



The duration discrimination respiratory task: A new test to measure respiratory interoceptive accuracy

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1. Introduction

Interoception, which refers to the perception of body's internal state, is implicated in emotional processes and psychopathological disorders. Over the last decades, different tools have been developed to measure the interoceptive accuracy, or the ability to accurately perceive physiological signals. These tools have primarily been developed for cardiac signals with task such Heart Rate Discrimination (HRD). However, they have some well-know limitations that call into question their validity. There are also few tools for measuring respiratory interoceptive accuracy, but they typically require specific and not easily carried equipment. Additionally, they do not account for individual variability in breathing time.

2. Objectives

Propose a new respiratory interoceptive task which aims to determine an individual's ability to detect exhalation longer than their resting reference duration.

3. Participants

125 healthy subjects (age: 25.4 ± 9.8 ; 50 men)

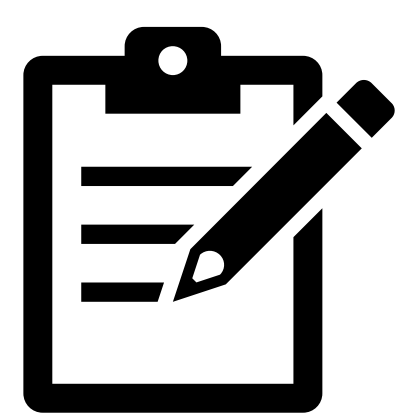
4. Hypotheses

Our task is a valid task of interoceptive accuracy with:

- **Internal consistency** calculate with Alpha Cronbach
- **Discriminant validity** demonstrate by comparing it with an exteroception task and measure the self-reported strategies.

