

Research Question

Can group singing make older adults more resilient to pain?

Introduction

- Social well-being is often compromised in older adults.
- Social isolation and loneliness are especially prevalent in those diagnosed with age-related diseases, such as Parkinson's Disease.
- Numerous research groups have found support for the idea that synchronous movement, such as group singing, can increase social bonding.
- Other studies have found that group singing can increase pain thresholds, which has been explained as a product of social bonding.
- These results have been found in younger adult choirs and choirs of mixed ages, but not older adult choirs, including those with specific aging-related diseases.

Objectives

- To determine if group singing can increase pain thresholds in older adults.
- To determine if increases in pain thresholds are an effect of singing
- To determine if increases in pain thresholds are an effect of group interaction

Hypothesized Results

- It is expected that pain thresholds will increase post group singing
- It is expected that pain thresholds will not increase post Yoga
- It is expected pain thresholds will not increase post private singing

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Methods

Participants:

Healthy Aging	Parkinson's Disease	Yoga
N = 10, Mean Age = 72.8	N = 14, Mean Age = 73.8	N = 10, Mean Age = 68.3

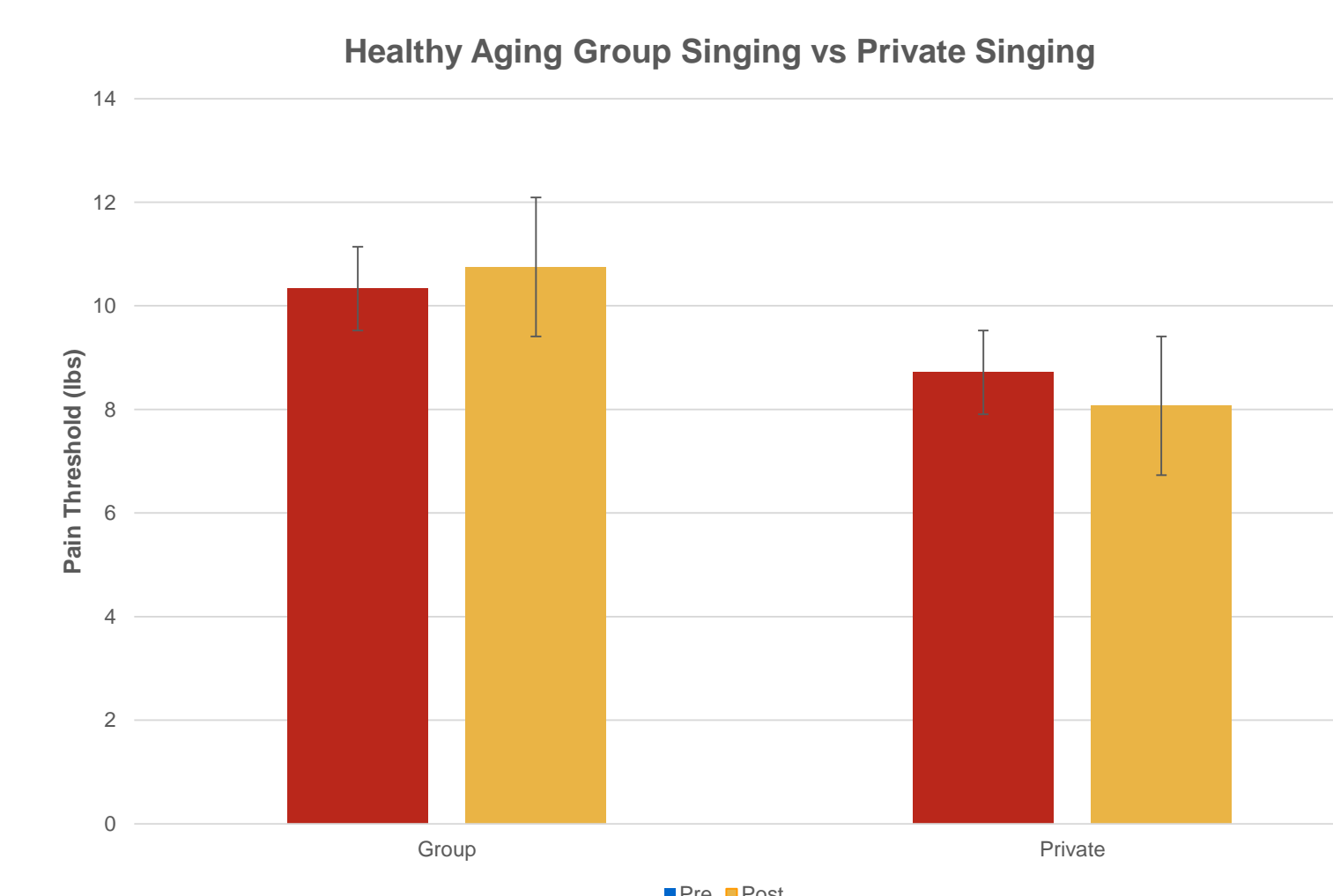
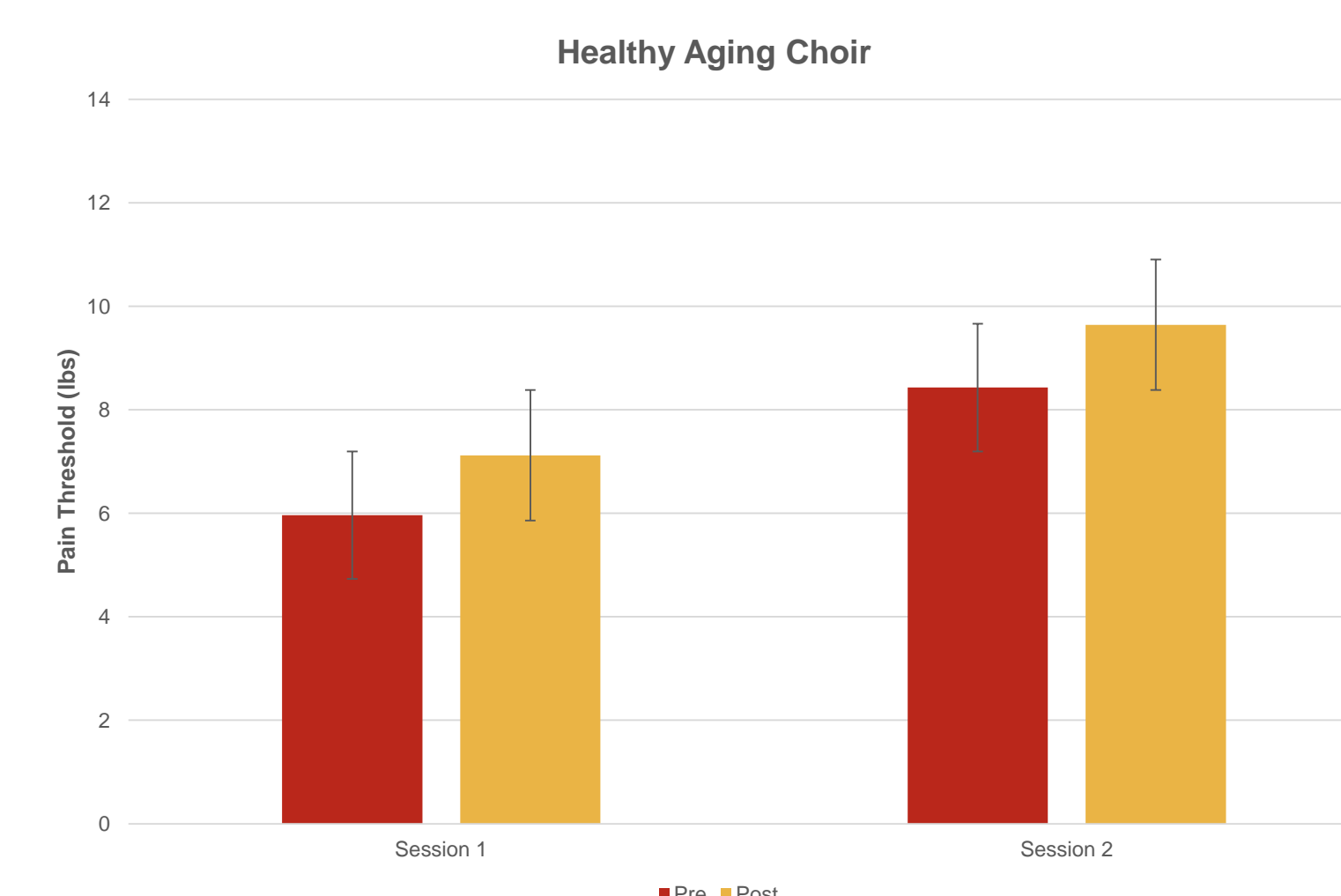
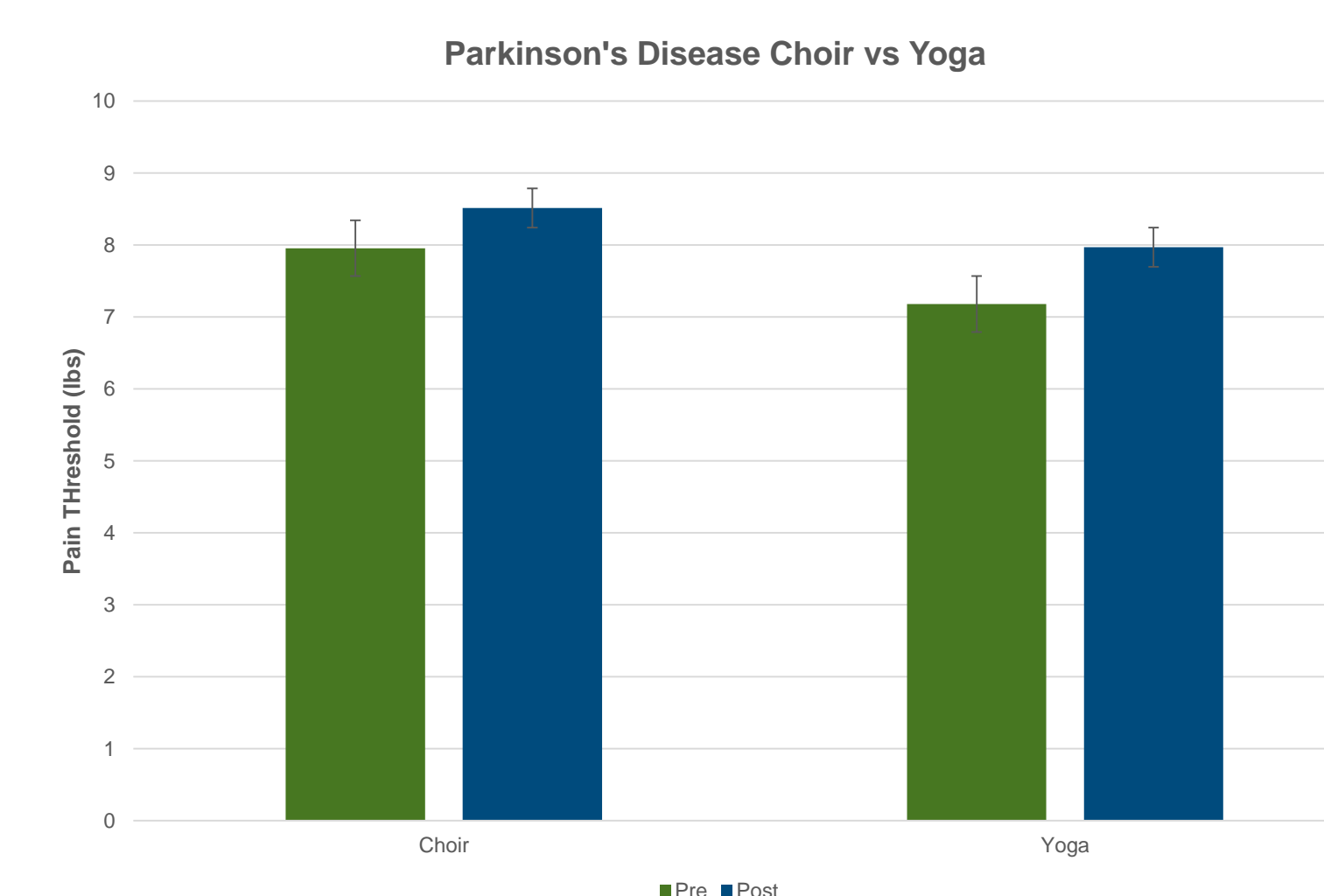
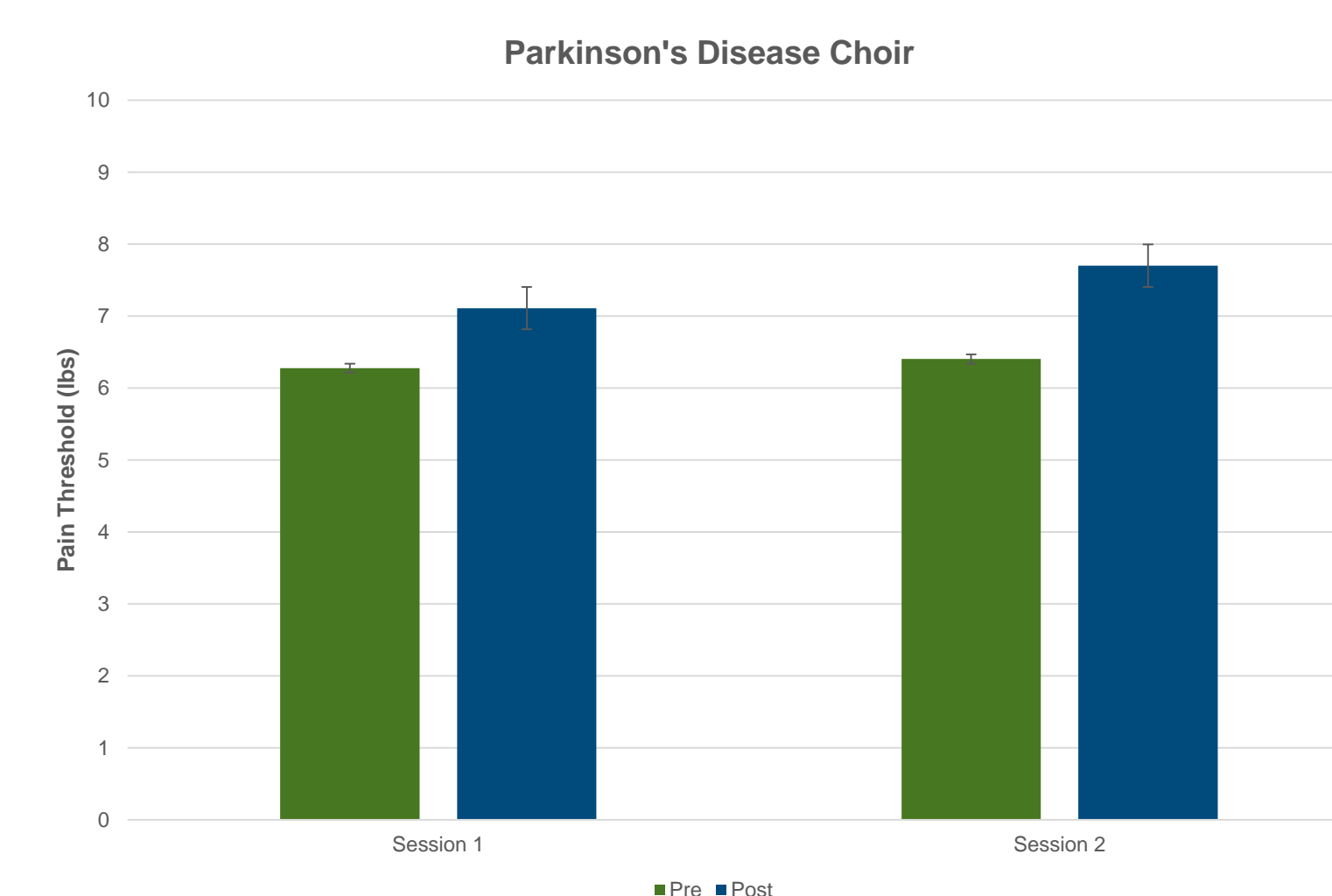
Procedure

