Tapping into Threat Response:

Assessing Test-Retest Reliability in the Tap-To-Safety (TTS) Task

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Background

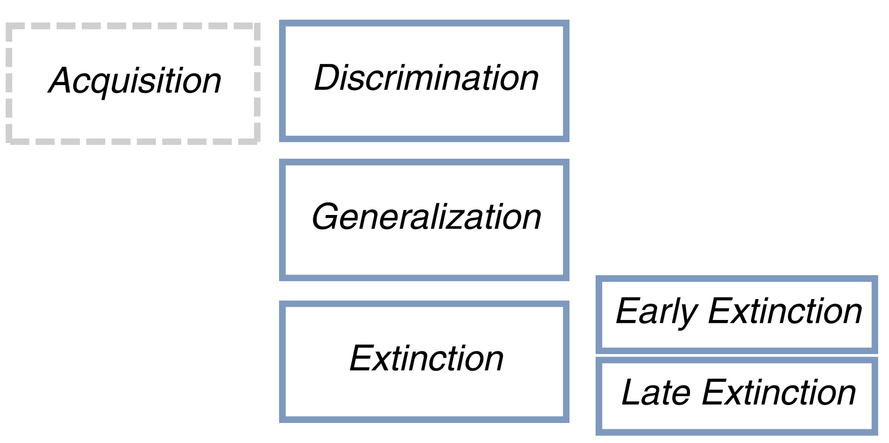
- Compulsions are the behavioral hallmark of obsessive-compulsive disorder (OCD).
- The Tap-To-Safety (TTS) Task is a novel paradigm developed to experimentally model compulsive behavior.
- Modeling clinically relevant behaviors like compulsions can support the development of targeted interventions.
- Assessing test-retest reliability is essential to determine whether TTS task indices consistently reflect individual differences.

Aims

- **Evaluate the test-retest reliability of the Tap-To-Safety (TTS) Task** over a defined time interval.
- **Establish the utility of the TTS Task** for measuring individual differences relevant to OCD-related compulsivity.

Methods

Healthy participants (n=13) complete four distinct phases throughout the task during both visits (T1, T2):

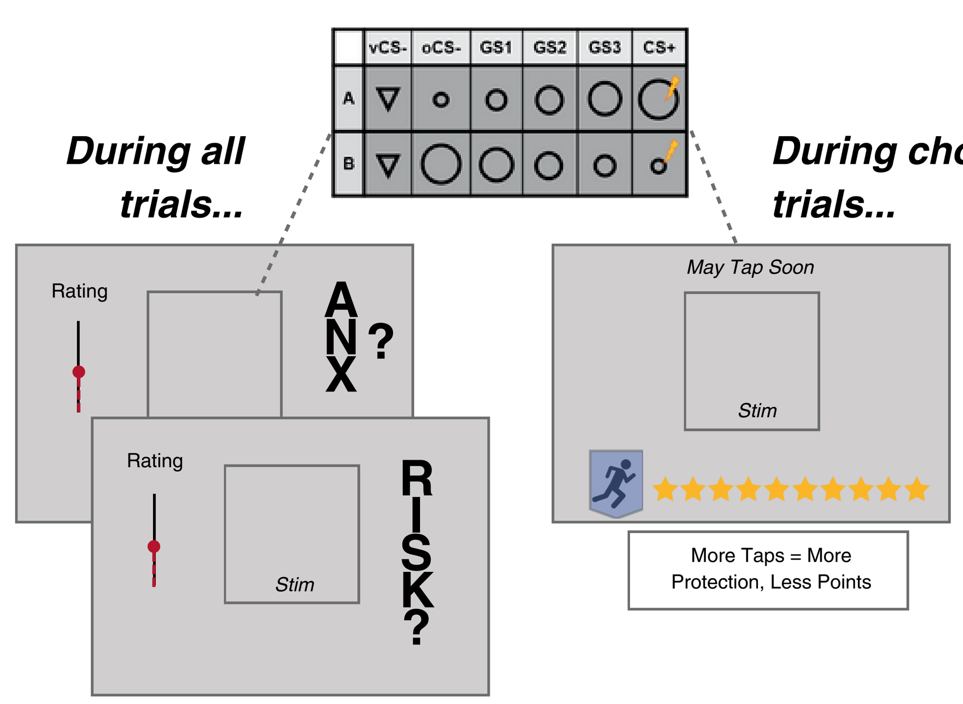


Participant Demographic Summary (Overall)

