



SAPIENZA  
UNIVERSITÀ DI ROMA



# Interoception and Dissociative Experiences: Unveiling the Relationship Between Bodily Awareness and Altered Sense of Self

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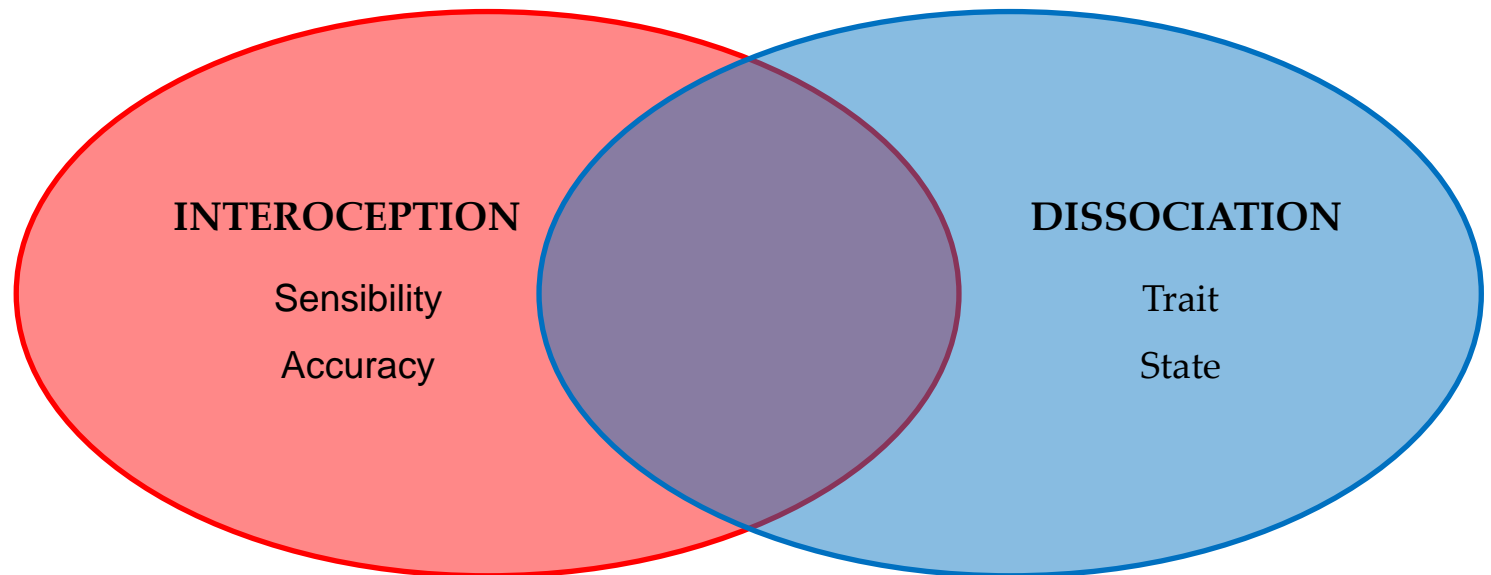
XXXI CONGRESSO NAZIONALE SIPF

