

When Safety Becomes Costly: Behavioral Patterns in Repetitive Threat- Neutralization

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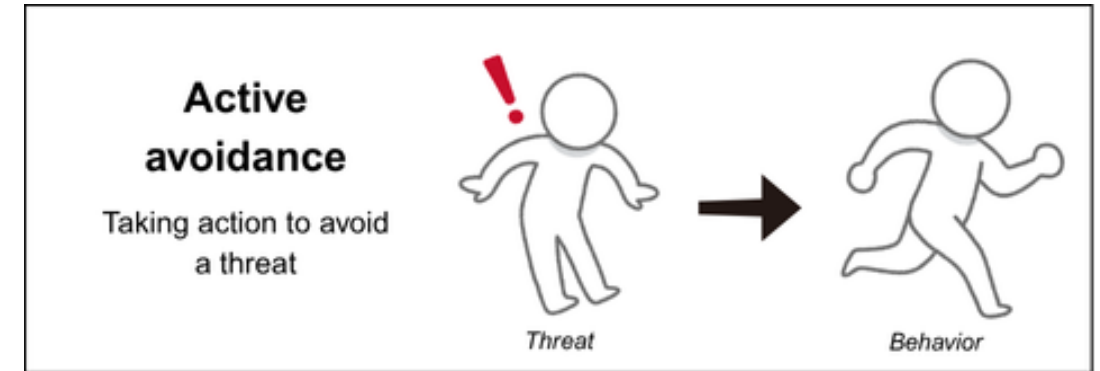


LIBR

Why Study Threat-Related Behavior?

Traditionally, research has focused on two kinds of responses to threat: active and passive avoidance

Some behaviors, like OCD **compulsions**, are repetitive attempts to **neutralize** perceived threats rather than avoid them

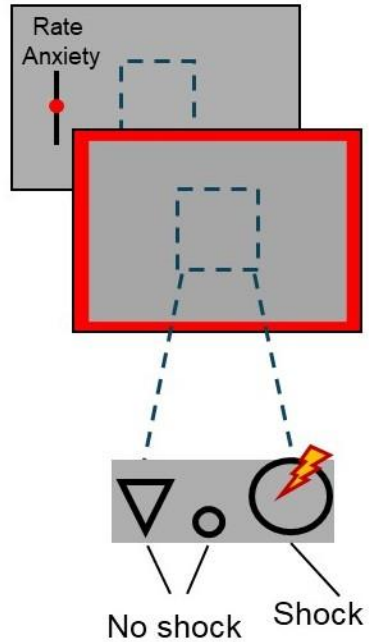


Tap-To-Safety Task

Pavlovian

*Tapping
Training and
Feedback*

Passive Trials



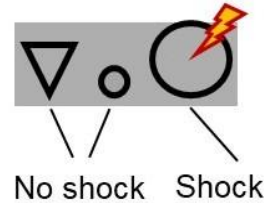
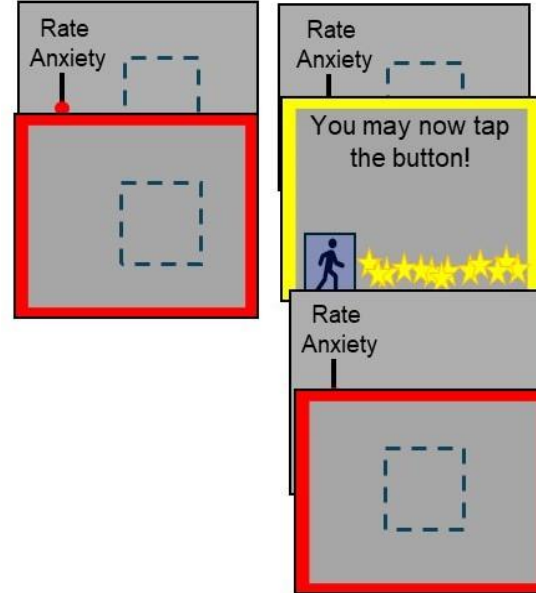
Tap

Result

Protection
Points

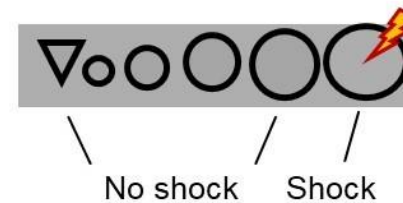
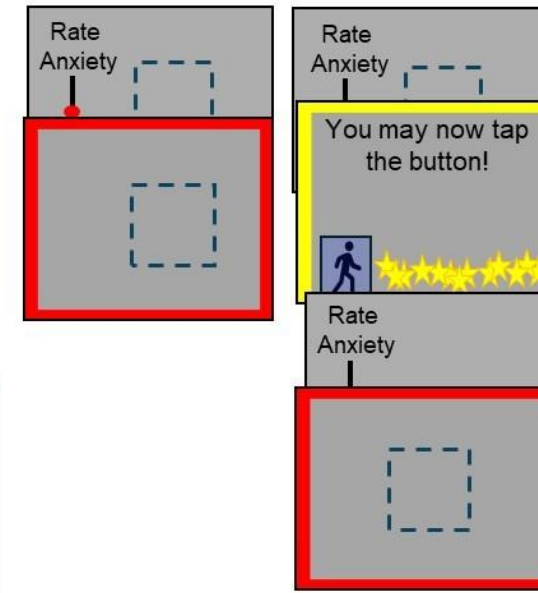
Discrimination