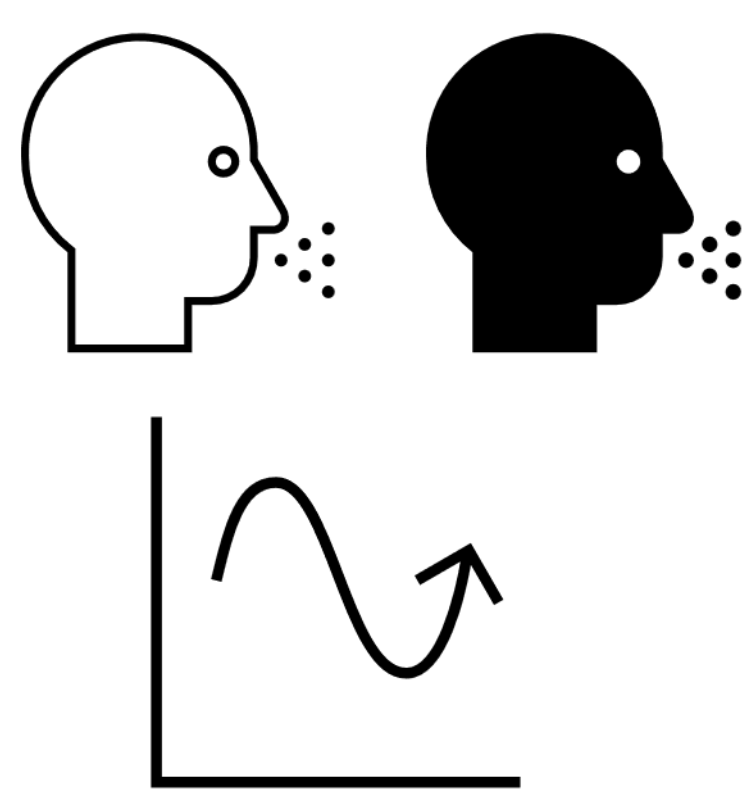
5. Method

Questionnaires



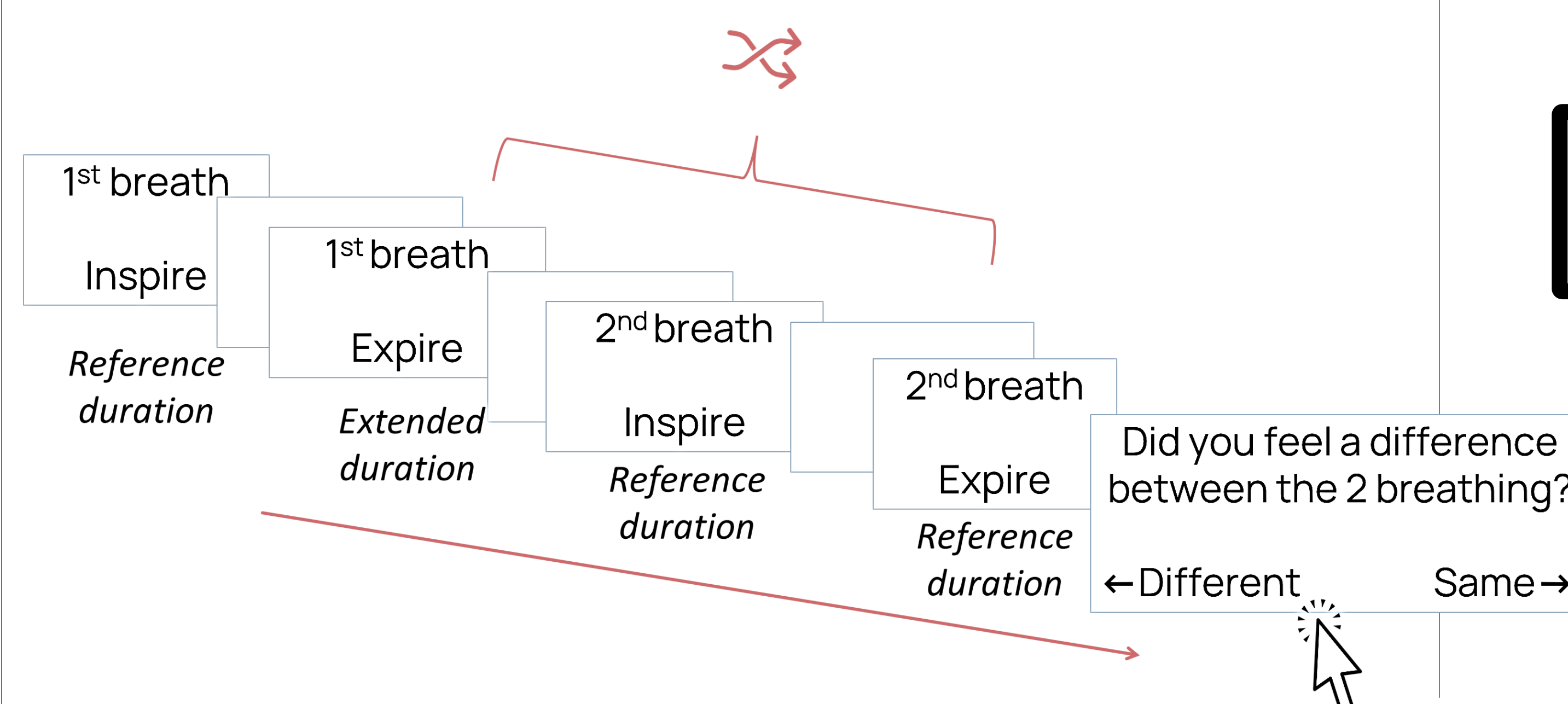
Interoceptive awareness (MAIA)
Alexithymia (TAS 20)

