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An Experimemtal Design of Voicepedagogy Training as a Means to Reduce Communication Apprehension Using Two-Factor Theory, Psychological Conditioning And enviornmental Cues

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Abstract

The efficacy of brief (10-minute) voice pedagogy training for lowering communication apprehension (CA) was investigated. Standardized measures of trait CA, state CA, as well as two measures of communication efficacy, the Willingness to Communicate (WTC) scale and the Self-Perceived Communication Competence (SPCC) scale, were obtained from participants. The results showed that brief voice pedagogy training significantly lowered trait and state CA scores, while increasing WTC and SPCC scores, relative to placebo and non-placebo control groups. Insight into whether the potential benefits of such training might be attributable to psychological conditioning, the effect of varying the environmental context is discussed.

Keywords: Voice Pedagogy; Communication Apprehension; Two-Factor Theory; Psychological Conditioning Environmental Cues

One of the most important aspects of human interaction is speech. Despite this importance, certain individuals experience intense fear or anxiety when anticipating or actually giving a speech, especially to an audience which is called communication apprehension (CA). As noted in the CA literature: Gearhart & Bodie, 2010;Ayres, 2002; Daly & Englberg, 2001;Dwyer, 1998;Wallenchinsky, Wallace, & Wallace, 1977), the fear of public speaking ranks number one in America, thus higher than the fear of dying, heights, snakes, or financial difficulties. Owing to its potential for creating suffering and stress, the phenomenon of CA has attracted considerable interest from researchers and authors over the years (e.g., Pearson, Child, DeGreeff, Semlak & Burnett, 2011; see Ayres, 1997; Beatty & McCroskey, 2000a, 2000b; Beatty, McCroskey, & Heisel, 1998;Clevenger, 1959b; Gilkinson & Knower, 1940; Hopf, 1970; McCroskey, 1977a, 1982c). There are a number of approaches for treating CA. One approach is rational emotive therapy (Ellis, 1962, 2001), which concentrates on the elimination of irrational and negative thoughts in order to reduce anxiety in individuals with CA. An alternative approach is rhetoritherapy (Phillips, 1977, 1991), which develops skills for giving oral presentations. Another approach is systematic desensitization (McCroskey, Ralph, &Barrick, 1970; Wolpe, 1958), which involves psychological conditioning of relaxation responses in the presence of stimuli (e.g., audience) that typically evoke fear and apprehension, which is called counter conditioning (Jones, 1924; Myers, 1992). Finally, an approach similar to systematic desensitization is visualization (Ayres & Hopf, 1985, 1991a; Ayres, Hopf & Ayres, 1997; Ellis, 1962), which entails using mental imagery of successful speaking to lessen CA. These approaches have had some success in decreasing CA. Given that CA involves fear of public speaking, it is surprising that no valid and reliable techniques have been developed for decreasing CA by focusing on the control of the individual's vocal apparatus and the voice-production parts of the anatomy. This could be important because it is possible that psychological tension and anxiety, from the worry about performing a speech to an audience (i.e., perceived ridicule), produce muscular tension within an individual's body, including the vocal folds and other physiological components of speech. This, in turn, could lead to anticipated poor performance, creating more psychological tension and anxiety.