Passive Trials + Choice Trials



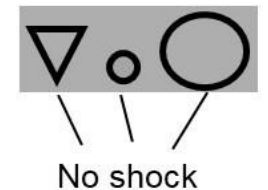
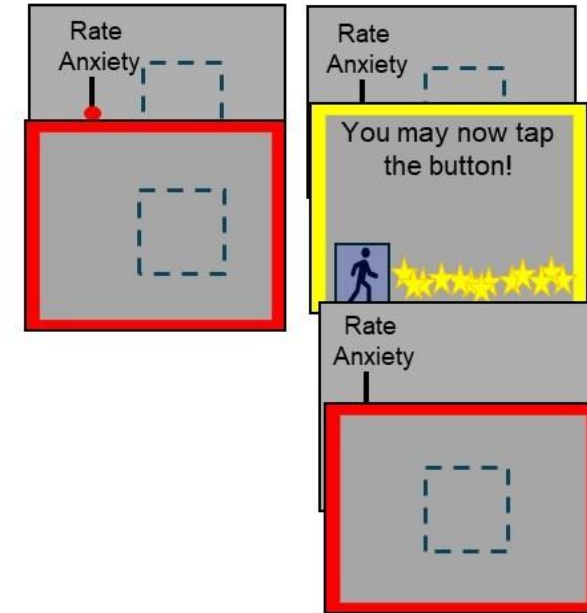
Generalization

Passive Trials + Choice Trials



Extinction

Passive Trials + Choice Trials



Research Questions and Predictions

Question

How do **anxiety traits** like anxiety sensitivity (ASI-3) **influence** repetitive threat-neutralizing behaviors like compulsions in OCD?



Prediction

Higher anxiety sensitivity leads to **more tapping** during uncertainty:

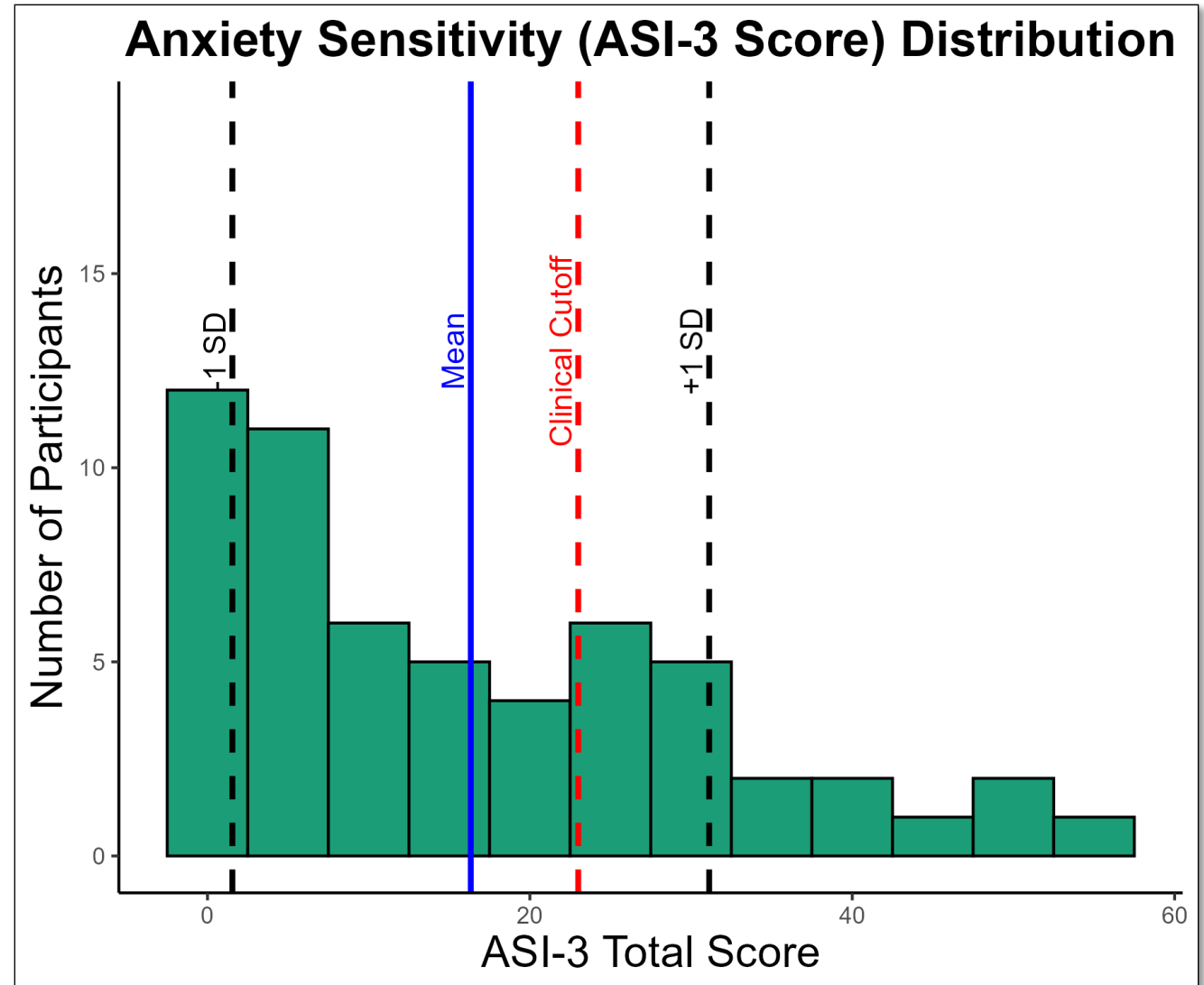
- shapes resembling the threat cue in generalization
- former threat cue (CS+) in extinction

Exploratory Analysis

Are there **distinct patterns** or profiles in how people manage **perceived threat**?