2 min baseline



Inhalation & exhalation, reference duration

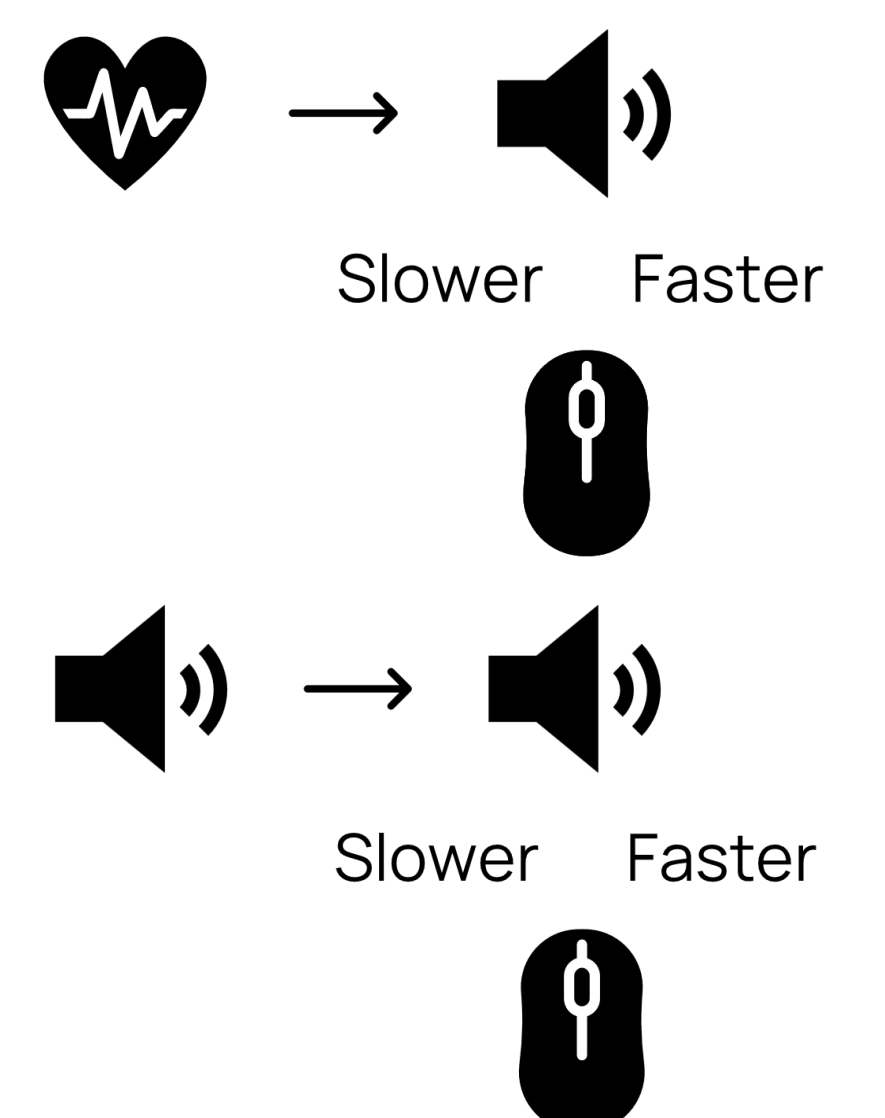
The duration discrimination respiratory task