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Thus, there is a reasonable assumption of a positive feedback connection between psychological anxiety and muscular tension of the vocal apparatus (Miller, 1996) may play a role in the development of CA. Such a relationship between anxiety and muscular tension would render competent public speaking less likely to occur once an individual prone to CA becomes anxious. However, if tension in the focal folds and associated anatomy could be reduced, and greater control over the speech apparatus promoted, then psychological anxiety may also be reduced. One promising technique for lessening tension in the vocal folds and increasing control over the vocal apparatus is voice pedagogy training. Voice pedagogy refers to a collection of musical exercises designed to improve singing performance in classically-trained singers. Such exercises are important for developing competency in singing because training in classical singing requires breath management, as discussed by Miller (1996). Singing requires the elongation of the breath cycle which permits lung expansion and an intensive action of the diaphragm using muscles of the thorax and abdominal wall. Breath management, in turn, requires proper alignment of the body (Miller, 1996; Schmidt, 1984). However, proper body alignment may not occur in individuals experiencing psychological anxiety. A misaligned body can lead to improper air flow, tension of the larynx, neck, shoulder and back, and improper breath management (Miller, 1996; Sundberg, 1987). Voice pedagogy exercises (e.g., body stretches, breathing exercises, simple relaxed singing)are designed to reduce or eliminate these problems (Miller, 1996). This study examined whether elements of vocal pedagogy training could be used as a treatment for reducing communication apprehension. Specifically, we determined whether individuals prone to CA who received brief voice pedagogy training experienced less CA prior to giving an impromptu speech than did individuals who did not undergo such training. In doing so, we sought to determine whether the effects of such training, if they occurred, could be attributable to a psychological conditioning effect. Psychological conditioning (i.e., associative learning) refers to a relatively permanent change in behavior resulting from experience (Kimble, 1961) and comes in two forms, classical conditioning and operant conditioning. Classical conditioning (Pavlov, 1955) involves learning a temporal association between two stimuli, a conditioned stimulus and an unconditioned stimulus. After conditioning has occurred, the conditioned stimulus will illicit an involuntary conditioned response—in other words the organism has learned to respond reflexively to a new stimulus (Hergenhahn & Olson, 1997). On the other hand, operant conditioning (Powell, Symbaluk & MacDonald, 2002; Skinner, 1953; Thorndike, 1913) involves learning an association between voluntary behavior and its consequences. Of the four types of operant conditioning (Hergenhahn & Olson, 1997), negative reinforcement is of particular relevance to the present study. Negative reinforcement (Weiten, 2002) involves, in part, the strengthening of avoidance or escape behaviors by the removal of aversive stimuli (Hergenhahn & Olson, 1997).

In two-factor theory (Mowrer, 1956), classical and operant conditioning are combined to explain how an organism learns to avoid an aversive stimulus. According to this theory, the presence of one stimulus—which first serves in the role of a conditioned stimulus—signals the imminent occurrence of an aversive stimulus, the unconditioned stimulus. Over repeated pairings of signal and aversive stimulus, the signal comes to evoke the emotion of fear, which is a conditioned response. Over time, the organism learns to avoid the aversive stimulus and escape the conditioned fear, which is a negatively-reinforced operant response. It is possible that the signaling stimulus itself becomes an aversive stimulus which the organism attempts to escape (Mackintosh, 1975; Rescorla & Wagner, 1972). In concert with a psychological-conditioning interpretation of communication apprehension, we propose that the presence of the audience level, such as a conditioned stimulus, which signals the possible occurrence of ridicule, an aversive event. After one or more imagined or real pairings of signal and aversive events (i.e., audience ridicule during speeches), the notion of an audience comes to evoke the emotion of fear. The individual learns to avoid the aversive stimulus—ridicule—by escaping the conditioned fear or by avoiding the audience, either of which would be a negatively-reinforced operant response. The very label used for fear of public speaking—communication apprehension—implies the existence of conditioning and learning: apprehension involves anticipation and anticipation involves learning. To determine whether psychological conditioning can explain some or all of the effects of voice pedagogy training the environmental context within which an impromptu speech was given was investigated. Specifically, participants performed voice pedagogy training exercises in a given room and then delivered the speech in the same or different room. In the conditioning literature, it is known that the responding of organisms conditioned in one environmental context declines when placed in a different environmental context, which is referred as a stimulus generalization gradient (Guttman & Kalish, 1956). In the present study, the color of the walls, room temperature, room size and shape, etc. during the training were manipulated as different discriminative stimuli for psychological conditioning. If the effects of voice pedagogy training are diminished when participants switched rooms, then a conditioning interpretation of voice pedagogy training effect would be warranted.

Counter conditioning (Wolpe, 1958) refers to a technique for treating anxiety that involves the conditioning of a relaxation response in the presence of an aversive stimulus as a substitute for conditioned fear (e.g., Kosslyn & Rosenberg, 2003; Wolpe, 1958). In the present study, if the voice pedagogy exercises lessen CA, then they maydo so by inducing greater self-efficacy and control of the vocal apparatus in the presence of an imagined or real audience, which could be a form of counter conditioning.