Variable	N = 13[1]
Sex	
Female	7 (54%)
Male	6 (46%)
Age (years)	38 (16)
Race	
Asian	1 (7.7%)
Other/Mixed	3 (23%)
White	9 (69%)

[1] n (%); Mean (SD)

After the initial acquisition phase, participants are subjected to two kinds of trials with the possibility of shock accompanied by the CS+: **passive** and **choice**.

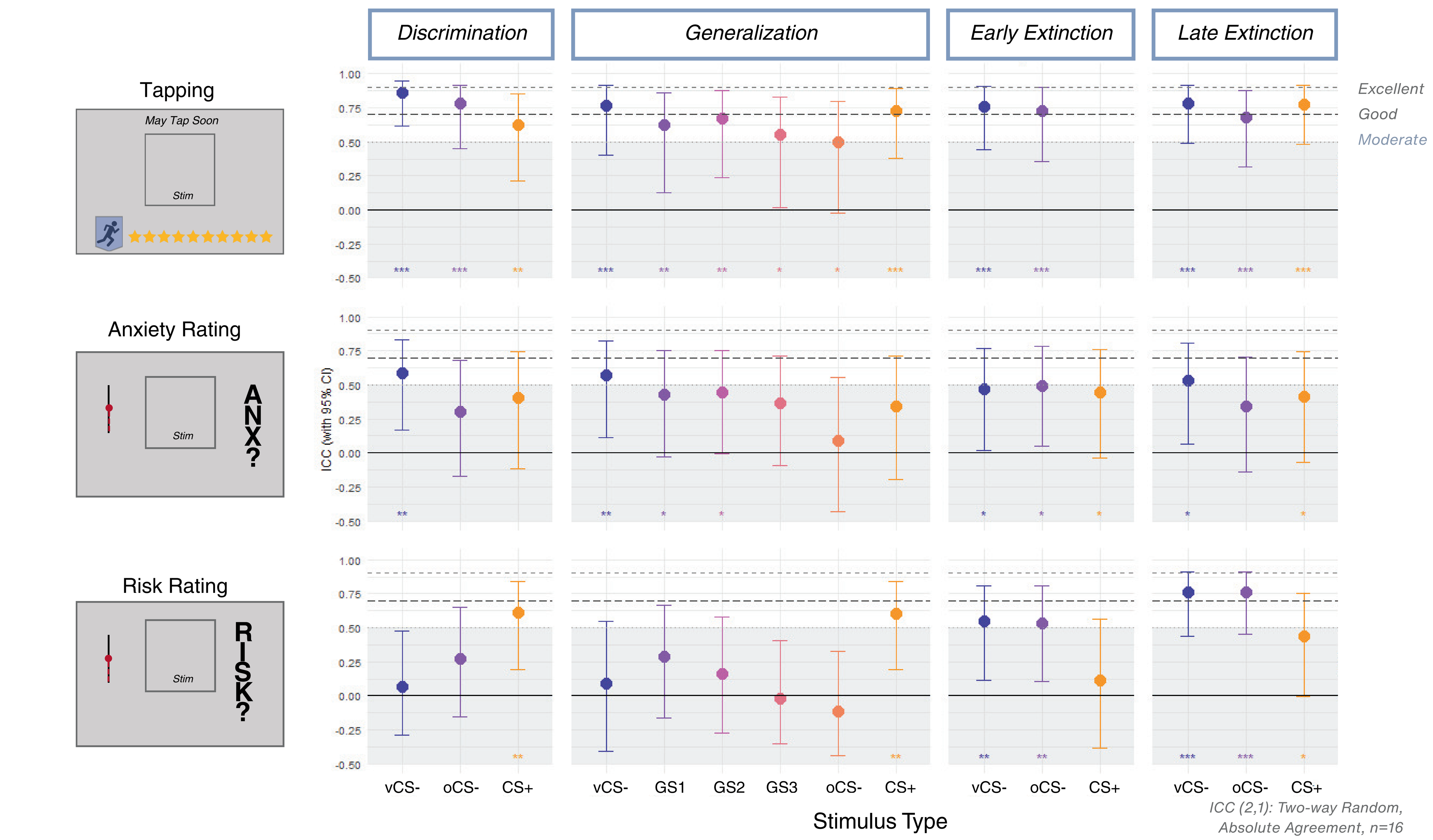


Analysis:

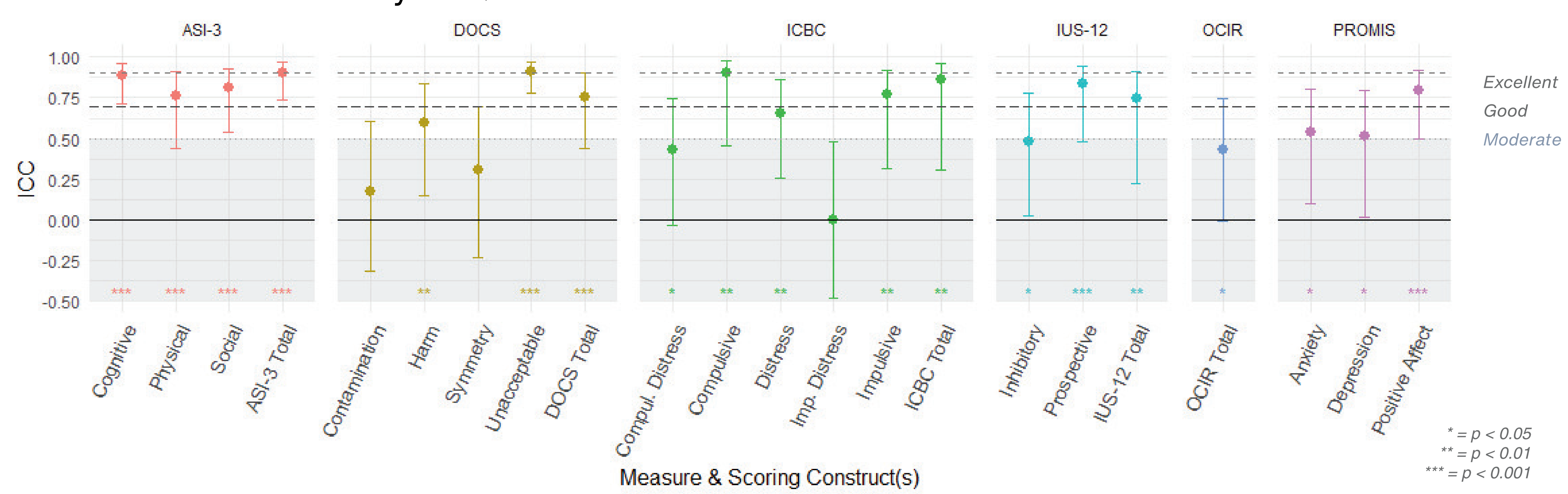
In order to establish test-retest reliability of the task, we calculated ICC values[1] for each response type, for each stimulus type, during each of the phases that occurred during T1 and T2 in those who demonstrated adequate conditioning to the stimulus (n=13).

Results

Test-Retest Reliability of TTS Task Measures



Test-Retest Reliability of Questionnaires



QUESTIONNAIRES:

Questionnaires were also calculated at each time-point to assess symptom severity.