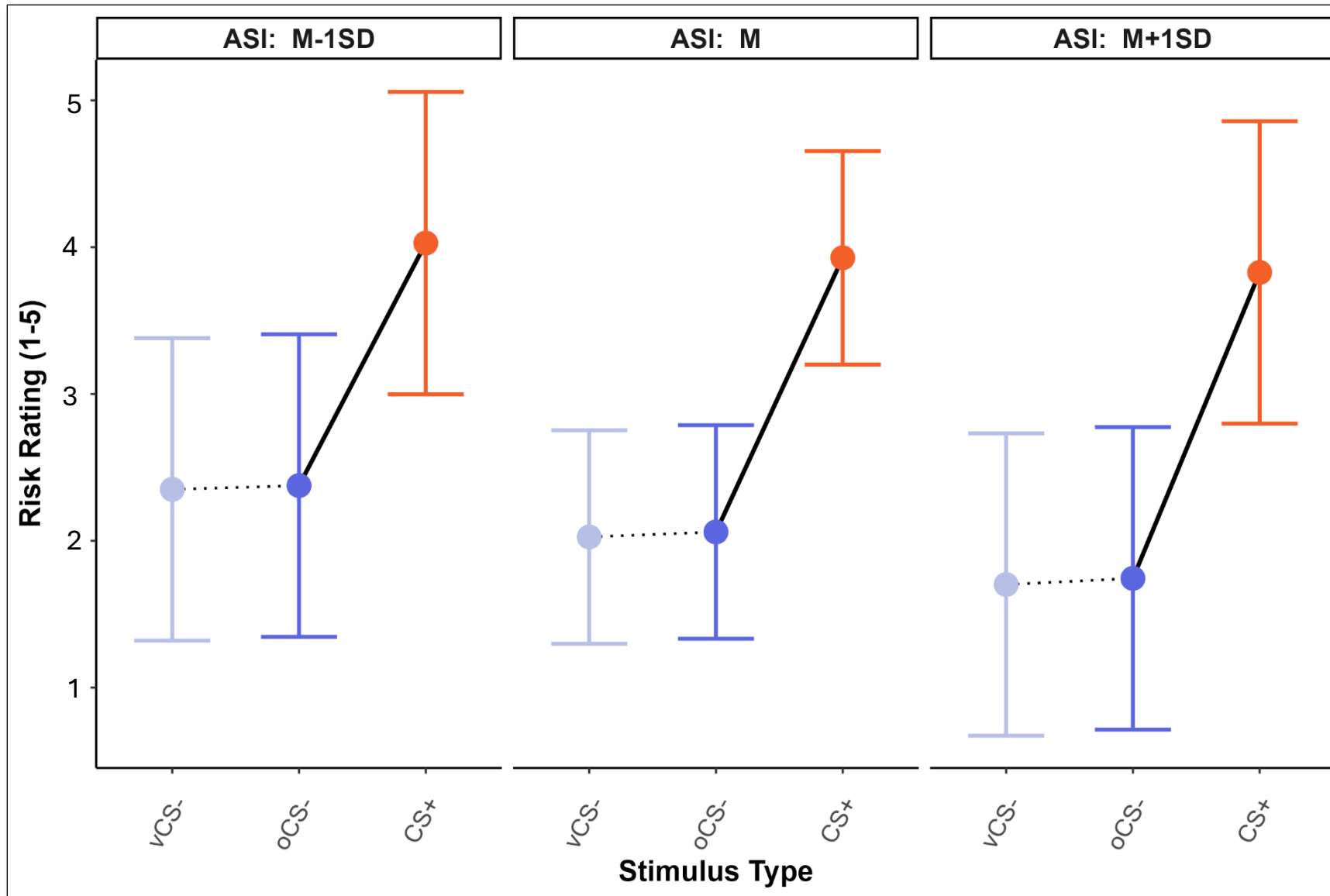
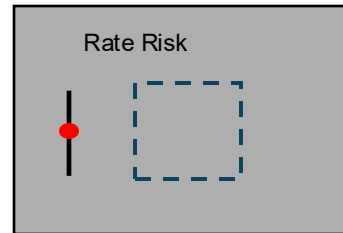
Participants

N (Total) = 57	
	Mean (SD)
Age	36.2 (13.4)
ASI-3	16.3 (14.7)
Sex	N (%)
Female	40 (70.2%)
Male	17 (29.8%)
Race	N (%)
American Indian	3 (5.3%)
Asian	9 (15.8%)
Black	2 (3.5%)
White	33 (57.9%)
Multiracial	7 (12.3%)
Other	3 (5.3%)



Results

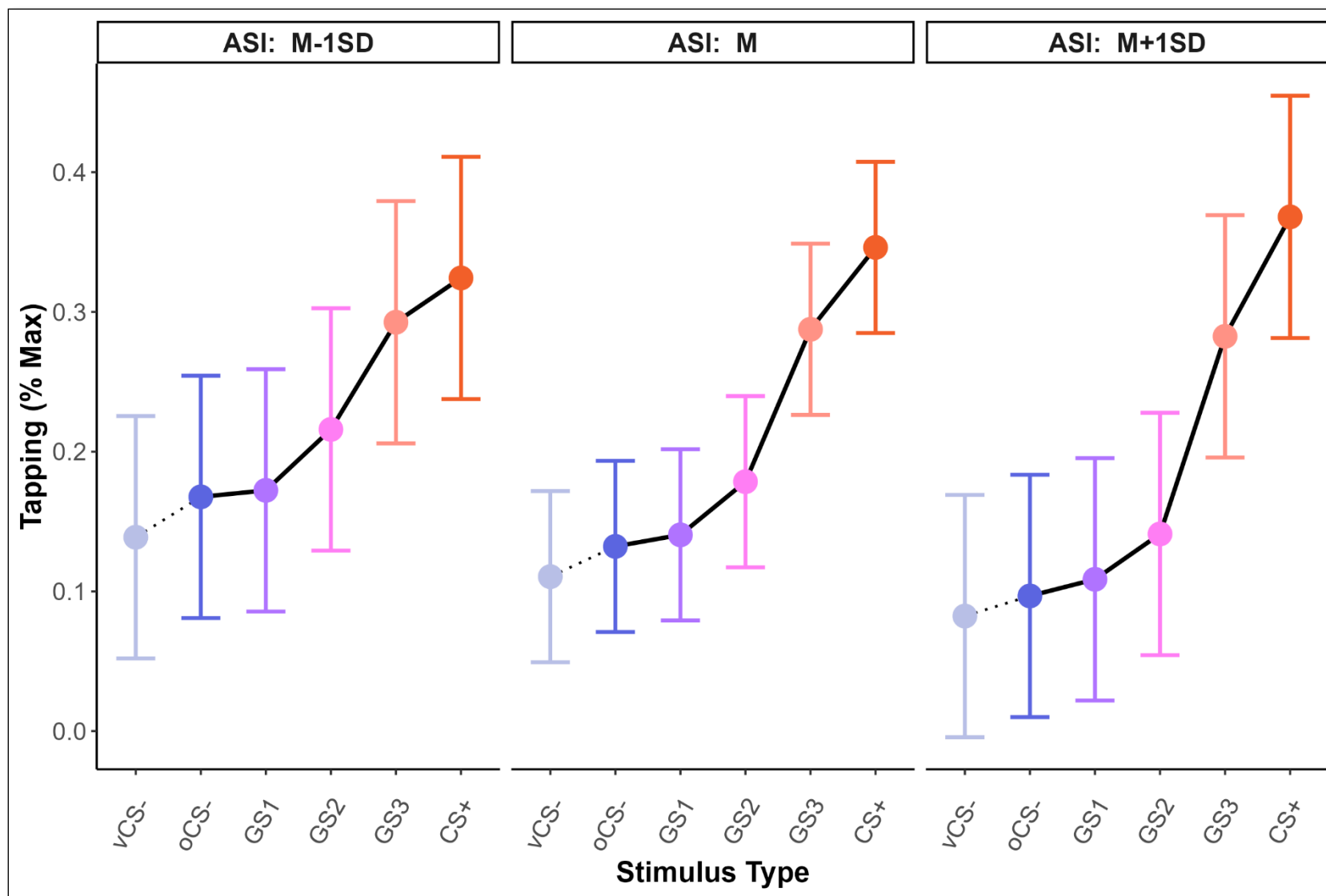
Discrimination: Everyone learns the basic threat association.