**Past, Present and Future Brains**

Siena 9-11 novembre 2023  
Museo Santa Maria della Scala

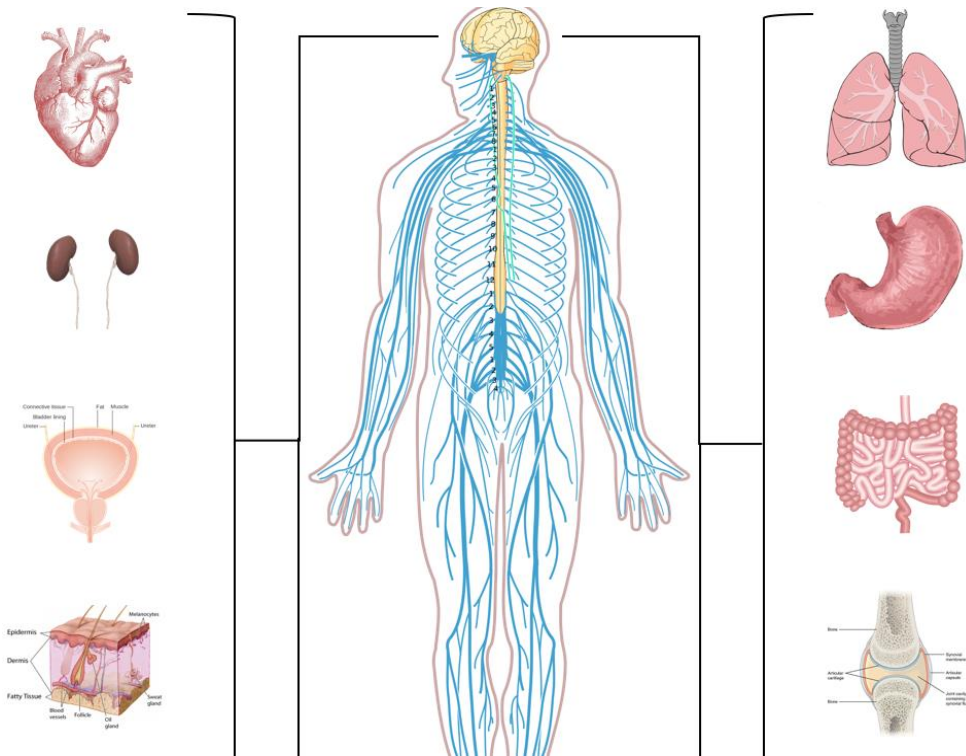
# Aims

Exploring the relationship between **interoception** <-> **trait and state** (normative, reversible, experimentally induced) **dissociative experiences** in **neurotypicals**



# Theoretical background: Interoception

Perception of visceral signals necessary to sense the physiological condition of the body and represent its internal state.



Herbert et al., 2012;  
Craig, 2009

**Sensibility:**  
self-evaluated assessment of subjective interoception

-  
*Questionnaires (BPQ, MAIA)*

**Accuracy:**  
performance on objective behavioural tasks

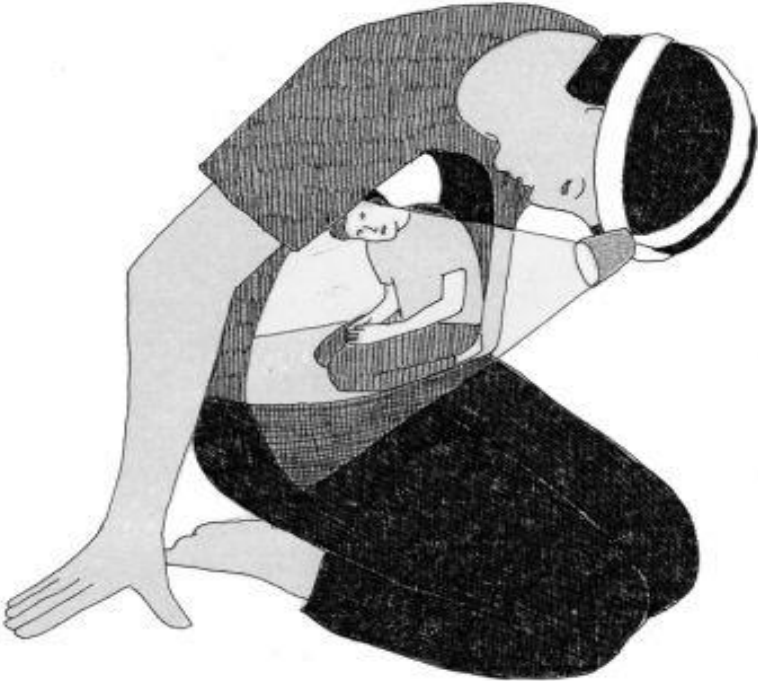
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*Heartbeat Counting Task, Water Load Test,  
Pneumoception Task*

**Awareness:**  
metacognitive awareness of interoceptive accuracy

-  
*Confidence-accuracy correspondence*

Garfinkel et al., 2017

# Theoretical background: Interoception and Self Identity



## **Bodily Self:**

A coherent, stable representation of the bodily self results from the continuous integration of exteroceptive and interoceptive signals (*Herbert & Pollatos, 2012*).

## **Self-consciousness:**

Feeling of being a distinct, holistic entity capable of global self-control and attention, possessing a body located in a specific space and time (*Serino et al., 2013*)

Interoception contributes to shaping the sense of bodily self and to higher cognitive levels of self consciousness (*Tsakiris et al. 2011*)

# Theoretical background: Self Identity and Dissociation



## Pathological Dissociation:

disconnection and/or lack of continuity between thoughts, memories, surroundings, actions and identity) (*DSM-V*):

- AMNESIA
- DEPERSONALIZATION
- DEREALIZATION



## Normative Dissociation:

- Alterations of experience of self consciousness occur not only in psychiatric conditions, but also **transiently** in neurotypicals (*Waller et al., 1996; Simeon & Abugel, 2006*), as a consequence of:
  - Dissociative personality traits
  - Sleep deprivation
  - Stress and Anxiety
  - Experimental manipulations (Mirror Gazing Task, MGT)

