



Self-Efficacy and Internal Locus of Attention

A STUDY OF ADULT MALE AMATEUR SINGERS

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Context and Justification

- ▶ Motor skill acquisition
- ▶ Changes in pedagogy landscape
- ▶ What can we do?

Aims and Objectives

- ▶ Test whether development of internal awareness of their tongue and jaw can be a reliable tool for helping students build self-efficacy
- ▶ Test whether improved feelings of self-efficacy can lead to more frequent, higher quality practice
- ▶ Gain experience conducting and presenting a mixed-methods study

Literature Review: Self-Efficacy

- ▶ What is Self-Efficacy?
- ▶ Components of Self-Efficacy
 - ▶ Enactive Mastery
 - ▶ Social Persuasion
 - ▶ Vicarious Experiences
 - ▶ Emotional and Affective States

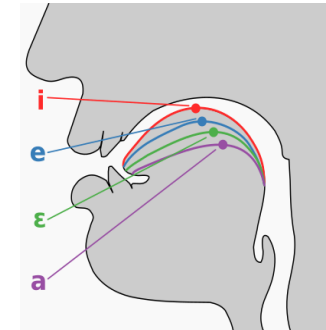
*“Unless people believe they
can produce desired effects
by their actions,
**they have little incentive to
act.**”*

(Bandura, 1997, p. 3)

Literature Review: Locus of Attention

- ▶ An **external locus of attention** is **outside of the body**
- ▶ An **internal locus of attention** is **inside the body**
- ▶ Self Efficacy and Motor Learning can be improved using External Locus (Wulf)
- ▶ Debate in Motor Learning Literature
- ▶ No studies to date on Self-Efficacy and Internal Locus
- ▶ No studies to date on Self-Efficacy and voice users

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References: Wulf et al., 1998, 2015; Wulf & Lewthwaite, 2016; Mass et al., 2008; Atkins, 2017; Treinkman, 2021, 2022a, 2022b; Collins et al., 2016; Parma et al., 2024; Toner & Moran, 2014; Gottwald et al., 2020

Study Design

- ▶ Constructivist Epistemology → Pragmatic Paradigm
- ▶ Mixed Methods → 2 parts Qualitative and 1 part Quantitative
- ▶ Longitudinal Study
- ▶ Recruitment
 - ▶ Convenience and Purposive Sampling
 - ▶ Inclusion/Exclusion Criteria

References: Walliman, 2005; Greene et al., 1989; Maarouf, 2019; Aduluv et al., 2022; Gill, 2020; Palinkas et al., 2015; Kaushik & Walsh. 2019

Data Collection

Semi-Structured Interview

5 questions asking about their feelings of vocal control, practice habits, and what they were thinking about when they sang.



Participant Generated Images

Participants were instructed to draw their vocal tracts



Likert-Style Survey

Thirteen statements for which participants indicated degrees of agreement on a scale of 0-5.



References: Aduluv et al., 2022; Walliman, 2005; Saldaña, 2013; Malde et al., 2020; Chen et al., 2001; de Rezende & de Medeiros, 2022; Steinmann et al., 2024; Frey, 2023

Survey Questions

Question 1: I am aware of whether I am singing how I want to while I am singing

Question 2: I cannot tell if I am singing the way I want to while I am singing.

Question 3: I am not in control of how well I sing.

Question 4: I am in control of how well I sing.

Question 5: I feel powerless to change how I am singing once I start.

Question 6: I feel confident that I can adjust while I am singing.

Question 7: I can never recover from a technical mistake while singing.

Question 8: I can easily recover from a technical mistake while I am singing.

Question 9: I am mostly thinking about my body movements while I am singing.

Question 10: I am mostly thinking about my sound goals while I am singing.

Question 11: I am thinking about physical feedback and sensations while I am singing.

Question 12: I am aware of my tongue movements while I am singing.

Question 13: I am aware of my jaw movements while I am singing.