vCS-	▽
oCS-	○
CS+	⊙⚡

Main effect of stimulus ($F(2,112) = 108.15$, $\eta^2 = 0.66$, $p < .001$)

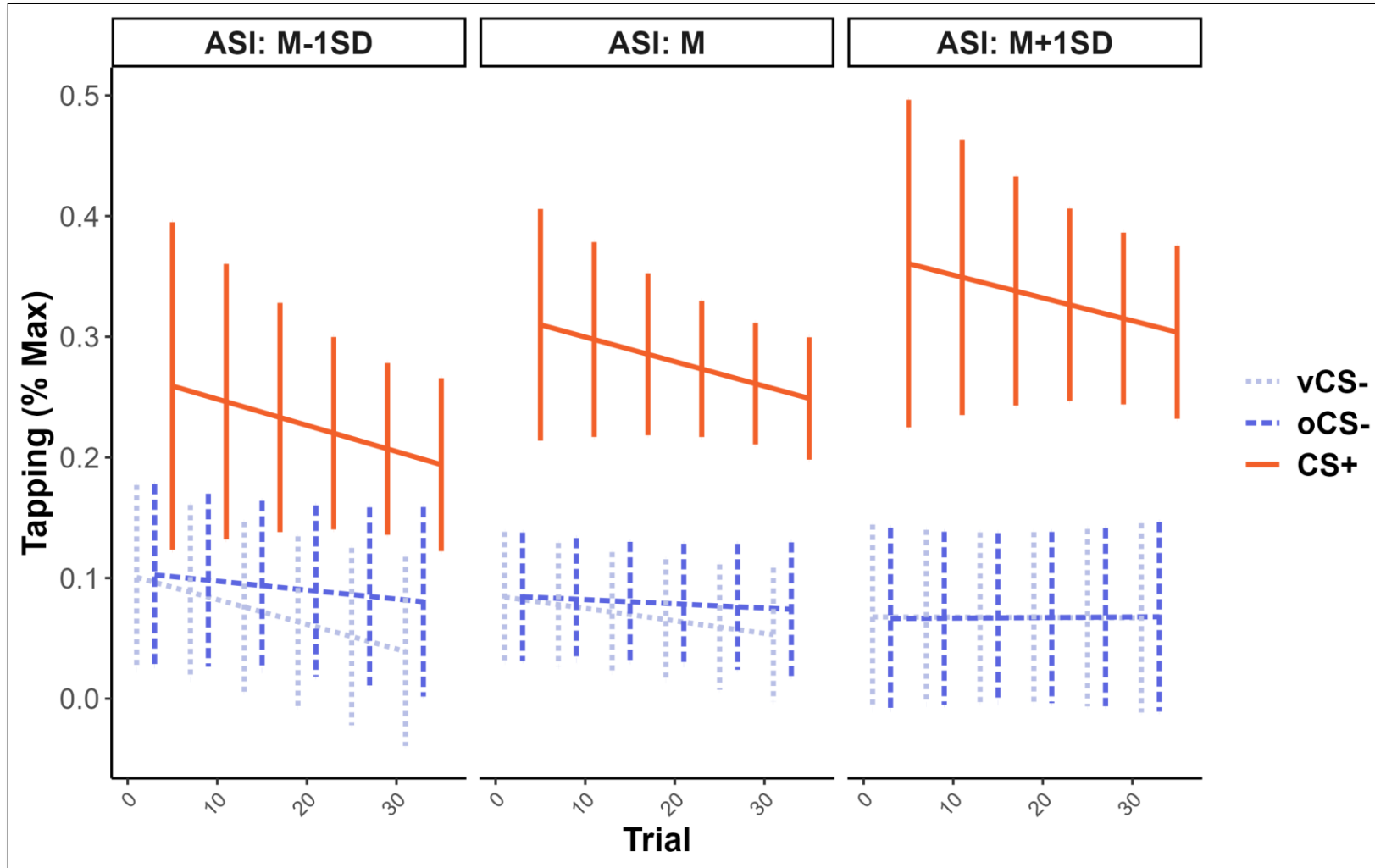
Generalization: Higher AS associated with more tapping to the threat cue.



vCS-	▽
oCS-	○
GS1	○
GS2	○
GS3	○
CS+	⚡

AS × stimulus ($F(5,275) = 2.64$, $\eta^2 = 0.05$, $p = 0.02$)

Extinction: Higher AS associated with greater tapping to former threat cue during extinction.

