1				
4. Disfluencies duration	13.98 (8.30)	.31*	.38*	.26*	1			
5. Total no. of disfluencies	14.09 (6.03)	.21*	.67*	.76*	.44*	1		
6. Planning	3.05 (.77)	-.22*	-.51*	-.14	-.51*	-.44*	1	
7. Specificity	2.57 (.76)	-.24*	-.44*	.00	-.49*	-.29*	.73*	1

*Correlation significant at the .01 level (one-tailed); **significant at the .05 level (one-tailed).

Table 1 contains a summary table of descriptive statistics and correlations. There was a positive correlation between public-speaking CA and the total number of disfluencies, $r(95) = .21$, one tailed $p < .001$. As the participant's trait CA increased, so did the number of total disfluencies. Additional correlation tests were conducted to assess the effects of CA levels on different measurements of disfluency. H1 was supported as a significant positive correlation was found between public-speaking CA and the total duration of disfluency within a speech, $r(95) = .31$, one tailed $p < .001$. Interestingly, a negative correlation was found between public-speaking CA and the average number of plans formulated by participants, $r(95) = -.22$, one tailed $p < .001$.

The second and third hypotheses were concerned with differences in the frequency of silent pauses and vocalized pauses between rehearsal and no rehearsal groups, while the fourth hypothesis examined the duration of disfluencies. A multiple discriminant analysis was used to test H2–H4. Discriminant analysis yields a linear combination of variables that maximally distinguishes between the rehearsal and no rehearsal groups. A supplemental component of discriminant analysis is its ability to produce classification accuracy estimates based on prior probability due to group size (McLachlan, 2004). Thus, knowing scores on disfluency variables that are entered into the analysis results in differential accuracy in classifying participants as rehearsing or not rehearsing.

A significant function emerged, Wilks' $\Lambda = .56$, $\chi^2(3) = 53.11$, $p < .001$. The canonical correlation of .66 revealed a sizable association between the function and the rehearsal groups. The highest loading disfluency variable on the discriminant function was the frequency of silent pausing followed by the duration of combined silent and vocal pauses. An examination of the group centroids revealed that the rehearsal group had fewer silent pauses and a shorter duration of combined disfluencies (Centroid = $-.89$) compared with those who did not rehearse (Centroid = $.87$). Moreover, the function was accurate in classifying 81% of the rehearsal and 83% of the no rehearsal group. Hence, H2 and H4 were supported while H3 was not. Rehearsal is associated with less pausing (H2) and the combined disfluency variable (H4).

However, contrary to H3 there were no group differences as a function of vocal disfluencies alone.

The fifth hypothesis was concerned with the negative association between the specificity of IIs and CA. The hypothesis was supported as revealed in Table 1, $r(95) = -.24$, one tailed $p < .009$. The direction of the sign reveals that having vague as opposed to specific IIs was a predictor of CA.

Discussion of Study 1

The factors that contribute to the fluency in one's speaking style include the amount of rehearsal, the specificity of those plans, and the level of trait anxiety found within the individual. Fluency is a factor that plays a significant role in the perceptions formulated by message recipients; by minimizing the number of hesitations, a speaker can increase the likelihood that his or her message and character are perceived as competent.

The first hypothesis predicted a positive correlation between the level of an individual's public-speaking CA and the disfluencies found in speech. When a person with high CA approaches a speaking encounter, mental preparation is at times forfeited for thoughts concerning their nervous condition. People who experience higher levels of CA can focus on little other than the internal discomfort that comes with extreme anxiety. The results of this investigation supported prior research and indicated a positive correlation between CA and the number of disfluencies. However, the results demonstrated only weak to modest correlations. A reasonable explanation may be that individuals who experience high levels of public-speaking CA actually emphasize preparation to alleviate extremely uncomfortable feelings. In situations where they are forced to communicate then, this extended preparation may reduce the number of disfluencies in the actual encounter.