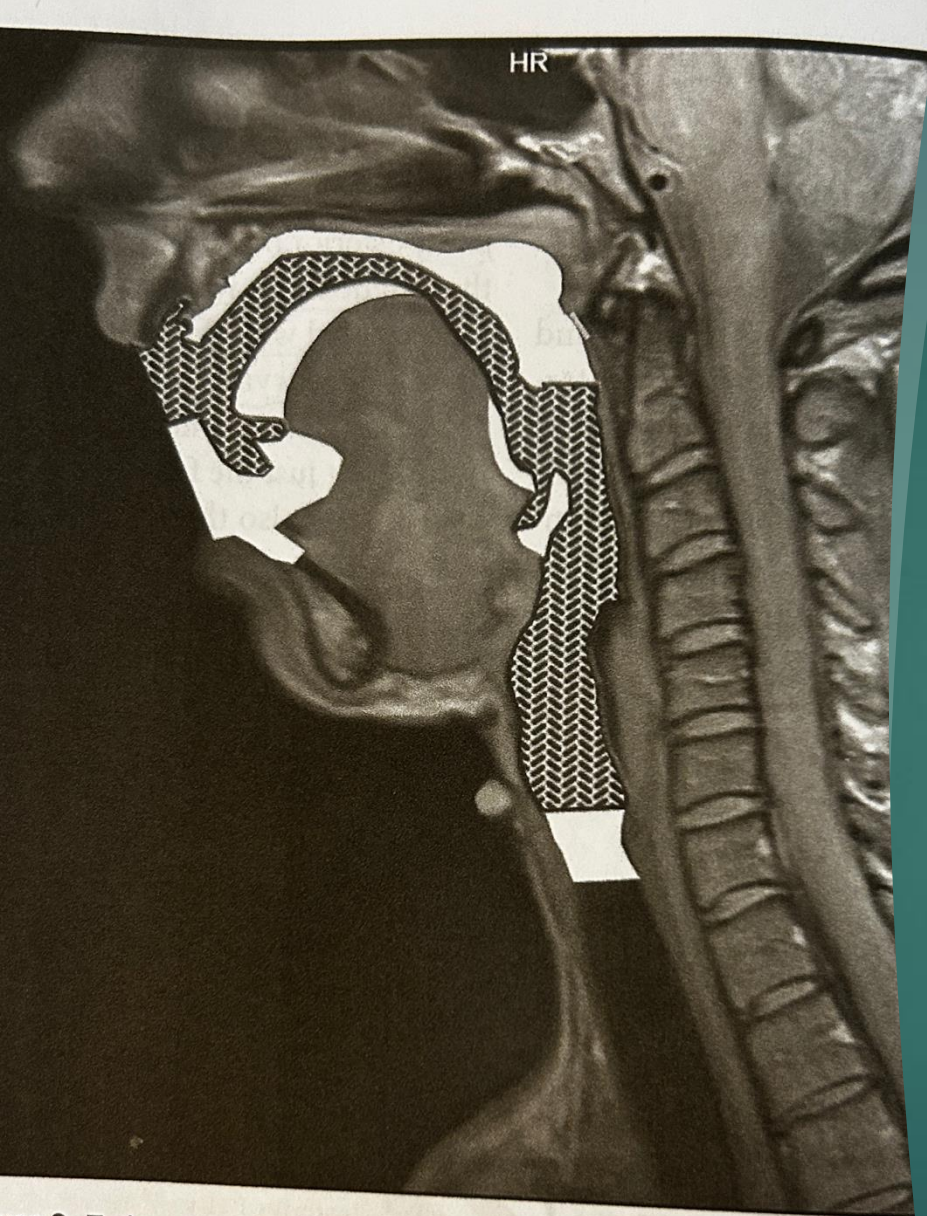


Figure 3–7. Increase in vocal resonance during low mandible maneuver. The dark herringbone area denotes the resonance space available for the /i/ vowel. The white areas are the spaces that are added during the maneuver (Nair et al., 2016).

