# The Effects of Cyclic Sighing on Heart Rate Variability, Resting Breathing Rate, and Mood

UNIVERSITY OF WATERLOO

Isabelle Boucher* & Mike J. Dixon, Department of Psychology, University of Waterloo

*Correspondence: iboucher@uwaterloo.ca

## BACKGROUND

Slow breathing has been shown to promote parasympathetic activity & increase heart rate variability (HRV).[1,2,3]

A study published by Balban et al. reported that as little as 5 minutes of cyclic sighing (CC) a day significantly reduces respiratory rate and increases positive affect compared to a mindfulness meditation condition.[4]

Surprisingly, there was no effect of CC on HRV in that study, despite CC having a strong breathing focus.

Here, we rectify this issue by introducing non-breathing-focused groups: a positive affirmation group and a no treatment control.

## METHOD

### PROCEDURE

DAY 1

In-lab measures (HRV, breathing rate, STAI, PANAS)

| Cyclic Sighing | Positive Affirmation | No Treatment |
|---|---|---|
| Daily 5-min CC intervention, PANAS-P | Daily 5-min PAffn intervention, PANAS-P | NO daily intervention, PANAS-P |

DAY 20

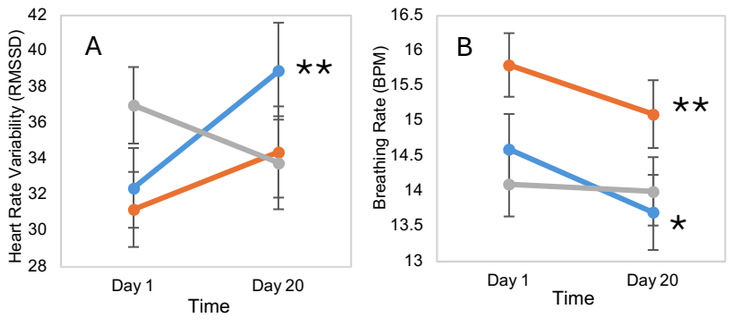
In-lab measures (HRV, breathing rate, STAI, PANAS)

SONA study pool, N = 167 (140 F), Aged 17 to 49 (M = 20.02, SD = 3.94)
Eligibility criteria: Participants must not been completing any yoga/breathing exercises once per week or more

## RESULTS

As expected, compared to NT, CC benefited participants by lowering breathing rates, and increasing parasympathetic activity. Only PAffn had an effect on positive affect.

***Figure 1: Physiological Measures***




Sig interaction (p = .012)
**Planned contrast CC (p = .006)

**Planned contrast CC (p = .02)
*Paffn across days (p = .036)

Cyclic Sighing — Positive Affirmations — No Treatment

***Figure 2: Subjective Measures***

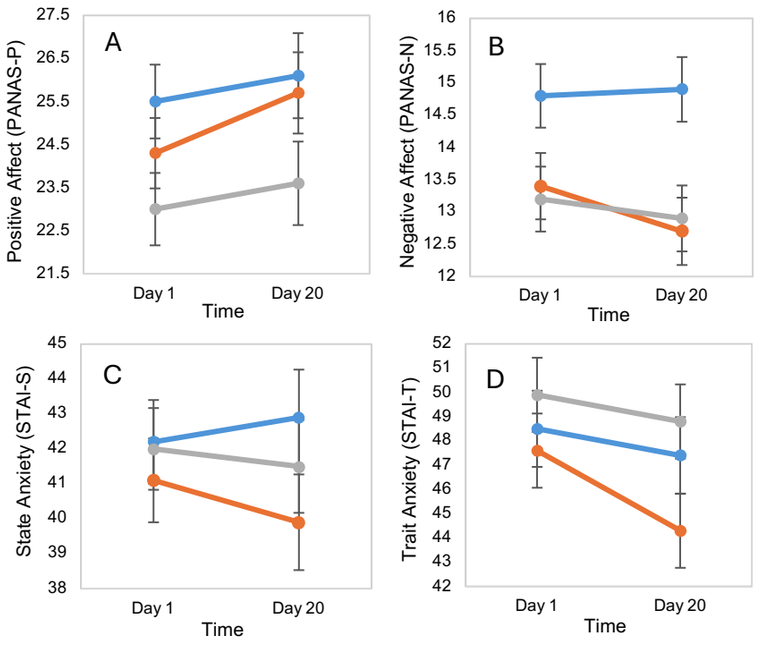
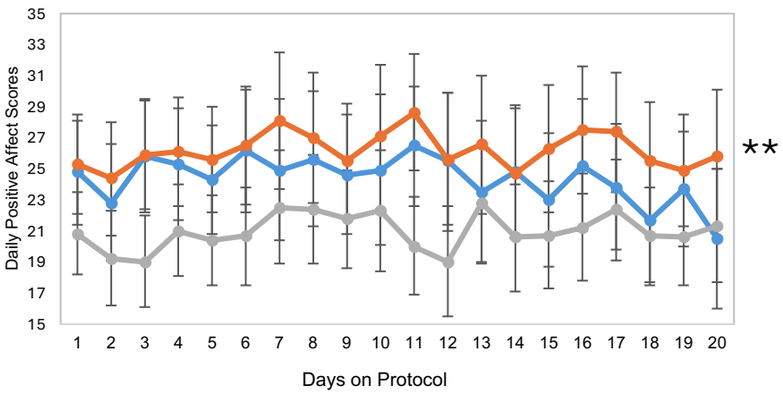



***Figure 3: Daily Positive Affect Change***




**Single-sample t-test PAffn (p = .047 (one-sided) )

Measures: HRV (pulse transducer, RMSSD), breathing rate (chest transducer), Anxiety (STAI), Mood (PANAS)

## CONCLUSION

Cyclic sighing has an effect on physiological measures (HRV & breathing) but this does not generalize to psychological measures like mood & anxiety.

Balban et al. results may have been a type 1 error.

## REFERENCES

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