

# Tension, Treatment and Technology: The Effectiveness of the Digital Delivery of Progressive Muscle Relaxation to Reduce Anxiety in Middle Eastern University Students

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## INTRODUCTION

### Objectives

Anxiety among college students is increasing and becoming difficult to manage by understaffed university counseling centers. Progressive Muscle Relaxation (PMR) is an effective technique for treating anxiety. The purpose of our research is to identify calming strategies to relieve possible anxiety symptoms in Middle Eastern university students. We aim to explore whether the digital delivery of PMR can efficiently reduce anxiety in university students. We hypothesized that 1) students will report higher anxiety at the semester's end than at the beginning and 2) students will report lower anxiety after listening to a PMR audio recording.

### Literature Review

- Progressive Muscle Relaxation (PMR) or Jacobson's Relaxation Technique is commonly used to treat anxiety. In a ten-year meta-analysis of 27 studies dating from 1997 to 2007, Manzoni and colleagues confirmed that relaxation training including PMR is effective in reducing anxiety (Manzoni et al, 2021).
- Toussaint and colleagues claim that multiple forms of relaxation training (e.g., Progressive Muscle Relaxation (PMR)), are effective in helping individuals to reduce stress, enhance relaxation, and improve overall well-being. In their findings and with regard to PMR, Toussaint and colleagues echo Manzoni and colleagues' claim that PMR is effective in reducing anxiety. They state that in addition to PMR alleviating stress and test anxiety in nursing students and depression and anxiety in coronary heart disease and cancer patients, PMR also induced psychological and physiological states of relaxation (Toussaint et al, 2021).
- Similarly, in a Turkish study using meditation in a pre-test/post-test experiment, researchers found that there was a significant difference in the degrees of anxiety between two groups (Onem, 2015).

## RESEARCH QUESTION

Is Progressive Muscle Relaxation effective in reducing anxiety in university students?

## HYPOTHESES

H1: Students will report increasing levels of anxiety during the semester.

H2: Students will report the lowest levels of anxiety at the beginning of the semester, moderate levels at mid semester (mid-term exams) and the highest levels of anxiety at the end of the semester (final exams).

H3: Students will report lower levels of anxiety after listening to the Progressive Muscle Relaxation (PMR) audio recording.

H4: Students will report even lower levels of anxiety levels of anxiety if they listened to the female dictated PMR audio recording.

## METHODS

Participants were 487 students from a convenience sample of Psychology 101 and 102 and received 0.2 credits. Seven common items across 3 anxiety rating scales (BAI, HAM-A, DASS) were used to assess levels of anxiety, then, students listened to the randomly assigned digital PMR audio and finally, the same 7 anxiety symptom items were re-administered to assess effectiveness.

## MATERIALS

*The Beck Anxiety Inventory (BAI)* (Beck et al., 1988).

- The BAI measures anxiety and consists of a total of 21 items which are scored on a 4-point Likert scale ranging from '0: not at all', to '3: severely affected'. The BAI has high internal consistency with a Cronbach's alpha of 0.92, and a high test-retest reliability of 0.75.

*Hamilton Anxiety Rating Scale (HAM-A)* (Hamilton, 1959).

- The HAM-A measures the severity of anxiety symptoms. It is comprised of 14 items and scored on a 5-point Likert scale ranging from '0: Not present, to '4: Very severe. The HAM-A has a high inter-rater reliability of 0.92.

*Depression Anxiety Stress Scale (DASS)* (Lovibond & Lovibond, 1995).

- The DASS, another anxiety scale, consists of 42 items with a 4-point Likert scale ranging from 0: 'Did not apply to me at all' to 3: 'Applied to me very much or most of the time.' The DASS has high internal reliability with Cronbach's Alpha at 0.888 for the depression scale, 0.866 for the stress scale, and 0.833 for the anxiety subscales.