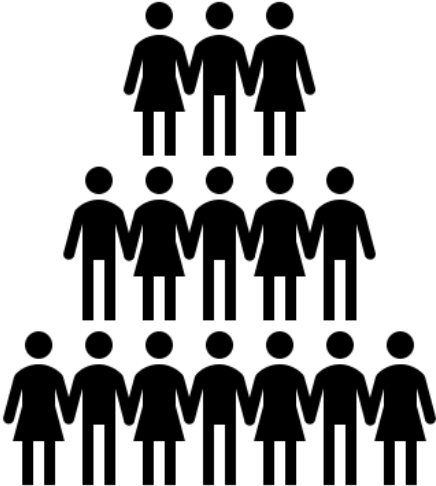
**Dissociation can be conceptualized as a deficit of bodily self-consciousness that may affect the whole sense of self (*Simeon & Abugel, 2006*).**

# Theoretical background: Interoception and Dissociation



- Altered interoception in patients with dissociative symptoms (Neurological Disorders, BPD, DID, DPD, PTSD...) (*Flasbeck et al., 2020; Pick et al., 2020; Koreki et al., 2020; Jungilligens et al., 2020; Schmitz et al., 2021*) with mixed findings.
- No clear evidence in neurotypical / normative dissociative traits.

# Methods and Experimental Design



83 healthy participants (F: 39, M: 44; mean age = 24,11; SD = 2,31), based on an *a priori* power analysis.

1<sup>st</sup> session

## Online Questionnaires:

- **Interoceptive sensibility (MAIA)**
- **Trait dissociation (DIS-Q)**

2<sup>nd</sup> session

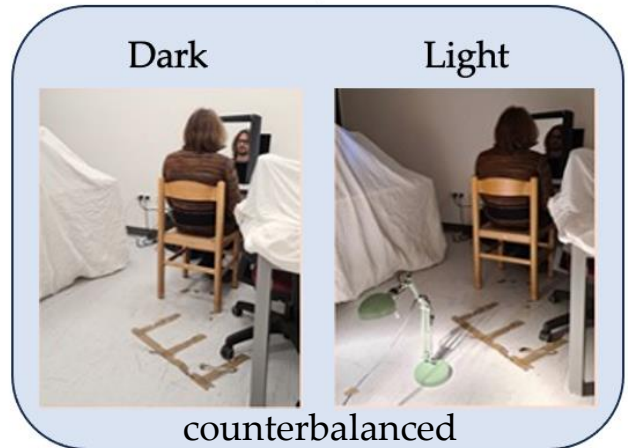
## Interoceptive Accuracy



State Anxiety  
Affective States

STAI, PANAS

## State Dissociation Induction



State Dissociation measures

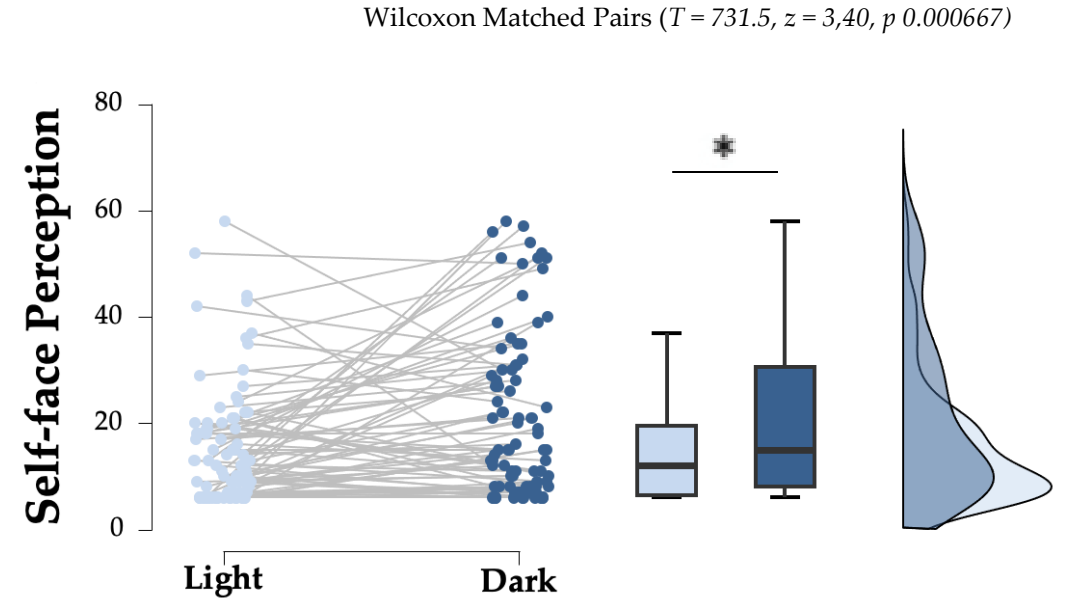
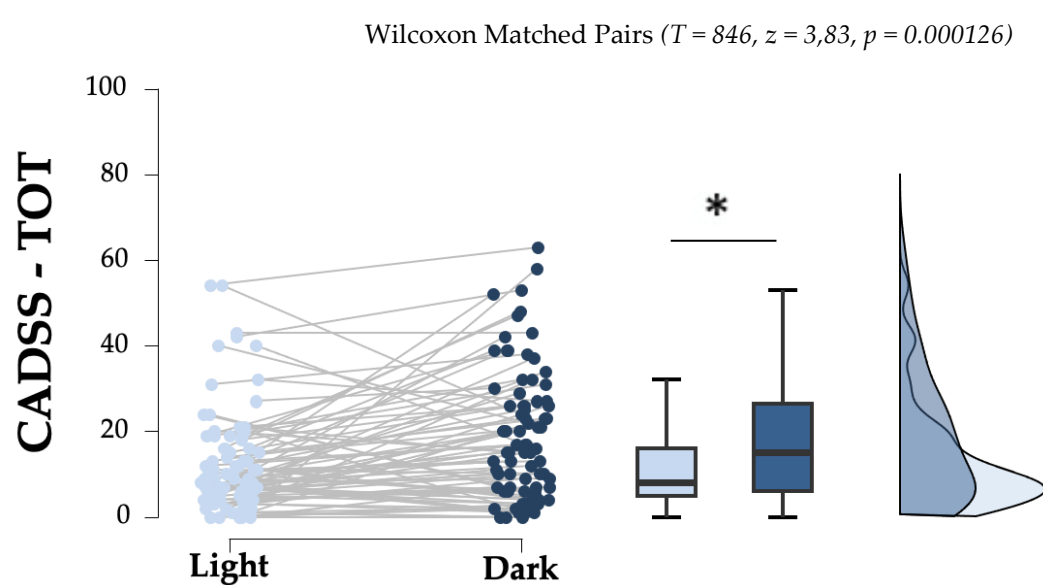
CADSS + self-face perception