The next three hypotheses dealt with the influence of rehearsal and revealed that the fluency of a person's speech was affected by II planning. H2 predicted that those led through the rehearsal process would reduce silent pauses within their speech, and the results supported this hypothesis. Participants who did not have time to rehearse had more instances of silent pauses when compared with those who were encouraged to plan. H3 predicted that those who were asked to plan would vocalize less verbal disfluency. Results did not suggest a significant difference for vocalized pauses between those that planned compared with those who did not plan. Allen (1990) found similar results and proposed that regardless of rehearsal, specific word choice was still selected during the actual delivery of the message; thus demonstrating similar verbal disfluencies. H4 analyzed the duration of disfluencies found within messages. The findings of this study show that those who did not plan before the encounter had longer durations of disfluencies. Hence, the rehearsal function of imagined interactions has practical benefits in terms of demonstrating fluency.

Finally, there was support for H5 in which specificity was negatively associated with CA. Berger and his associates (1989) explain that the complexity in one's plan alleviates some of the uncertainty going into an anxiety provoking communicative

encounter. Having vague IIs is associated with CA due to the lack of specific details in the plan enactment.

The research is clear that by minimizing the number of hesitations, a speaker can increase the effectiveness and authority of a message (Goldman-Eisler, 1968; Miller & Hewgill 1964; Stagner, 1936). A limitation of this study is the lack of differentiation between the mixed modes of imagery utilized in IIs and the practice of visualization techniques alone. When an individual is trained to utilize mixed imagery during rehearsal (i.e., visual, verbal, and a combination of both) instead of simply visualizing a positive outcome, there may be a difference found in the production of a speech performance.

Prior research (Gotcher & Honeycutt, 1989) has shown that as participants engage in more detailed processes (i.e., IIs) they experience further reduction of nervousness demonstrated by the minimization of disfluencies in their speech. Prior research in visualization is vague by not explicitly testing the value of detailed message planning, as is done using II induction (Beatty, 1988). By separating these conditions even further, the impact of IIs should be even more evident, and further investigation toward an effective remediation technique could have a significant impact on the way in which CA is addressed within instructional communication. Therefore, Study 2 was conducted to more carefully analyze these predictor variables and to determine the effect of mixed modes of imagery.

Study 2: Separating II Rehearsal and Visualization

As indicated in Study 1, II training and induced mental rehearsal resulted in fewer disfluencies in an individual's speech. In regard to how IIs help a speaker develop more fluency, Honeycutt (2003) described the importance of three modes of imagery: verbal, visual, and mixed. Study 2 investigates the effectiveness of IIs as a remediation technique and attempts to identify the impact of utilizing the three modes of imagery on verbal fluency. By isolating this unique aspect of the II technique, the current study also examines how one's self-reported evaluation of an overall speech performance is affected by the more detailed plans in IIs.

Visualization (VIS) alone occurs when individuals are instructed to relax using systematic desensitization and to visualize success (Ayres & Hopf, 1985). VIS allows a speaker to go through a practice run of the anticipated encounter so that he or she may be more prepared and confident when an actual communicative encounter occurs (Ayres & Hopf, 1987). While this treatment is closely related to a primary II function, VIS only emphasizes the visual planning process and ignores the verbal and mixed modes offered in II Theory.

In VIS, speakers are instructed to relax using systematic desensitization and to visualize success, and the treatment increases both a willingness to communicate and perceptions that individuals are competent communicators (Ayres et al., 1998). However, Beatty (1988) reported that this treatment did not necessarily reduce felt anxiety but had the potential to exacerbate that anxiety by insufficiently addressing the verbal or content aspects of a communicative encounter. Since one's anxiety can

potentially create a negative impact on the overall fluency of a speech (as seen in Study 1), it is important that the preparation for a communicative encounter be thorough and detailed.

While VIS training focuses solely on visual planning, II Theory proposes that preparation sessions where all three forms of imagery are encouraged should be the most effective in reducing disfluencies. IIs, just like the VIS treatment, utilize visual imagery in which individuals are asked to formulate mental images of enacting the anticipated behavior. In addition, however, through an II the person may also use verbal and mixed imagery by changing, enhancing, or subtracting particular verbal and nonverbal behaviors that may or may not help with the situation (Ayres & Hopf, 1985, 1989; Honeycutt, 2003). The more detailed preparation should address PSA by increasing confidence and potentially improving the overall evaluation from the speaker's own perspective.