Study Exercises

- 5 Exercises on tongue and jaw awareness/independence performed at the beginning of each lesson for 4 lessons
- Reasons for Choosing
 - New perspective on a current goal
 - Maximum impact
 - Neurological speculation

References: Malde et al., 2020; Nelson and Blades, 2018; Nair, 2021; Vilkmann et al., 1996; Bozeman, 2013; Adatia & Gehring, 1971; Ishiwata et al., 2000; Cobo et al., 2017

Image from Nair, 2021, p. 34

Key Results

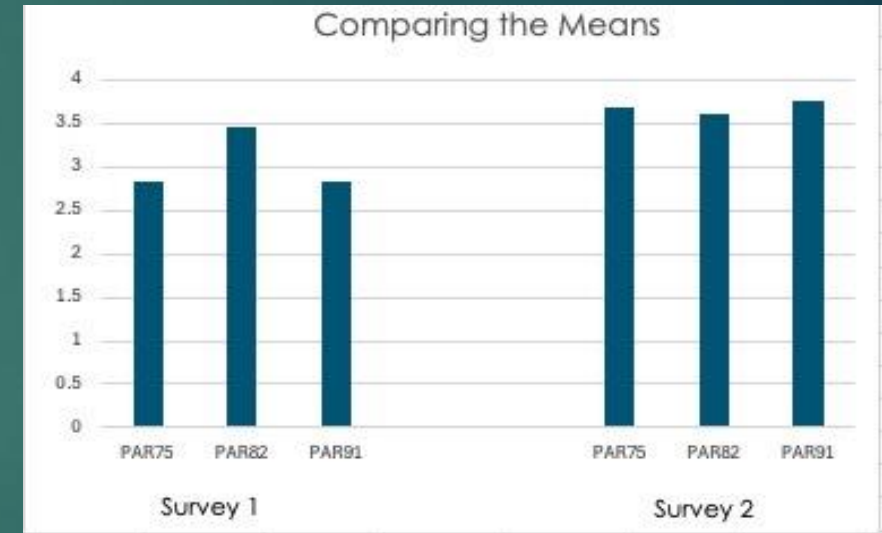
Semi-Structured Interview

- PAR75 and PAR91 positive results corroborated by survey responses
- increased internal awareness and self-efficacy
- positive emotional associations around practice,
- *PAR82 did not experience these things and did not increase practice time*

Participant Generated Images

- All images changed from before the study to after
- Most of the changes indicated an increased mapping of space in the back of the throat
- PAR75 and PAR82 seemed to indicate more resonance at the laryngeal level

Survey



(References: Bandura, 1997; Lewis et al, 2015; Kryzwinski & Altman, 2013)

PAR75 Interview Results

Interview 1

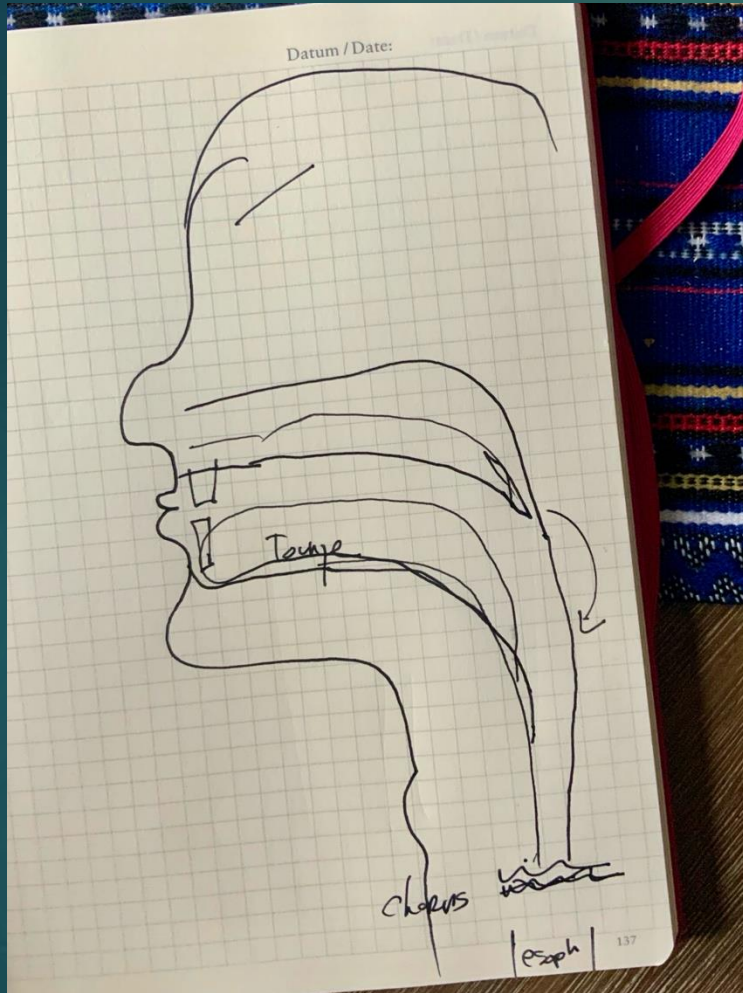
- ▶ Exhibited very low self-efficacy
- ▶ Practiced for 15 minutes 3-4 times a week while doing something else
- ▶ Practice was 'just singing' and not focused on improving
- ▶ Described an inability to 'hit the techniques' from lessons