- Using a dolorimeter, pain thresholds were measured before the activity began and then again after 45 minutes of the activity.
- The dolorimeter was applied to the first knuckle of the index finger on each hand 3 times each, alternating between hands.
- Participants were told to notify the researcher once they experienced discomfort.
- The pressure readings were averaged to determine the participant's pain threshold.



Results

- Pain thresholds significantly increase after group singing in both the Parkinson's Choir, $p = .009$, and the Healthy Aging Choir, $p = .04$
- There is no significant difference in pain thresholds between the Parkinson's choir and Yoga, but the pain thresholds are trending towards significance post-activity, $p = .071$
- Group singing leads to higher pain thresholds than private singing, $p = .012$



Discussion

- We found that group singing can increase pain thresholds which supports findings of previous studies.
- These findings show that the effect of group singing on pain thresholds can be generalized across age and possibly across levels of health.
- It appears that the increase in pain thresholds may not just be an effect of singing, but of rhythmic movement or controlled breathing.
- With regards to the effect of singing on pain thresholds, it appears that increases in pain thresholds are solely an effect of group singing. This supports the theory that pain thresholds can be augmented through social bonding.
- There is a noticeable trend towards smaller pre/post differences in pain thresholds as the group becomes more connected; however, the overall pain threshold levels appear to increase. This seems to support the Icebreaker Effect, as first described by Pearce, Launay and Dunbar (2015).

References

- Carney, M. T., Fujiwara, J., Emmert, B. E., Liberman, T. A., & Paris, B. (2016). Elder orphans hiding in plain sight: a growing vulnerable population. *Current gerontology and geriatrics research*, 20(16), 1-11. doi:10.1155/2016/4723250
- Dunbar, R. I. M., Kaskatis, K., MacDonald, I., & Barra, V. (2012). Performance of music elevates pain threshold and positive affect: implications for the evolutionary function of music. *Evolutionary Psychology: An International Journal of Evolutionary Approaches to Psychology and Behavior*, 10(4), 688
- Good, A., Choma, B., & Russo, F. A. (2017). Movement synchrony influences intergroup relations in a minimal groups paradigm. *Basic and Applied Social Psychology*, 39(4), 231. doi:10.1080/01973533.2017.1337015
- Pearce, E., Launay, J., & Dunbar, R. I. M. (2015). The ice-breaker effect: Singing mediates fast social bonding. *Royal Society Open Science*. <https://doi.org/10.1098/rsos.150221>
- Smith, J. M. (2012). Toward a better understanding of loneliness in community-dwelling older adults. *The Journal of psychology*, 146(3), 293-311. doi:10.1080/00223980.2011.602132
- Sullivan, P. J., Rickers, K., & Gammage, K. (2014). The effect of different phases of synchrony on pain threshold. *Group Dynamics: Theory, Research and Practice*, 18(2), 122-128. doi:10.1037/gdn0000001
- Tunggenç, B., & Cohen, E. (2016). Movement synchrony forges social bonds across group divides. *Frontiers in Psychology*, 7, 782. doi:10.3389/fpsyg.2016.00782
- Valdesolo, P., Ouyang, J., & DeSteno, D. (2010). The rhythm of joint action: *Synchrony promotes cooperative ability*. *Journal of Experimental Social Psychology*, 46(4), 693-695. doi:10.1016/j.jesp.2010.03.004
- Weinstein, D., Launay, J., Pearce, E., Dunbar, R. I., & Stewart, L. (2016). Singing and social bonding: Changes in connectivity and pain threshold as a function of group size. *Evolution and Human Behavior*, 37(2), 152-158. doi:10.1016/j.evolhumbehav.2015.10.002

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