As important as the verbal fluency exhibited by the speaker, one's own evaluation of the speech may also be impacted by the more detailed preparation offered through IIs. Harvey, Clark, Ehlers, and Rapee (2000) highlight the impact of cognitive preparation when evaluating the success of one's own videotaped speeches. When participants took the time to review the details of a speech performance, the self-reported evaluations were more favorable, and this process of reflection through these mental evaluations seemed to provide a greater sense of confidence. Consequently, we posit an association for the training in detailed IIs and verbal disfluencies.

H6: The combination of a II training along with time given to II mixed imagery rehearsal results in the fewest number of disfluencies followed by II training only and visualization only; the highest number of disfluencies occur under no II training and no visualization.

In order to determine the influence of IIs and VIS on one's self-evaluation of a speech, we examined postspeech reports of self-confidence about speech performance as represented by ease of delivery ratings and additional self-judgments about speaking well. Persons may exhibit fewer disfluencies but still underestimate their performance. Therefore, the following hypothesis was tested:

H7: The combination of a II training along with time given to II mixed imagery rehearsal results in the highest self-ratings of delivery and speaking well followed by II training only and visualization only; the lowest self-ratings of delivery performance occur with no II training and no visualization.

Method

Participants. Participants ($N = 200$) for this experiment were enrolled in communication courses at a western university and completed the study as part of course research participation requirements. The sample consisted of approximately 21% male ($n = 42$) and 79% female ($n = 158$) participants who were proportionally divided among four different experimental conditions. The age of participants ranged from 18

to 28 ($M = 19.6$, $SD = 1.62$). The majority of the sample was Caucasian (58%), followed by Asian American (7%), Hispanic (7%), Asian (6%), African American (5%), and Latino (5%). The remaining percentages consisted of Pacific Islander, Middle Eastern, and other combinations. Participants were told that the experiment was a study on public speaking in order for the individual's speech to be emphasized.

Procedure. The sample was divided into four groups, three experimental groups, and one control group. Participants in the study were randomly assigned to one of the four groups using a random numbers table and then sampled individually. The three experimental groups were asked to either participate in II training, spend time visualizing to prepare themselves for an upcoming speech without any II training, or be engaged in a combination of II training and II mixed imagery rehearsal. The control group did not go through the II training or have time to conduct any visualization or rehearsal about their upcoming speech, but instead was led through a series of distractor tasks similar to the one described in Study 1. All subjects were given a set of predetermined notes on a topic that was pertinent to this particular western university and were then asked to deliver a public speech to an imaginary group of their peers.

II training only group. Participants in the first experimental group were given the 4-min II training video. The short training session on IIs reviewed techniques for rehearsal such as repetition and mentally imagining the successful outcome of a speech in which the audience applauded and gave sincere, positive feedback. The training video also included the definition, examples, procedural steps in IIs, and emphasized the mixed imagery utilized in the II process. Benefits of this concept were then explained to encourage the use of IIs as rehearsal. Those in this first group, however, were not given any time to actually conduct IIs for their upcoming speech, but instead participated in a 4-min distractor task before delivering their speech. The purpose for this experimental condition was to create a clear distinction between the impact of II training alone and the added benefit of actually practicing the mixed mode training.

VIS only group. Participants in this experimental condition did not view the training video on IIs, and instead started with a 4-min distractor task to fill the same amount of time given to others placed in different groups. After this task, members of this group were instructed simply to visualize successfully delivering the speech as preparation and then to deliver a public speech to an imaginary group of their peers. Participants in this group were then given 4-min to rehearse for their recorded speech.

Combined II training / II mixed imagery rehearsal group. The third group was allowed to view the II training video for 4-min, and was also given 4-min to rehearse by conducting mixed imagery IIs and plan for their speech.

Distractor group. The final group did not listen to the 4-min training tape on IIs; nor were they given the opportunity to plan or visualize for their speech. The control group participated in two distractor tasks: one lasting 4-min which corresponded with the time spent for the II training video, and another task for an additional 4-min which corresponded to the rehearsal time given to the other groups.