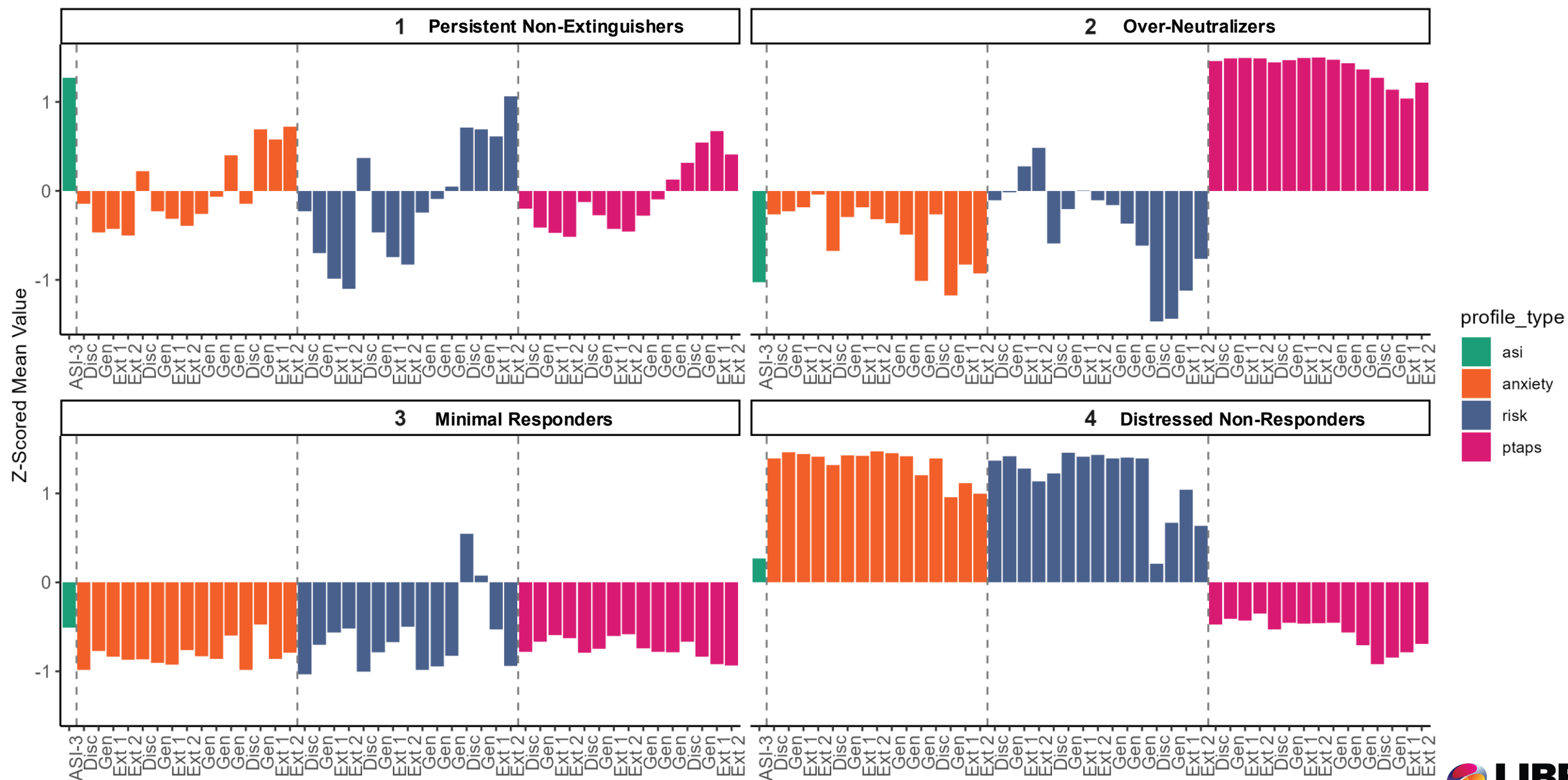


vCS-	▽
oCS-	○
CS+	◯

Trial x AS ($F(1,959) = 20.21$, $\eta^2 = 0.02$, $p < .001$), Stim x AS ($F(2,959) = 10.18$, $\eta^2 = 0.02$, $p < .001$)