Interview 2

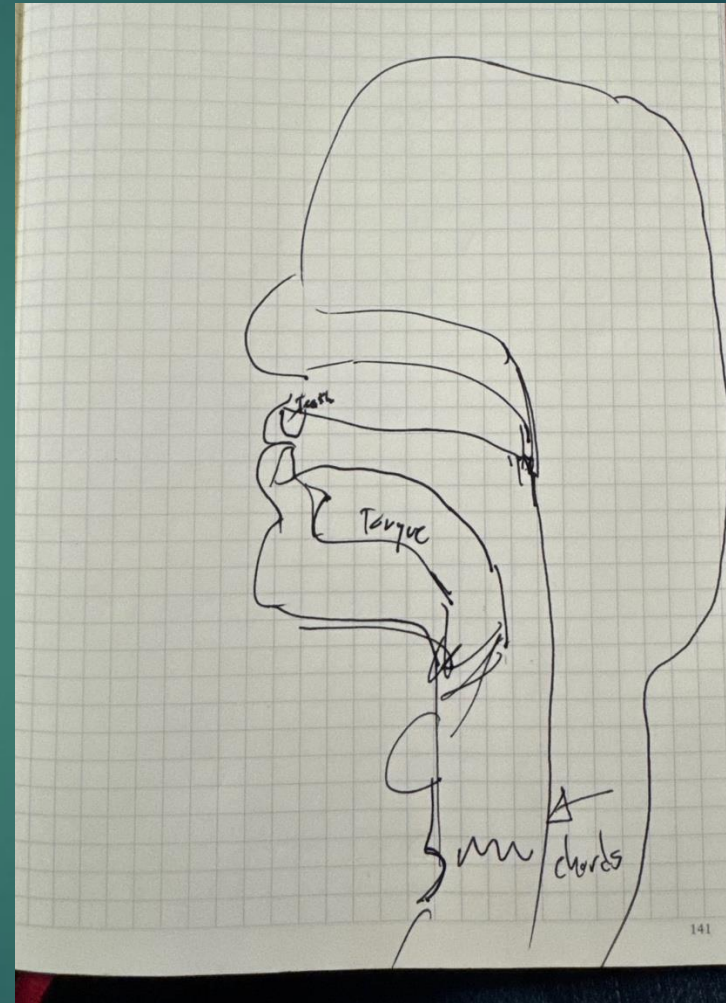
- ▶ Exhibited increased Self-Efficacy from successful practice sessions
- ▶ Practice became daily
- ▶ Expressed specific goals about his practicing
- ▶ Described looking forward to practice and finding it more enjoyable

"I know I'm on the right path and I know that I'm more accurate than not"