Task strategies



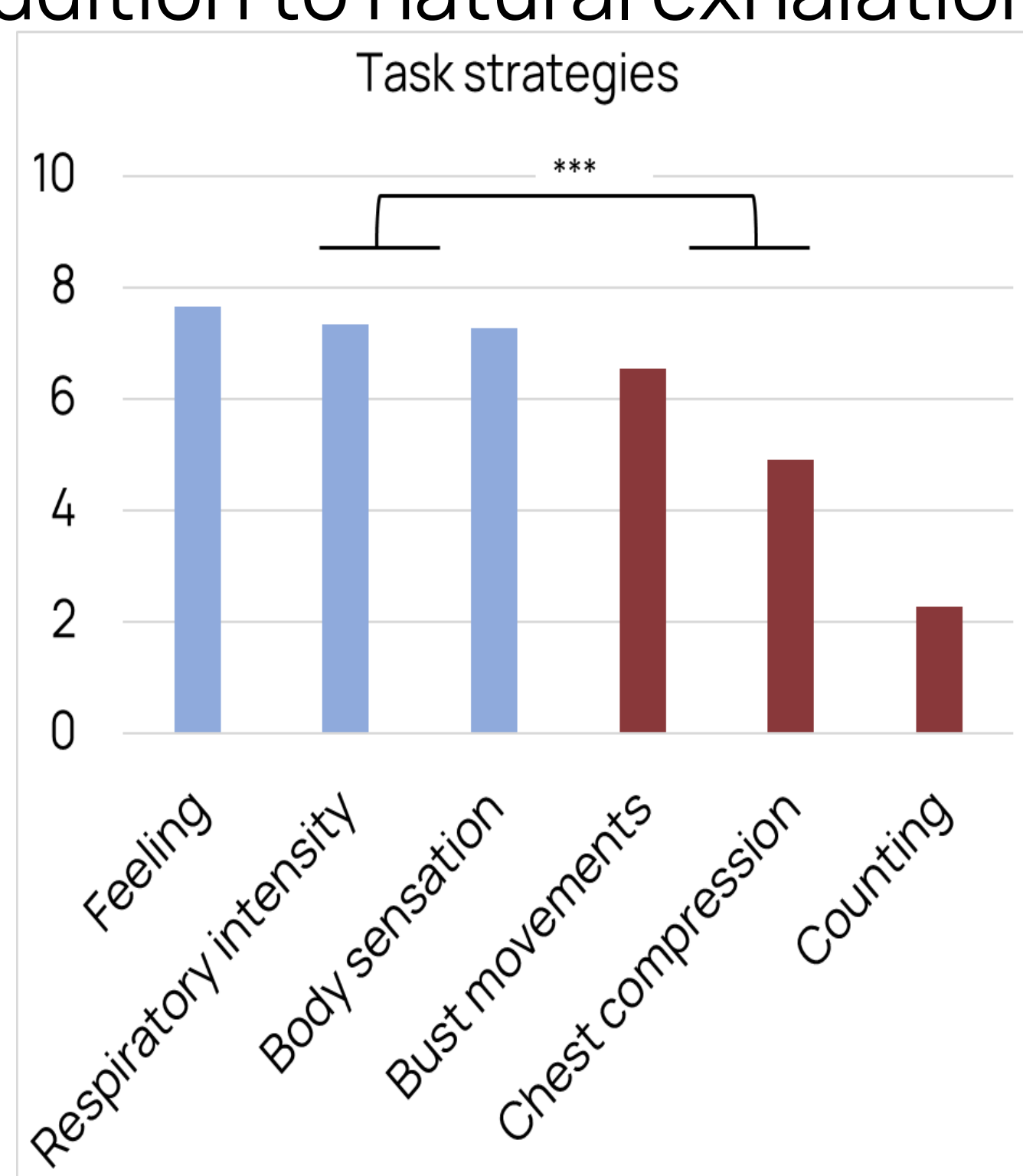
HRD & Exteroceptive task



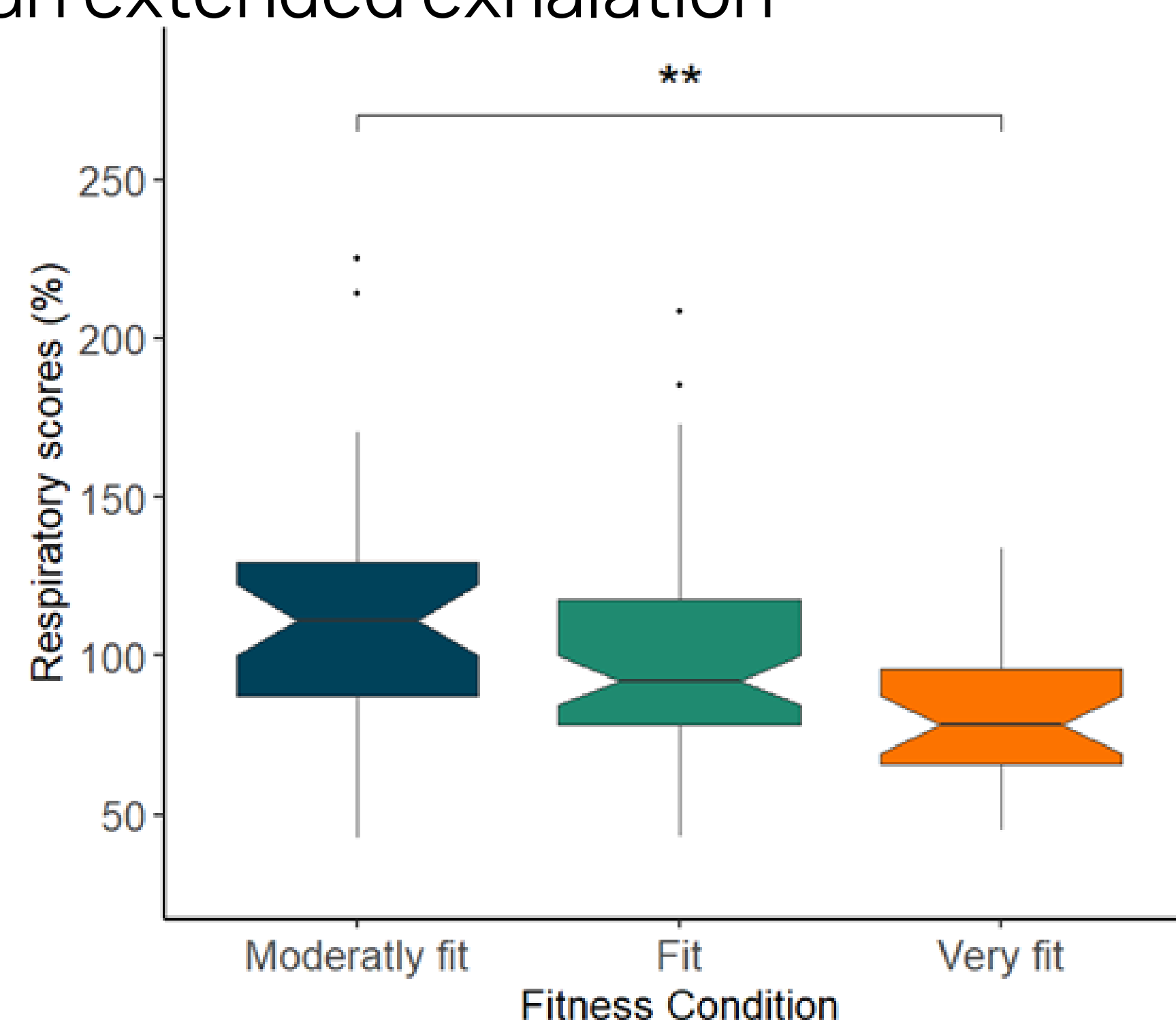
6. Results

- Good internal consistency (Cronbach's $\alpha=0.94$)
- Mean score: 99.29% (SD=36.51) of the reference exhalation time in addition to natural exhalation to detect an extended exhalation