Method

Participants

Two hundred and forty participants (mean age = 20 years; 60% female, 40% male) volunteered to participate in this study. They were undergraduate students enrolled in a communication, psychology or sociology course ata western university during the time period the study was performed. All participants scored at least one standard deviation above the mean or higher on the Personal Report of Communication Apprehension (PRCA) scale, a measure of trait CA, during a pre-test. All participants were paid four dollars and given extra course credit for participation.

Instruments and Materials

The two rooms for performing the voice pedagogy exercises and the speech were room A, which possessed a small size, cold temperature, dark-colored walls, low lighting, and a neutral sense of smell, and room B, which possessed a very large size, warm temperature, light-colored walls, bright lighting, and a smell of coffee. Thus, room size, temperature, lighting and smell were factors in manipulated between the two rooms Two forms of CA were measured, trait CA (dispositional) and state CA (situational). Trait CA was measured with the public speaking sub-scale of the Personal Report of Communication Apprehension (PRCA; see Levine & McCroskey, 1990), and state CA was measured with the state CA subscale (Speilberger, Gorsuch, & Lushene, 1970).Both subscales contains five questions in a Likert-type format. We also measured communication efficacy with the Willingness to Communicate scale, which measures an individual's predisposition to avoid communicative contact, and the Self-Perceived Communication Competence instrument, which measures an individual's self-perception of her or his ability to communicate in a public-speaking format. Both instruments contain three items measuring self-perceived attributes on a percentage scale. All four instruments have been found to be valid and reliable (PRCA: Levine & McCroskey, 1990; State CA: Beatty, Dobos, Balfantz, & Kuwabara, 1991; WTC: McCroskey, 1992; SPCC: McCroskey & McCroskey, 1988).

Design and Procedure

Three levels of treatment (voice pedagogy, placebo, control) were combined with two levels of room factor (same room, different room) to make this study a 3 x 2 factorial design, with 40 participants randomly assigned to each of the six conditions. In the *voice pedagogy condition*, each participant first completed the trait CA, state CA, WTC, and SPCC measures as a pre-test and then in phase 1 performed a set of voice pedagogy exercises, which were explained by a written script as well as shown on a televised video lasting 10 minutes. These exercises involved gentle head, neck and trunk stretching, controlled breathing, and simple voice exercises (singing). After completing the exercises, the participant in phase 2 performed an impromptu speech to an audience. Following the speech, the participant completed the trait CA, state CA, WTC, and SPCCpost-test measures. In the *placebo condition*, each participant completed the pre-test and then viewed the voice pedagogy training video, but without sound nor exercising, during phase 1, performed an impromptu speech to an audience during phase 2, and then completed the post-test measures. In the *control condition*, each participant completed the pre-test and then sat in a chair for a duration of 10 minutes, without viewing the video, during phase 1, performed an impromptu speech to an audience during phase 2, and then completed thepost-test measures. In the same-room conditions, the participants performed the impromptu speech in the same room in which they performed the voice pedagogy exercises, either room A or room B. In the different-room conditions the participants performed the speech in a different room from which they performed the exercises, either going from room A to room B or vice versa.

Results

For each dependent variable separately, scores from the participants were averaged together to provide a mean score for each condition. Posttest scores were normalized by dividing them by the pretest scores on each of the four dependent variables, which served to convert the dependent measures into proportion measures. A mean score represents the average normalized score for each condition. Figures 1 and 2, respectively, show mean trait CA and mean state CA across the six conditions. It can be seen that participants who received voice pedagogy training showed a large reduction in trait CA and state CA relative to those in the control or placebo groups. Among those in the voice pedagogy group, the greatest reduction in trait CA and state CA occurred for individuals who received treatment and performed the speech in the same room. Figures 3 and 4, respectively, show mean WTC scores and mean SPCC scores across the six conditions. It can be seen that participants who received voice pedagogy training showed increased WTC and SPCC scores relative to those who were in the control or placebo conditions. Among those in the voice pedagogy group, the greatest increase in SPCC scores occurred for individuals who received treatment and performed the speech in the same room. For WTC scores, however, the greatest improvement was among those who received the treatment and performed the speech in different rooms.