PAR75 Drawings



Drawing Pre-Study



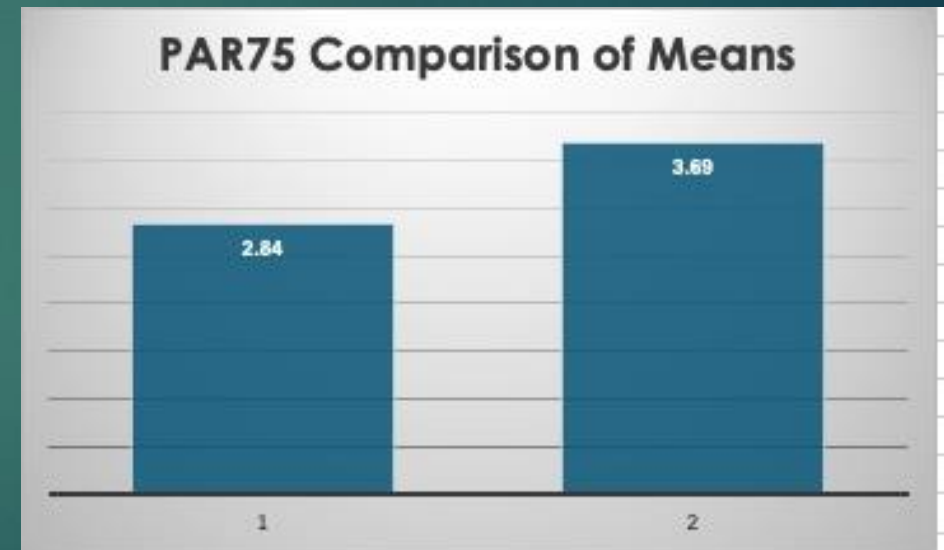
Drawing Post-Study

PAR75 Survey Results

Null Hypothesis: no difference in the means across questions

Alternative Hypothesis: there will be a difference

Reds were reversed because negative questions		
PAR75	Survey 1	Survey 2
Q1	3	5
Q2	4	5
Q3	2	2
Q4	3	4
Q5	4	4
Q6	4	4
Q7	1	4
Q8	3	4
Q9	1	2
Q10	3	3
Q11	4	3
Q12	2	4
Q13	3	4
Sum	37	48
Mean	2.84	3.69
P Value (2 Tailed)	0.014458	
Reject Null Hypothesis?	Yes	



PAR82 Interview Results

Interview 1

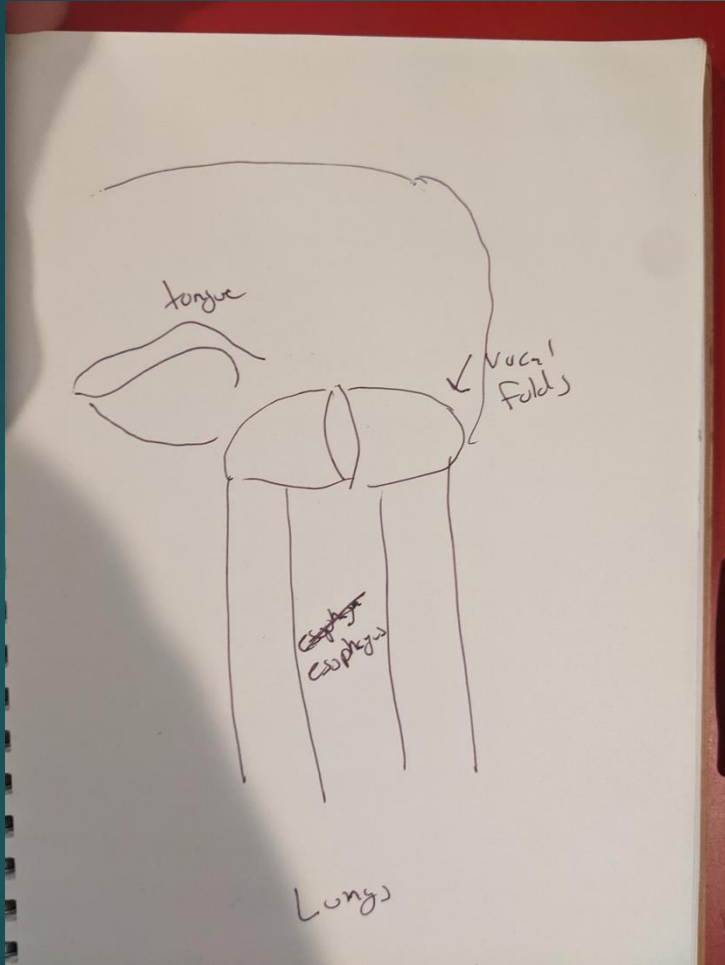
- ▶ Exhibited very low self-efficacy
- ▶ Practiced 0-1 times between lessons
- ▶ Described difficulties with 'executive function' as something that prevented him from practicing
- ▶ Described a theoretical belief that he would improve more if he practiced