After completing the various tasks assigned to each group, participants were asked to deliver their videotaped speeches and fill out the postexperiment survey. The survey included a manipulation check and a Speech Evaluation Questionnaire (Harvey et al., 2000), which asked them to rate speech performance (e.g., “overall how well you think you came across” and “how well you think you performed during the speech”). Alpha was .98 for this measure. Finally, participants were asked to rate how well they spoke (Rapee & Lim, 1992), and these items included, “I spoke well” and “I made a good impression.” Alpha was .89 for this measure.

Coding of the videos. Identical to the coding process in Study 1, the first 60 s of each speech was videotaped and analyzed by two coders. NONVERB (Honeycutt, 1987) was used again here, and a durational measure of disfluencies was computed. Both silent and vocalized pauses were combined in Study 2 in order to focus the analysis on the remediation techniques and to determine which would be most effective to address fluency. Previous research in the psycholinguistics literature describes the phenomenon of breakdown fluency (De Jong, Steinel, Florijn, Schoonen, & Hulstijn, 2012) and encourages the analysis of overall fluency. Skehan (2003) as well as Tavakoli and Skehan (2005) noted that utterance fluency is a construct with several aspects including breakdown fluency, speed fluency and repair fluency. Breakdown fluency has to do with the ongoing flow of speech and can be measured by counting the number and length of both filled and unfilled pauses. Speed fluency has to do with the speed that speech is delivered and can be measured by calculating speech rates including the number of syllables per second. Repair fluency has to do with how often speakers use false starts, utilize corrections, or produce restatement. Our interest here is breakdown fluencies, specifically.

Also, it is noted that speech length and words may be negatively correlated with anxiety. However, we used only 60 s that were coded in order to control for durational anxiety. Indeed, differences in both state and trait anxiety have been observed by researchers as they examine PSA across four signposts of public speeches: *anticipation*, the minute preceding the speech; *confrontation*, the first minute of the speech; *adaptation*, the last minute of the speech; and *release*, the minute following the speech (Witt, Roberts, & Behnke, 2008). Additionally, Behnke and Sawyer (1998, 1999) found that most speakers report the greatest trait anxiety before a speech, followed by significant decline throughout the speaking and postspeaking periods. Due to these findings, we examined confrontation during the first minute of the speech.

Having the two coders cross check with each other on 10 randomly selected speeches assessed reliability. There was a high level of coder reliability (intraclass

$r = .87$) for coding the frequencies and duration of disfluency. An intraclass correlation was computed based on using 10-s observational windows.¹

Results

Manipulation check. The manipulation check consisted of 14 items designed to measure rehearsal (e.g., I planned out what I would say) and visualization (e.g., When preparing to speak, I pictured images of myself speaking about the given topic). An exploratory factor analysis with varimax rotation revealed these factors with the following stable reliabilities: rehearsal $\alpha = .77$, visualization $\alpha = .87$. A series of one-way ANOVAs were run on each index; each was significant. The II training/II mixed imagery rehearsal group ($M = 3.35$, $SD = .74$, 95% CI [3.14, 3.57]) and the II training only group ($M = 3.20$, $SD = .79$, 95% CI [2.97, 3.43]) reported more rehearsal compared with the visualization ($M = 2.35$, $SD = .89$, 95% CI [2.10, 2.60]) and no-training groups ($M = 1.94$, $SD = .80$, 95% CI [1.71, 2.17]); $F(3, 196) = 34.04$, $p = .000$.

Finally, for visualization, the combined II training/II mixed imagery rehearsal group reported the most visualization ($M = 3.22$, $SD = .95$, 95% CI [2.95, 3.49]) followed by the visualization only ($M = 2.50$, $SD = .92$, 95% CI [2.25, 2.76]) and II training only groups ($M = 2.55$, $SD = .83$, 95% CI [2.31, 2.79]) while the no-training group had the least amount of visualization ($M = 1.96$, $SD = .88$, 95% CI [1.71, 2.21]); $F(3, 196) = 16.86$, $p = .000$. Collectively, these results reveal that the combined group (II training/II mixed imagery rehearsal) reported the highest amount of rehearsal, specificity, and visualization, while the no-training group had the least amount. The II training only group reported more rehearsal than the visualization only group, and as expected, there was similar visualization occurring between these conditions. Hence, the manipulations were confirmed while revealing the nuances and subtleties of these training techniques.