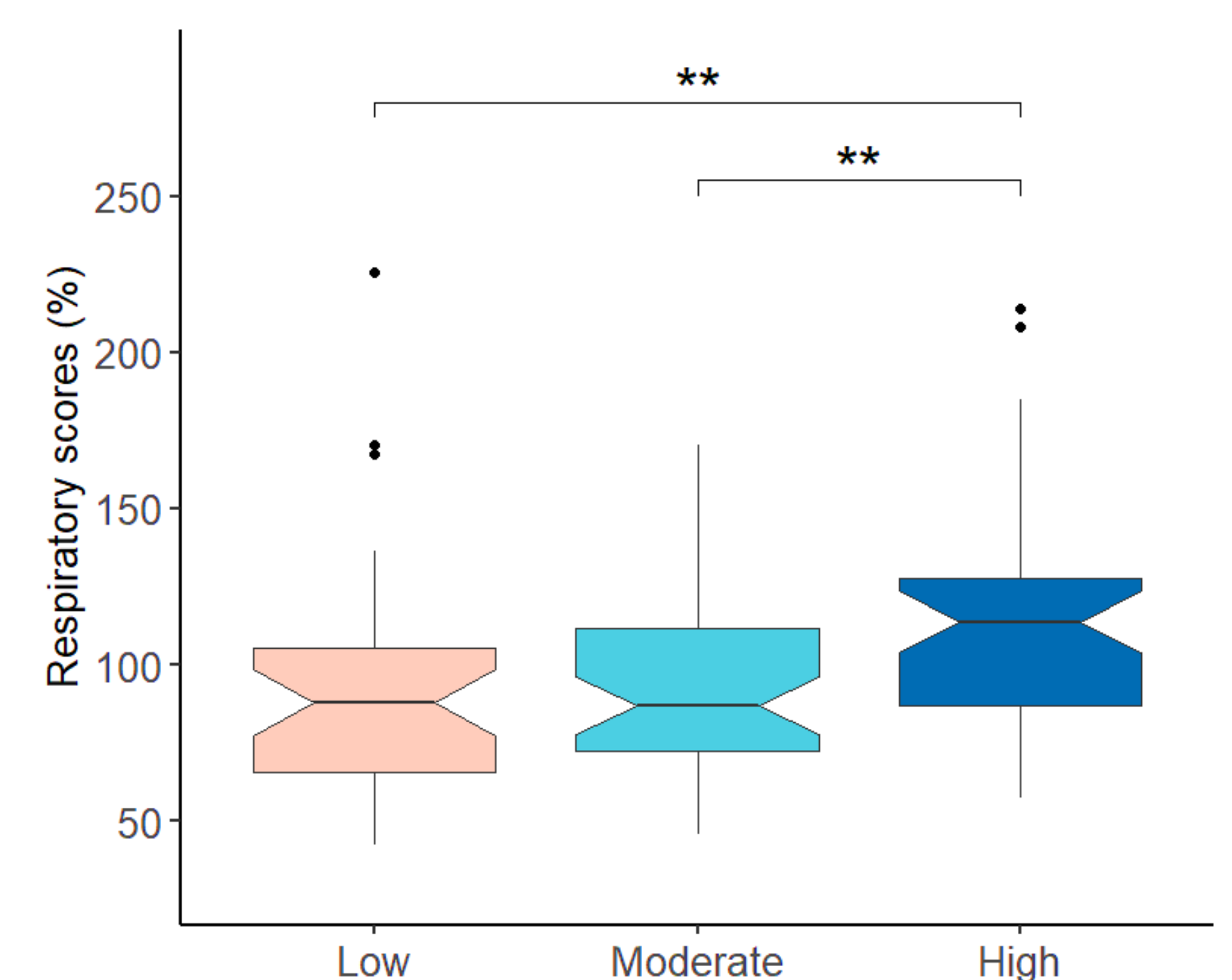
- Higher self-reported **fitness levels** and lower **difficulty in describing feelings** (DDF, TAS subscale) predicted higher respiratory scores



Higher scores for interoceptive strategies ($F_{(5,744)}=70.36, p<.001$)



Higher respiratory scores in very fit group compared to moderately fit group ($F_{2,122}=5.10, p=.007$)



Higher respiratory scores in low **difficulty in describing feeling** group ($F_{2,122}=6.22, p<.003$)

7. Conclusions

This study demonstrates the usefulness of the duration discrimination respiratory task as a valid measure of interoception. Moreover, we found interesting associations with **fitness level** and **alexithymia** that confirm the usefulness of our task as a valid measure of interoception. This study also emphasizes the need for validated tasks in different bodily modalities to understand the links between them and their contributions to a general interoceptive ability.