Interview 2

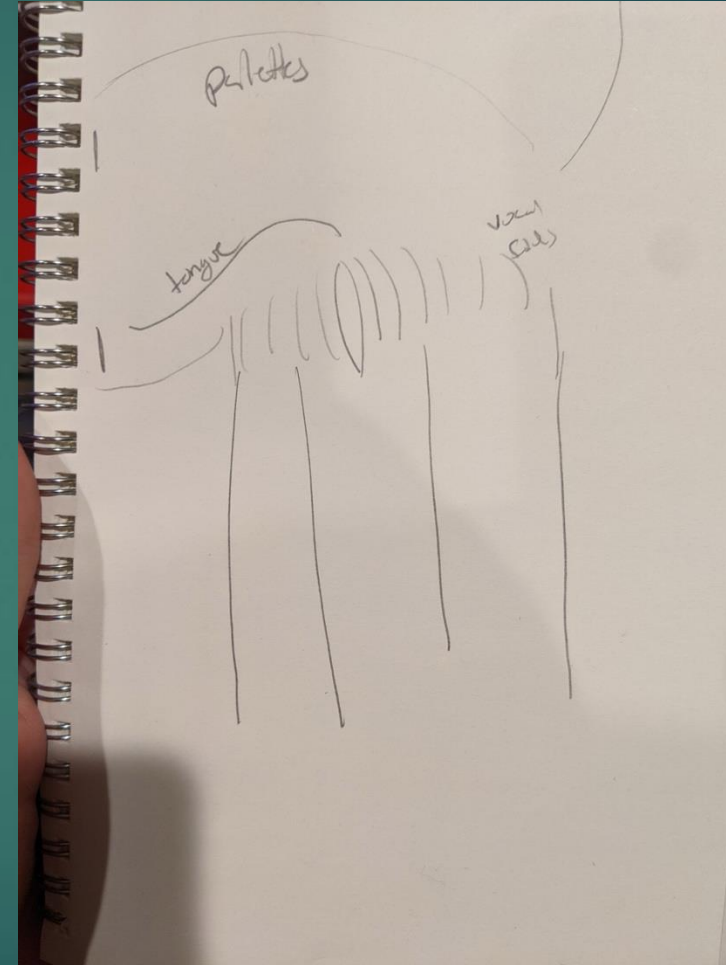
- ▶ No expression of change in self-efficacy
- ▶ Practice habits did not change
- ▶ No experiences of enactive Mastery or other Self Efficacy components
- ▶ Expressed low confidence in ability to evaluate his own singing

"If you imagine all the [outcomes] that I would ever... use for singing, I don't know what percent of those I have access to at any given point in time... the ones I'm actually interested in, the top 1%... I only ever have half of that or very rarely."