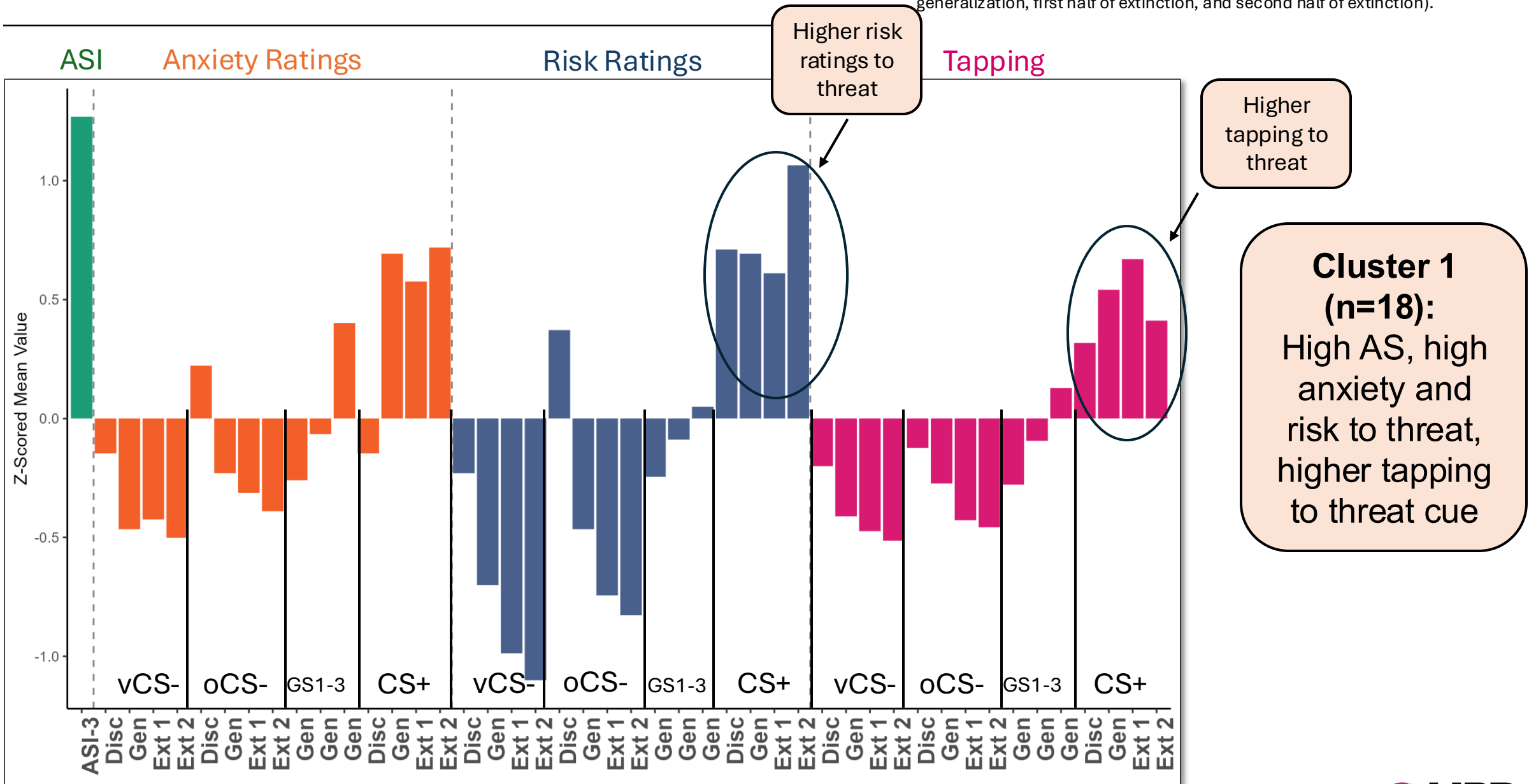
Exploratory Analyses

Clustering Reveals Four Distinct Profiles



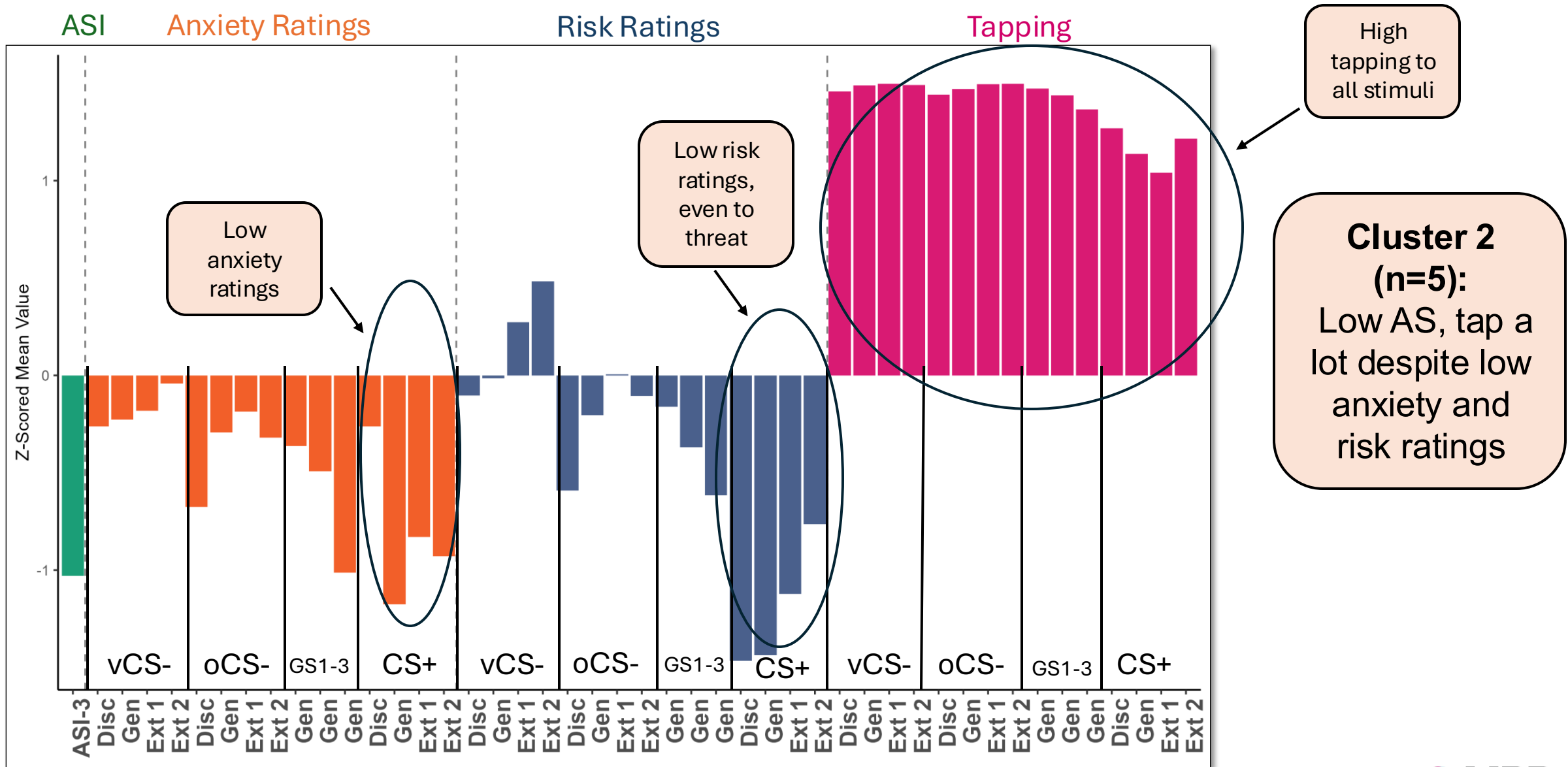
Persistent Non-Extinguishers

Note: Variables are grouped by type (AS, anxiety, risk, taps), and within each, ordered by stimulus (vCS-, oCS-, GS1-GS3, **CS+**) then phase (discrimination, generalization, first half of extinction, and second half of extinction).