A 3 X 2 (treatment x room) multivariate analysis of variance (MANOVA) revealed that the treatment X room interaction was significant on at least one of the four dependent variables, Hotelling's Trace = 0.17, $F(8, 456) = 4.82$, $p < .001$.Follow-up analyses using analysis of variance (ANOVA) were computed which indicated that all four dependent variables showed a treatment X room interaction: for trait CA,$F(2, 232) = 5.41$, $p = .005$; for state CA,$F(2, 232) = 3.66$, $p = .03$;for WTC,$F(2, 232) = 4.70$, $p = .01$;for SPCC,$F(2, 232) = 10.92$, $p < .001$. Main effects for combined training type of voice pedagogy, placebo and control: Hotelling's Trace = 0.18, $F(8,456) = 5.18$, $p < .001$.Main effects for same room type: 0.60, $F(8, 226) = 8.49$ $p < .001$, and different room type: 0.13, $F(8, 222) = 1.77$ $p < .001$. Post-hoc comparisons between different pairs of treatment conditions were computed using the Bonferroni method for each level of the room factor individually. This analysis indicated that those participants who underwent voice pedagogy training showed a greater reduction of trait CA and state CA scores, and a greater increase in SPCC scores, than those in the placebo or control conditions, with the effect being significantly greater for those who received treatment and performed the speech in the same room (all ps< 0.05).

Discussion

Voice pedagogy training lowers communication apprehension and increases communication efficacy. Thus, when individuals with high communication apprehension must give a public speech, having them go through voice pedagogy exercises likely helps them produce a relaxed posture, proper breathing, and perhaps less psychological anxiety. Thus, voice pedagogy training represents a new treatment for helping communication apprehension. It is reasonable to conclude that the elements of voice pedagogy training used in this study may be a beneficial alternative treatment for communication apprehension. Presumably the training worked because it affects the voice production apparatus directly. Moreover, the effects of voice pedagogy training may be explained, in part, by psychological conditioning. The efficacy of the training was dependent upon having the same environmental context, and thus the same discriminative stimuli when the speech was given and when the training was undertaken. However, there is an alternative explanation for this context effect, namely that the room within which the voice pedagogy training occurred served as a set of retrieval cues for remembering how to perform the exercises. Such an explanation is unsatisfactory because it does not take into account the anticipatory nature of communication apprehension. The very nature of communication apprehension involves the act of becoming apprehensive about an imminent speech, and anticipation is a characteristic of learning and conditioning.

It is likely that the room within which the voice pedagogy training occurred served as a set of discriminative stimuli (e.g., color of the walls) for counter conditioning, signaling the subsequent arrival of a potential aversive event such as ridicule. Such discriminative stimuli could elicit an emotional response of fear, whose reduction would be negatively reinforced by avoidance or escape behavior. The individual would also be motivated to avoid or escape the signaling stimuli—the audience—as well. With voice pedagogy training, the participants were taught to develop muscular relaxation, voice control, and self-confidence, in the presence of those discriminative stimuli, and it is likely that the state of relaxation and control substituted for conditioned fear. Switching rooms likely served to weaken those newly acquired conditioned responses because discriminative stimuli varied, an effect interpreted as a stimulus generalization gradient.

That CA can be helped with treatment based on psychological conditioning provides a challenge to the communibiological framework, which posits that communication apprehension is an inherited trait that is not susceptible to modification from the environment (Beatty et al., 1998). In this framework, much, if not most, of the emotional basis of communication apprehension is derived from two inherited personality traits—neuroticism and extroversion (Beatty, McCroskey, &Heisel, 1998). However, the fact that the experience of CA can be modified by the environment, as found in the present study, suggests that the role of conditioning and the environment plays in the development and treatment of CA.

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