PAR82 Drawings



Drawing Pre-Study



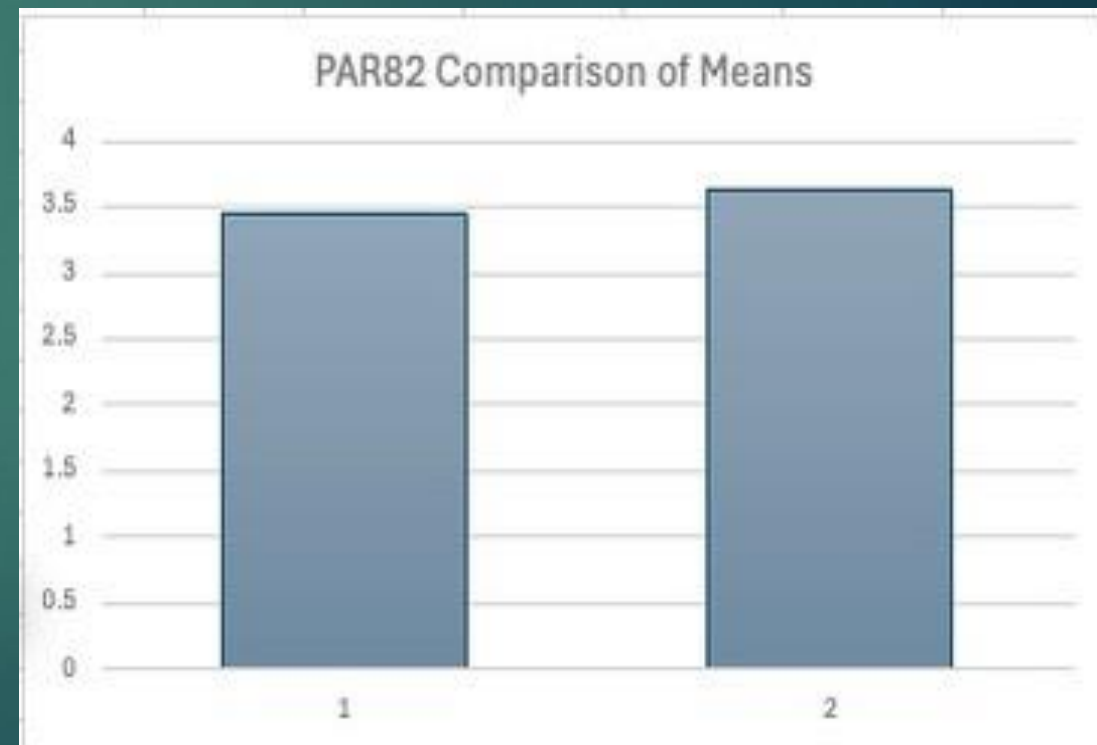
Drawing Post-Study

PAR82 Survey Results

Null Hypothesis: no difference in the means across questions

Alternative Hypothesis: there will be a difference

Reds were reversed because negative questions		
PAR82	Survey 1	Survey 2
Q1	4	5
Q2	4	5
Q3	3	4
Q4	4	4
Q5	4	2
Q6	4	4
Q7	5	4
Q8	4	3
Q9	3	3
Q10	2	2
Q11	2	3
Q12	2	3
Q13	4	5
Sum	45	47
Mean	3.46	3.62
P Value (2 Tailed)	0.584493	
Reject Null Hypothesis?	No	



PAR91 Interview Results

Interview 1

- ▶ Had already had enactive mastery experiences with his singing
- ▶ Described difficulty listening to his own voice
- ▶ Described needing more 'discipline'-practiced 1x/week
- ▶ Described practicing more when he enjoys music and can play it on piano

Interview 2

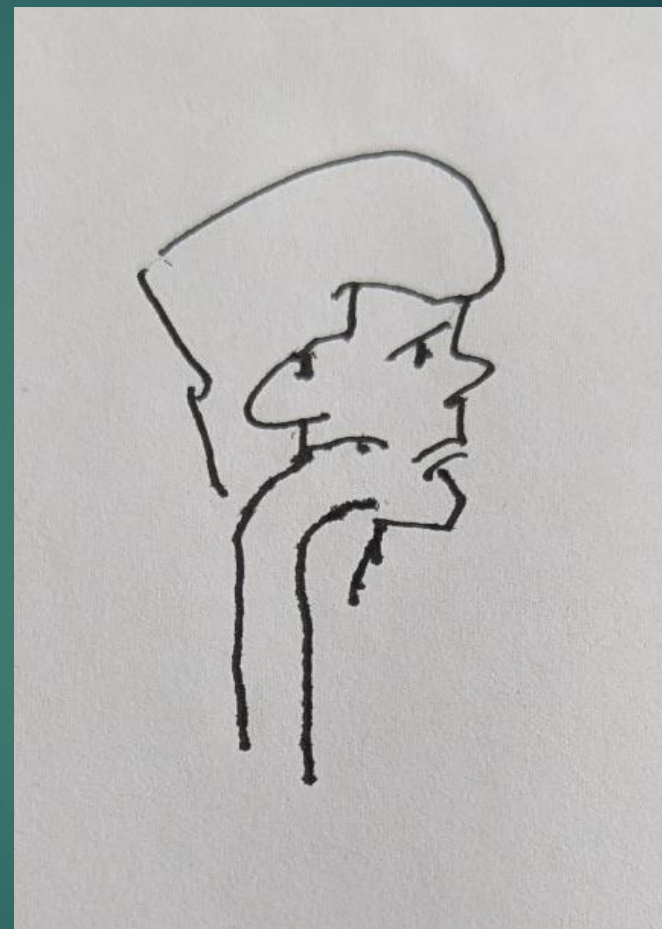
- ▶ Experienced all of the 4 components of self-efficacy
- ▶ 'Got over himself' and "made friends" with listening to his voice
- ▶ Practice time increased to 2-3 times per week
- ▶ Noticed how much more he improved when he listened to lesson and practiced; this was motivating
- ▶ Ascribed improvements in singing to improved internal awareness that he was connecting to his sound

"I know what my voice sounds like when I'm nervous, and it didn't sound like that at all... I am surprised."