*Progressive Muscle Relaxation (PMR)/Jacobson's Relaxation Technique* (1920s)

- Progressive Muscle Relaxation (PMR) or Jacobson's Relaxation Technique is commonly used to treat anxiety. Dolbier and Rush (2012) reported that PMR has some positive effects on anxiety reduction. However, Tan et al (2022) found PMR to have significant anxiety reducing properties.

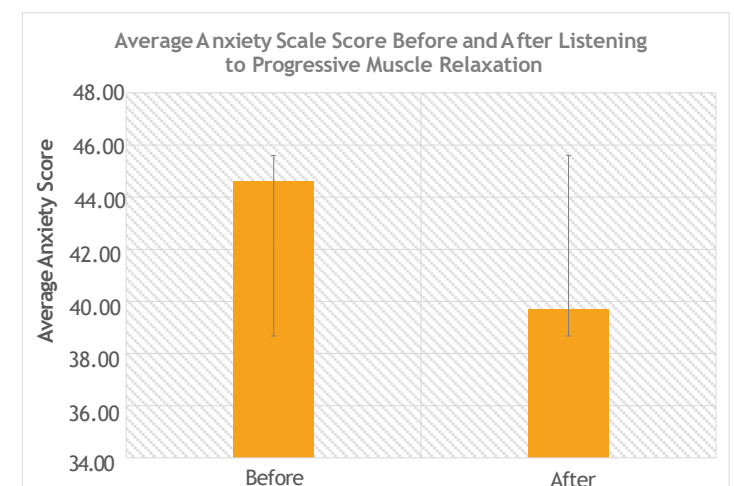
## PROCEDURE

- Approved by Institutional Research Committee
- Extra credit for PSY 101 and PSY 102
- Laboratory-based digitally administered study
- Used Sona & Qualtrics platforms to deliver consent form and the study materials
- Random assignment determined whether the 8-10 min recorded progressive muscle
- Relaxation audio script was delivered in a female or male voice.
- This information will be gathered three times during the semester: at the start, middle, and end.
- Minimal to no risks were involved
- Statistical analyses were performed using Jamovi and Excel.
- Based on 7 common symptom-based items of the HAM-A, anxious mood, tension, fears, somatic, cardiovascular, and respiratory symptoms, and hand tremors, our data
- was extrapolated in a comprehensive analysis across 3 anxiety measures, the HAM-A, the DASS and the BAI.

## RESULTS

The average score of anxiety was higher before listening to progressive muscle relaxation than after:

- Analyzing the results using Jamovi, participants' average score was 23.3 prior to PMR, suggesting moderate anxiety. Post-PMR, participants' average score was 18.5, suggesting low anxiety. A significant difference was found ( $t(221) = 11.4, p < .001$ ), and a mean difference of 4.62.
- A single factor ANOVA was conducted to determine whether students reported different levels of anxiety at different points in the semester, but there were no significant results.



## CONCLUSIONS

- Our hypothesis that students will report lower levels of anxiety after listening to the PMR audio was supported.
- At the three different points of the semester, participants displayed moderate anxiety levels before listening to the PMR, then displayed low anxiety after the PMR was administered.
- Although, we were unable to determine if a female dictated PMR audio was related to reduced anxiety, our hypothesis that students will report lower levels of anxiety after listening to the PMR audio was supported. Students displayed very similar levels of anxiety at the beginning, middle, and end of the semester. Thus, our second hypothesis which stated that students will report increasing levels of anxiety during the semester was rejected.
- Hence, University Counseling Centers should adopt online PMR treatment to reduce anxiety, which could lead to improving students' academic performance. We hope to duplicate this study using an in-person approach to explore other digital delivery methods.
- Finally, although effective, the digital delivery of treatment, such as the PMR, does not solve the problem of accessibility to care delivered by embodied professionals

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## ACKNOWLEDGEMENTS

Special thanks to Al Hasouni, Ali Jaber, Z., Alshehadeh, S. who were members of the 2022 – 2023 research team and Radwan, Y. (Summer 2024).