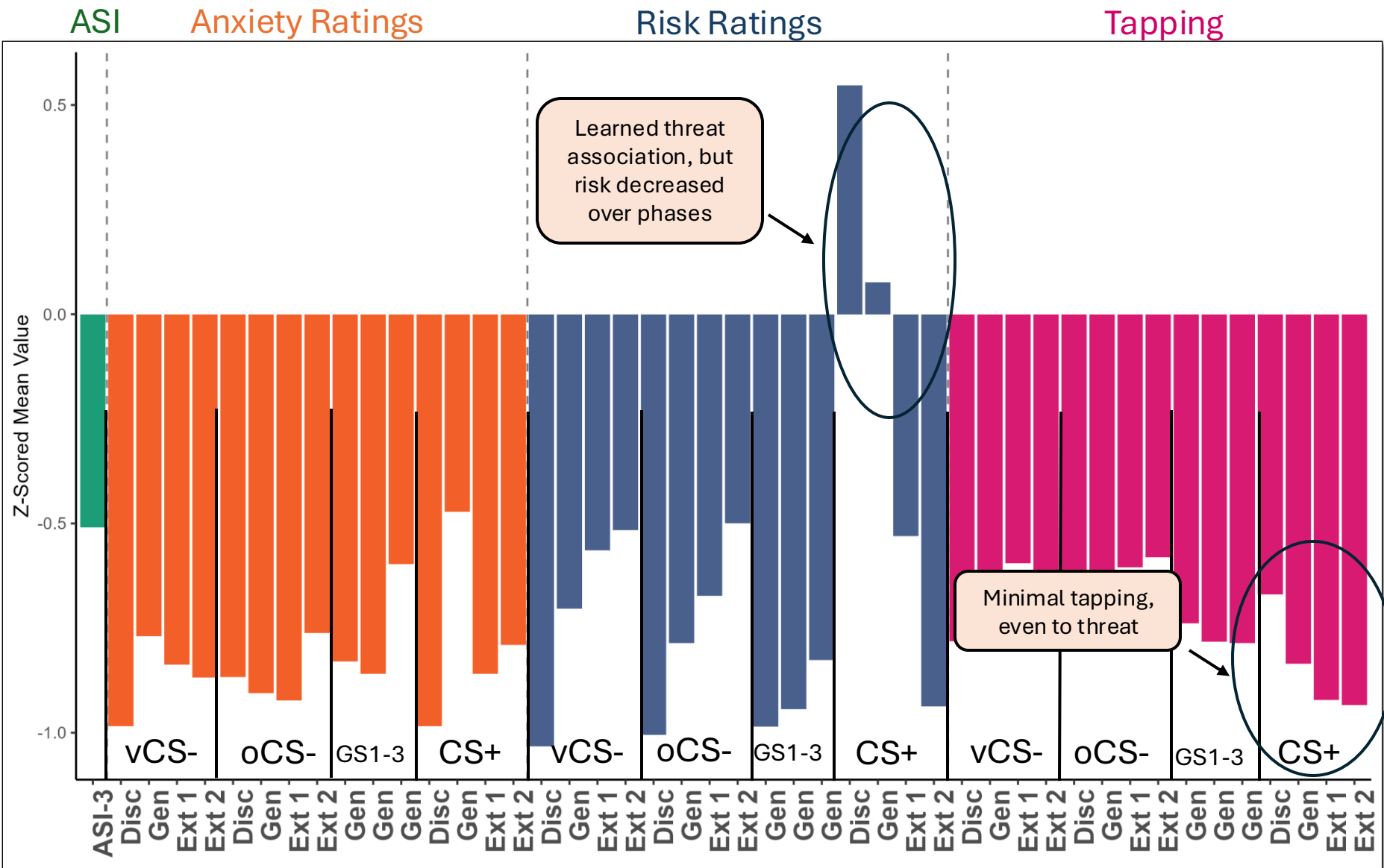
Over-Neutralizers

Note: Variables are grouped by type (AS, anxiety, risk, taps), and within each, ordered by stimulus (vCS-, oCS-, GS1-GS3, **CS+**) then phase (discrimination, generalization, first half of extinction, and second half of extinction).