PAR91 Drawings



Drawing Pre-Study



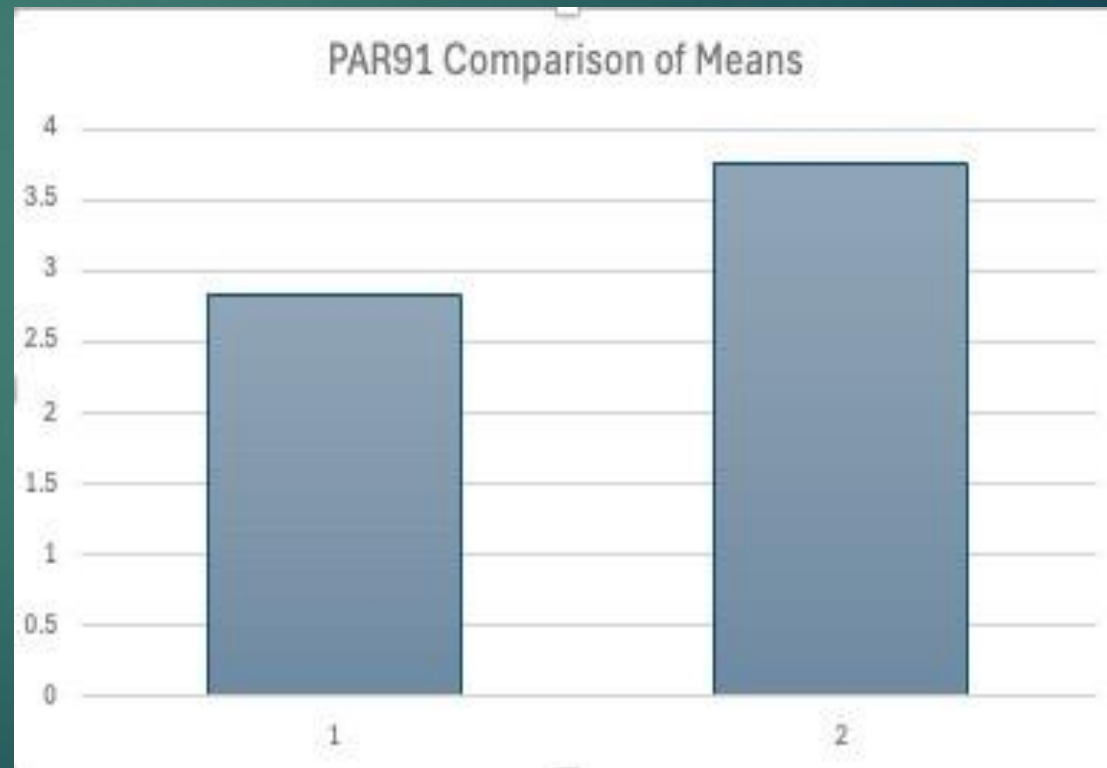
Drawing Post-Study

PAR91 Survey Results

Null Hypothesis: no difference in the means across questions

Alternative Hypothesis: there will be a difference

Reds were reversed because negative questions		
PAR91		
Q1	3	4
Q2	1	4
Q3	4	4
Q4	4	5
Q5	4	4
Q6	4	4
Q7	4	4
Q8	4	3
Q9	1	3
Q10	1	2
Q11	5	5
Q12	0	4
Q13	2	3
Sum	37	49
Mean	2.84	3.76
P Value (2 Tailed)	0.033031	
Reject Null Hypothesis? Yes		



Limitations

- ▶ Time
- ▶ Sample Size
- ▶ Participant variety with sample size
- ▶ Likert Survey number of data points
- ▶ My own biases

Recommendations

- ▶ Teaching through the lens of Self-Efficacy
 - ▶ Enable Enactive Mastery Experiences
 - ▶ Mindfulness about attentional loci when teaching
 - ▶ Internal Locus may need to be used with caution with certain learning styles

Conclusion

- ▶ Internal Locus of attention shows merit as a path to building feelings of self-efficacy in adult male amateur singers
- ▶ This led to increased practice time, improved emotional associations around singing for two participants, and not for one of them
- ▶ Survey came close enough to statistical significance across questions to merit further study in a larger population

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