Test of hypotheses. In order to test the sixth hypothesis concerning the effectiveness of the II training/II mixed imagery rehearsal group being the most effective technique to reduce disfluencies, a one-way ANOVA was run with planned contrasts. There was partial support for the hypothesis. There was a small but significant effect for the planned contrasts, $F(1, 185) = 4.11$, $p = .04$, $\eta^2 = .02$. Figure 1 reveals the mean plots showing the fewest number of disfluencies were in the II training/II mixed imagery rehearsal group ($M = 17.49$, $SD = 5.77$, 95% CI [15.80, 19.18]). Yet, this was statistically equivalent to the II training only condition ($M = 17.80$, $SD = 6.93$, 95% CI [15.75, 19.86]). Contrary to H6, the highest number of disfluencies was in the visualization only training condition ($M = 20.43$, $SD = 9.25$, 95% CI [17.71, 23.14]) followed by the no-training condition ($M = 18.98$, $SD = 5.68$, 95% CI [17.35, 20.61]).

The seventh hypothesis predicted differences in self-ratings of speech performance across training conditions. First, there was a significant effect for training condition on postspeech evaluations of effective delivery, $F(3, 196) = 4.02$, $p = .008$, $\eta^2 = .06$. Figure 2 displays the mean plots for postspeech confidence about delivery. Contrasts revealed that the II training/II mixed imagery rehearsal condition resulted in the

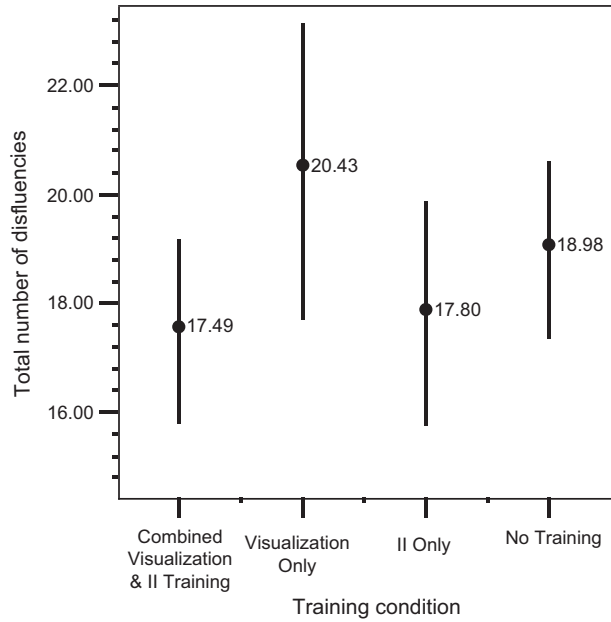


Figure 1 Total number of disfluencies. Note: 95% mean confidence intervals revealed by column lines.

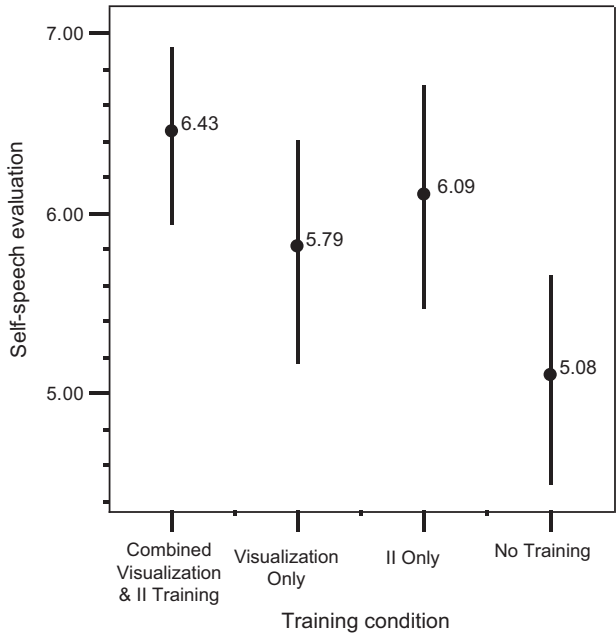


Figure 2 Postspeech self-evaluation of delivery. Note: 95% mean confidence intervals revealed by column lines.