Minimal Responders

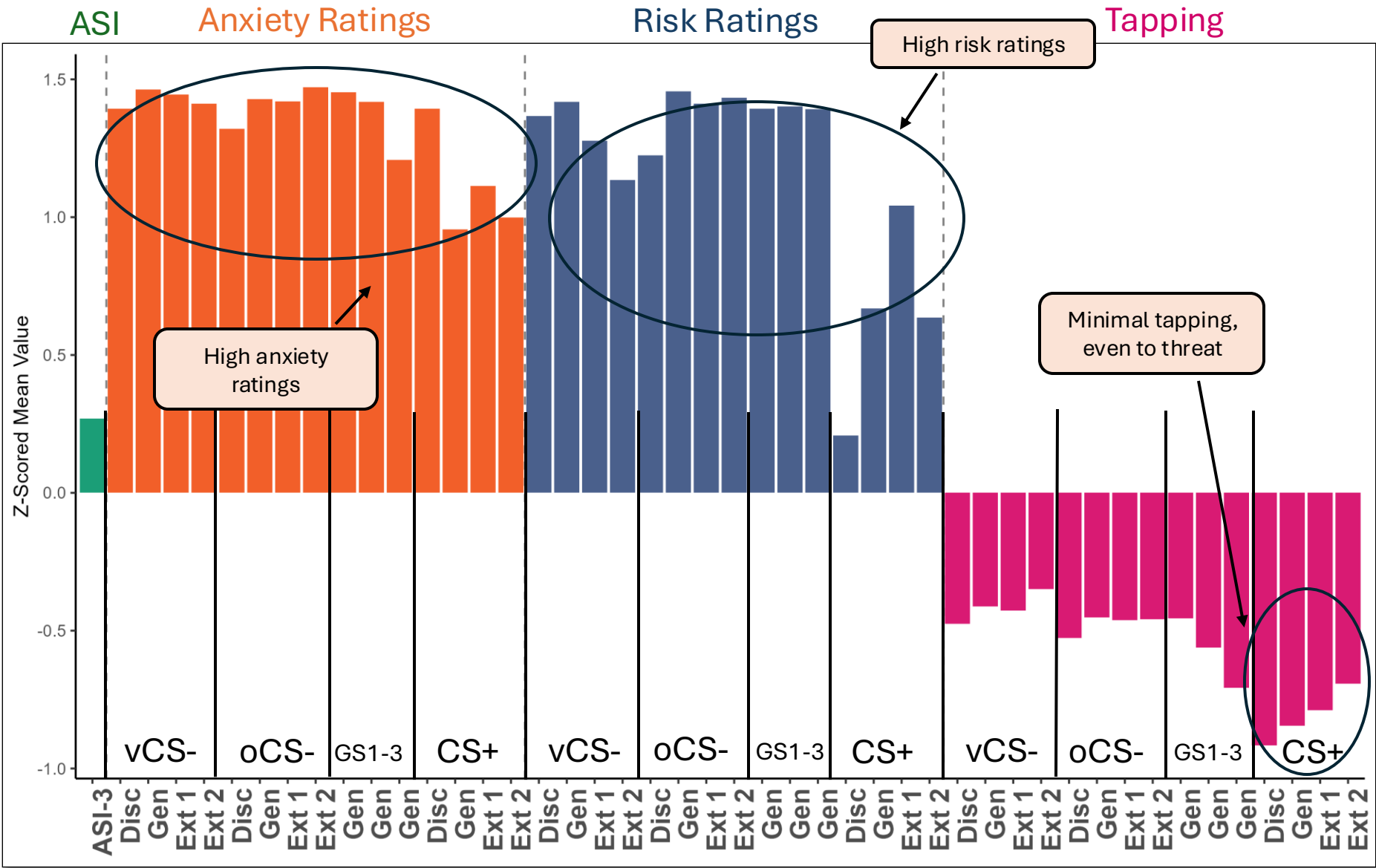
Note: Variables are grouped by type (AS, anxiety, risk, taps), and within each, ordered by stimulus (vCS-, oCS-, GS1-GS3, **CS+**) then phase (discrimination, generalization, first half of extinction, and second half of extinction).



Cluster 3 (n=25):
Low AS, low anxiety and risk ratings, minimal tapping

Distressed Non-Neutralizers

Note: Variables are grouped by type (AS, anxiety, risk, taps), and within each, ordered by stimulus (vCS-, oCS-, GS1-GS3, **CS+**) then phase (discrimination, generalization, first half of extinction, and second half of extinction).

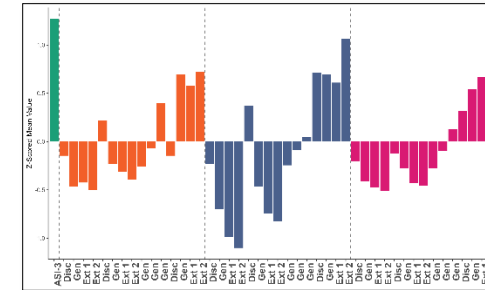


Cluster 4 (n=9):
Moderate AS, high anxiety and risk ratings, low tapping

Clustering Reveals Four Distinct Profiles

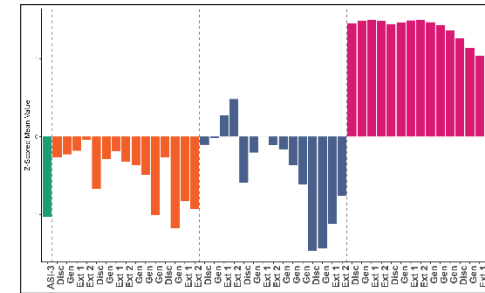
Persistent Non-Extinguishers:

Compliments earlier findings: greater tapping to threat cue in high AS, especially in extinction.



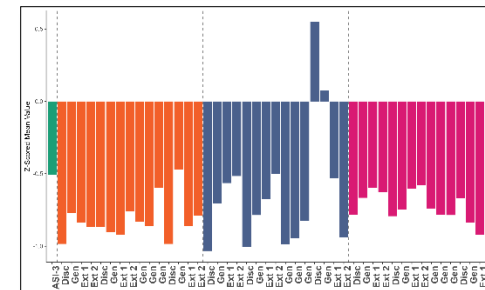
Over-Neutralizers:

Showed lower distress, but tapped to all stimuli.



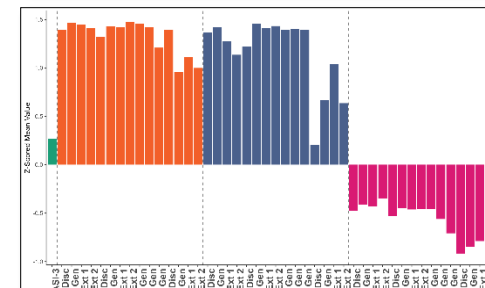
Minimal Responders:

Learned threat association, but had low ratings and minimal tapping.



Distressed Non-Responders:

Showed higher distress to all stimuli, but low tapping even to threat.



Findings

Main Question

How do **anxiety traits** like anxiety sensitivity (ASI-3) **influence** repetitive threat-neutralizing behaviors like compulsions in OCD?



Findings

Anxiety sensitivity plays a key role in **tapping** during uncertainty:

- Former threat cue (CS+) in extinction

Exploratory Analysis

Are there **distinct patterns** or profiles in how people manage **perceived threat**?

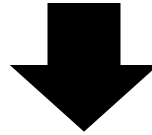


RTN response patterns are **heterogeneous**:

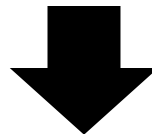
- Persistent non-extinguishers
- Over-neutralizers
- Minimal responders
- Distressed non-neutralizers

What Does This Tell Us?

Anxiety sensitivity plays a key role in **higher RTN** to the threat cue in uncertain situations, like extinction



RTN response patterns are **heterogeneous**; not all individuals react the same way



Personalized interventions may be beneficial, but more research is needed

Thank you!



New preprint on the TTS
Task

Questions?

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