Reducing public speaking anxiety in university students: Effects of the Anchor App program.

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Abstract. This study tested a voice training program supported by an application (Anchor) to observe its effects on public speaking anxiety (PSA). A quasi-experimental design was used, with 340 students as the participants of this study. 161 participants were assigned to the experimental group and 177 were assigned to the control group. The results showed significant differences between the experimental group and the control group in PSA posttest measures (t = 2.147, Sig = .033) with an effect size (d = .25) which could be considered large for educational interventions. Even though some aspects need to be reviewed, the program had significant effects which suggest app-supported voice training as an option to intervene public speaking anxiety in higher education.

Keywords: Reducing anxiety, communicative competence, higher education, application software

Introduction

Social anxiety (Hoffman, 2010) generally begins in adolescence and its prevalence in the population is considerable, leading many young patients to drop out of school and university. Many other students struggle with it every day in academic activities, mainly those involving social performance (Russell & Topham, 2012) such as public speaking (Blote et al., 2009). In this context, there are few validated programs for this purpose in university contexts (Takac et al., 2019). The objective of the present research will be to test a program to reduce public speaking anxiety (PSA).

Literature review

Voice training emerges as a viable option. First, previous training is needed in diaphragmatic breathing (Gillespie, 2016; Russo & Santarelli, 2017). Then, training in vocal inflection is needed to emphasize strategic parts of the text and create a nonverbal narrative. The articulation of speech through thought, body movement and feeling is called embodied speech (Fisher & Zwann, 2008). Finally, for a learner to observe themselves while articulating might be difficult; therefore, feedback becomes essential. Mobile applications have provided many tools to facilitate this process for educational purposes (Bae & Kim, 2014), such as the Anchor App.

Methodology

Design and Participants

A quasi-experimental, non-randomized design with pretest and posttest measures was used. 340 students in different faculties from Universidad Continental in the city of Huancayo, Peru, participated in the study. Participants' ages and gender were matched prior to group assignment. Homogeneity tests revealed no significant differences between groups in public speaking anxiety (t = -. 035, Sig = .972). Finally, 161 students were assigned to the experimental group (8 classrooms of approximately 20 students) and 177 students were assigned to the control group.

Instruments

The Personal Report of Public Speaking Anxiety (PRPSA) was administered, a 34-item scale in which each item is rated on a 5-point Likert scale. The 18-item version of this scale was used (Mortberg et al., 2018), as it is a recent version with good internal consistency (α = 0.97). It was adapted for the purpose of this study (Aikens V > 70) and pilot-tested (α = 0,79).

Procedure

The program was established in three stages. The first one consisted of participant recruitment in a university course called "Research Methodology". Some courses that had similar PSA scores were chosen to take the program as training for the final exam of that course, which would consist of an oral presentation in front of an audience. In order to establish a voice training platform, the second step of the program consisted of creating a podcast on Anchor App called “Psiconline”, where students could find tutorials, create their own podcasts, and post their vocal exercises. By following their episodes, constant feedback could be provided. In the third step, parallel to the Anchor App training, participants took ten 45-minute face-to-face sessions (one session per week). This 10-week program followed the schedule seen in Table 1.

Table 1. Content and objectives for each session of the program

Unit	Number of sessions	Objectives	Tasks	App tasks
Introduction to diaphragmatic breathing and phonation	1-3	To increase awareness of slow breathing and how breath management can produce changes in voice pitch and volume	Attention to breathing - 10 minutes Body relaxation through meditation - 10 minutes Vocal warm-ups – 10 minutes Playing with short fragments - 10 minutes	Practice breathing and relaxation exercises at home. Upload their first exercises to their podcasts
Analyzing text and providing movement	4-7	To speak publicly by playing with voice inflections and body movement spontaneously	Emotional text analysis – 10 minutes Vocal inflections plan – 10 minutes Oral presentation practice – 20 minutes	Upload pieces of text with movement inflections through voice
Trying an entire piece	8-10	To speak publicly with an action or intention that is evident to the audience	Actor's score – 10 minutes Oral presentation practice – 30 minutes	Upload an entire piece of text

Data Analysis

A t-test was performed, and the effect size was determined using Cohen's *d*. The level of statistical significance used was $p < .05$. Analyses were carried out using the SPSS 22 statistical package, Process V 3.2 and the R Stats effect size calculator for the t-test and Cohen's *d*.

Results

In the levels of public speaking anxiety (PSA), as shown in Figure 1, statistically significant differences were observed between the control and the experimental groups at the time of the posttest (t = 2.147, Sig = .033). The experimental group obtained lower scores (M = 31.96, SD = 0.75) than the control group (M = 34.09, SD = 1.25). Cohen's d showed that this effect is small (d = .25), which is confirmed by the analysis of variance (F = 4.608, p = .033, n^2 = .016).

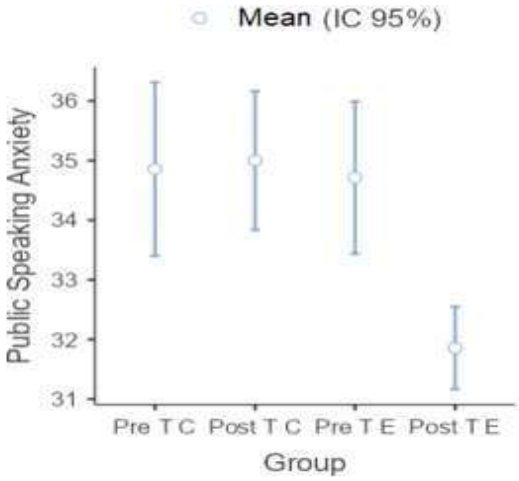

Figure 1. Significant differences were observed in PSA between the control and experimental groups at the time of the posttest: control group (M = 34.09), experimental group (M = 31.96)

Discussion

In this research, the effects of voice training have proven to decrease public speaking anxiety (PSA) in college students. Through its components, amygdala overactivity could be inhibited (Ma et al., 2017), facilitating embodied speech even in the midst of anxiety (Fuchs, 2018). If suggested parameters are considered (sample size, achievement goals, and complexity) to reinterpret effect size in educational interventions (Kraft, 2020) we can assume that an effect size of .25 can be considered large. In that sense, the effectiveness of the present work is similar to related studies aimed at reducing public speaking anxiety (Pribyl et al.,2001; Takac et al., 2019).

Conclusions

The results showed that the changes resulting from the program are statistically significant when compared to a control group and, for educational intervention parameters,

its effect is considered large. Diaphragmatic breathing training, nonverbal text analysis-articulation and feedback provision through an app are valid for addressing PSA in university contexts.

Limitations and future research

An exclusive training space was not available for the intervention of this study. The curricular time of the course was used for training, which could have reduced the motivation of some students. In a future replication of this study, it might be relevant to fully align the course curriculum with the nature of the program, such as a language, communication, or debate course.

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