highest self-confidence ($M = 6.43$, $SD = 1.75$, 95% CI [5.94, 6.92]) followed by the II training condition only ($M = 6.09$, $SD = 2.14$, 95% CI [5.47, 6.71]) compared with the no-training condition ($M = 5.08$, $SD = 2.04$, 95% CI [4.50, 5.65]). While it approached significance at the .08 alpha level, the visualization training only condition did not result in any more self-confidence after the speech ($M = 5.79$, $SD = 2.20$, 95% CI [5.17, 6.41]) compared with the no-training condition.

Similar results were obtained for postspeech ratings of speaking well, $F(3, 196) = 2.79$, $p = .04$, $\eta^2 = .04$, as revealed in Figure 3. Contrasts revealed that the II training/II mixed imagery rehearsal condition ($M = 3.38$, $SD = .72$, 95% CI [3.18, 3.58]) and the II training condition were close in their perceptions about speaking well ($M = 3.14$, $SD = .86$, 95% CI [2.89, 3.38]) compared with the visualization only condition ($M = 3.08$, $SD = .77$, 95% CI [2.88, 3.39]) and no-training conditions ($M = 2.94$, $SD = .79$, 95% CI [2.72, 3.17]).

Discussion of Study 2

The results of Study 2 revealed that the combined II training/II mixed imagery rehearsal condition and the II training only condition resulted in the fewest number of disfluencies. Interestingly, the VIS only condition resulted in the most disfluencies. These findings confirm what was expressed by Beatty (1988) in that utilizing VIS only does not necessarily reduce anxiety, but has the potential to exacerbate that anxiety. Planning for a communicative encounter utilizing VIS alone depends solely on the

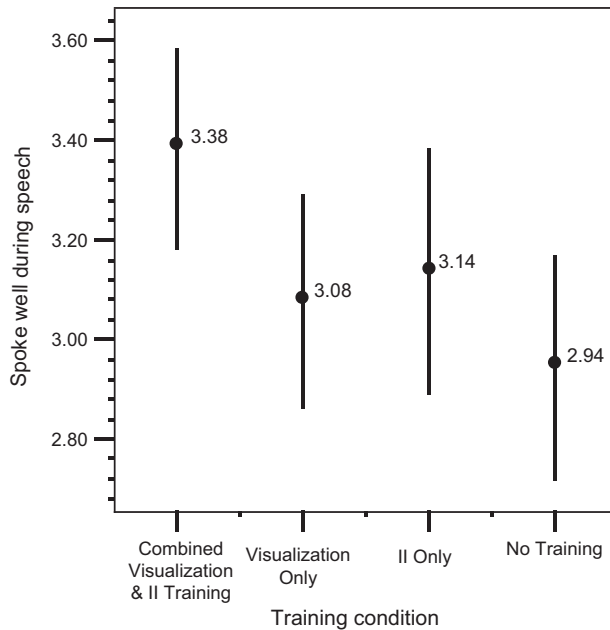


Figure 3 Postspeech self-evaluation of speaking well. Note: 95% mean confidence intervals are revealed by column lines.

use of visual imagery and does not specifically address the anxiety that may arise from the verbal or content aspects of a communicative encounter. In contrast, IIs allow for a person to prepare for the content of a future speech, and when the verbal output matches this detailed preparation it is more likely to increase the confidence of the speaker.

All three training conditions resulted in higher postspeech confidence about delivery compared with the no-training condition. However, the combined II training/II mixed imagery condition and the II training only condition resulted in the highest postspeech beliefs about delivery performance followed by the evaluations found in the VIS only condition. The detail offered through IIs seems to positively impact the evaluation that a speaker has on his or her own speech. Working through the verbal, visual, and mixed process in the preparation impacts both the actual speech output and the overall confidence in one's performance.