Of all measures, the ASI-3 represents the most consistent subscale and measure total responses across T1 and T2 with 'Good' reliability.

The OCIR demonstrated the least reliable measure total in the 'Low' to 'Moderate' threshold (ICC = 0.43, p < 0.05), in contrast to the present consensus[2].

TAPPING:

Tapping behavior across all stimulus types and phases demonstrated 'Moderate' to high-end 'Good' reliability (0.54 ≤ ICC ≤ 0.87, 0.0002 ≤ p ≤ 0.02) with the highest and most significant values represented by vCS- (0.76 ≤ ICC ≤ 0.86, p < 0.0005).

ANXIETY RATING:

Anxiety ratings for vCS- demonstrate high-end 'Low' to 'Moderate' ICC values (0.47 ≤ ICC ≤ 0.59, p < 0.05) throughout all phases, while all other stimulus types demonstrate 'Low' values of varying significance (0.09 ≤ ICC ≤ 0.48).

RISK RATING:

Risk ratings to the CS+ retained the highest ICC values across phases (0.60 ≤ ICC ≤ 0.) until Extinction (0.11 ≤ ICC ≤ 0.44), where the oCS- and vCS- demonstrated 'Good' reliability (0.76 = ICC, p ≤ 0.0005). Whereas in the Distinction through Generalization phases, all non-CS+ stimuli fell in the 'Low' threshold with varying significance.

OTHER FINDINGS:

All rating types across Generalization specific stimulus types (GS1'2'3) demonstrated 'Low' to 'Moderate' ICC values (-0.11 ≤ ICC ≤ 0.67).

Discussion

Results suggest...

Good test-retest reliability in Tapping responses to stimuli indicate that it may be a reliable behavioral indicator of compulsion-like behavior.

Low to Moderate ICC outputs in Anxiety and Risk ratings indicate variance in responses across timepoints, despite retained tapping behavior.

Behavioral measures used in the TTS task measuring obsessive-compulsive traits demonstrate greater timepoint variance than those assessing other construct ratings (i.e. Anxiety and Depression).

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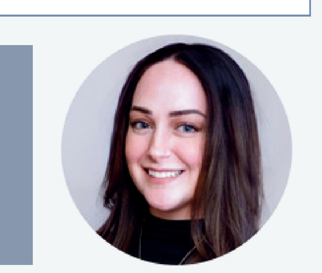

References: [1]Koo, T. K., & Li, M. Y. (2016). A Guideline of Selecting and Reporting Intraclass Correlation Coefficients for Reliability Research. Journal of chiropractic medicine, 15(2), 155–163. https://doi.org/10.1016/j.jcm.2016.02.012; [2]Wootton, B. M., Diefenbach, G. J., Bragdon, L. B., Steketee, G., Frost, R. O., & Tolin, D. F. (2015). A contemporary psychometric evaluation of the Obsessive Compulsive Inventory-Revised (OCI-R). Psychological assessment, 27(3), 874–882. https://doi.org/10.1037/pas0000075; Samuel E. Cooper, Joseph E. Dunsmoor, Fear conditioning and extinction in obsessive-compulsive disorder: A systematic review, Neuroscience & Biobehavioral Reviews, Volume 129, 2021, Pages 75-94, ISSN 0149-7634, https://doi.org/10.1016/j.neubiorev.2021.07.026; Cooper, S. E., Dunsmoor, J. E., Koval, K. A., Pino, E. R., & Steinman, S. A. (2023). Test–retest reliability of human threat conditioning and generalization across a 1-to-2-week interval. Psychophysiology, 60, e14242. https://doi.org/10.1111/psyp.14242; Koo, T. K., & Li, M. Y. (2016). A Guideline of Selecting and Reporting Intraclass Correlation Coefficients for Reliability Research. Journal of chiropractic medicine, 15(2), 155–163. https://doi.org/10.1016/j.jcm.2016.02.012