General Discussion

The current article investigated the benefits of planning through IIs and evaluated the impact of various remediation techniques for developing a speaker's speech performance and confidence. The act of public speaking can be overwhelming to those who are more anxious in communicative encounters (Bodie, 2010), and a lack of planning may be detrimental in certain critical situations (Shepherd & Edelmann, 2007). IIs aid a person with making decisions in the midst of complex and disorganized thoughts (Rosenblatt & Meyer, 1986).

The results of this investigation reveal that a person's public speaking anxiety (PSA) will influence the number of disfluencies in a speech, but that planning strategically through IIs can minimize these effects. Gotcher and Honeycutt (1989) proposed that rehearsing messages in IIs releases tension as the imager reduces uncertainty for the anticipated interaction. Having a firmer grasp of what will be said through the II, participants in both studies delivered a public speech more smoothly and with more confidence.

When looking more closely into the amount of detail that could be found in the planning process, Study 2 determined a distinction between VIS and II's. The findings demonstrated that there was a significant impact of detailed plans on both fluency and overall evaluation of a speech performance. Participants who engaged in the more detailed process (i.e., IIs) experienced a reduction of nervousness demonstrated by the minimization of disfluencies in their speech. The verbal, visual, and mixed method of rehearsal afforded by IIs, also caused participants to evaluate their speeches as having been more successful overall.

The results of this analysis could be different if participants were speaking with live confederates or conversing with people in a more natural setting. With the experimental design, the duration of pauses was impacted simply because there was no threat of interruption, and verbal output may have been inhibited without the presence of a speaking partner. Another limitation might be that the participants considered their speech as an unimportant encounter because students knew that

there were no negative repercussions to a lack of effort. The current method was sufficient to obtain the predicted results, while findings may vary due to context (e.g., transitory causes of PSA; Bodie & Morgan, 2010; Daly & Buss, 1984). Future research may include different settings such as actual student government meetings or laboratory interviews with live confederates.

Implications

The style in which people communicate plays an important factor within both organizational and interpersonal contexts (Miller & Hewgill, 1964; Richmond & McCroskey, 2000), and the manner in which the message is delivered impacts its effectiveness and acceptance (Stagner, 1936). When it is absolutely necessary for recipients to hold positive impressions of a speaker, the cognitive process of planning ensures the minimization of hesitations (Berger, 1997).

This article has examined the mental process of IIs used as plans and its effect on trait apprehension toward public speaking, verbal fluency, and the overall self-evaluation of speech performance. The findings from both studies indicate several implications for instructional communication. First, the overpowering impact of CA is related to public speaking disfluencies. The link between apprehension toward communication and verbal fluency further highlights the importance of remediation techniques that directly impact trait apprehension. Second, there is a clear link between the specificity found in communication planning and the overall effectiveness of that rehearsal. This result advocates the need for a revisioning of communication training and the conclusion that individuals with high levels of CA should be instructed to create more detailed plans in order to alleviate the anxiety from an anticipated communicative encounter. Finally, and related to the last implication, the vague remediation technique of visualization does not sufficiently address the specific fears held by an individual with high levels of PSA. It is through the detailed cognitive and behavioral aspects of II preparation (i.e., verbal, visual, and mixed imagery) that allows for a significant change in the communicative behavior, and the benefits of this more tailored approach has the potential of positively impacting those individuals with an acute fear of communicative encounters.

Caught without preparation, a person can easily say something unintended or communicate a message that does not come across clearly. By planning through the use of IIs, a speaker can compose a position through logical organization and strategically figure out how he or she will communicate the message (Honeycutt et al., 1989, 1990). Not only will the general ideas of the message be formatted logically through IIs, but also this investigation has concluded that the delivery of the speech performance will improve, in regard to fluency, anxiety, and overall evaluation of the speech performance.

Note

- [1] Querea, Bakeman, and Gnisci (2007) discuss using observational windows in order to reflect the temporal order of coder agreement. They provide examples of how simply reporting correlation coefficients fail to reveal the timing of agreement. For example, using the total

number of onsets for the 2-min time period does not reveal the location of coder agreements/disagreements. An intraclass correlation of .91 was used when summing across the 2-min time period. The idea of a moving time window results in more precise estimates of coder agreement. Coders may agree on the total number of behaviors occurring while completely disagreeing on when they occurred.

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