State Anxiety  
Affective States

STAI, PANAS

# Results: Mirror Gazing Task

MGT induces State Dissociation and alterations in self-face perception.

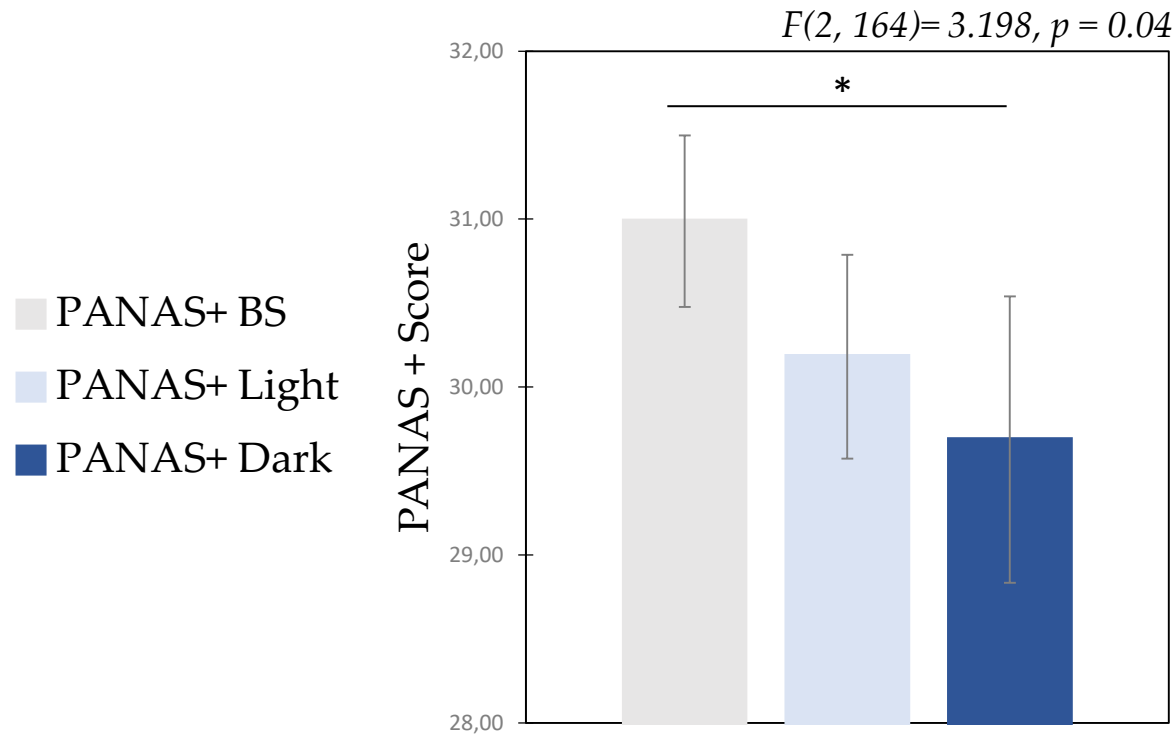


**Higher state dissociation (CADSS) and alterations in self-face perception in the experimental condition (DARK).**



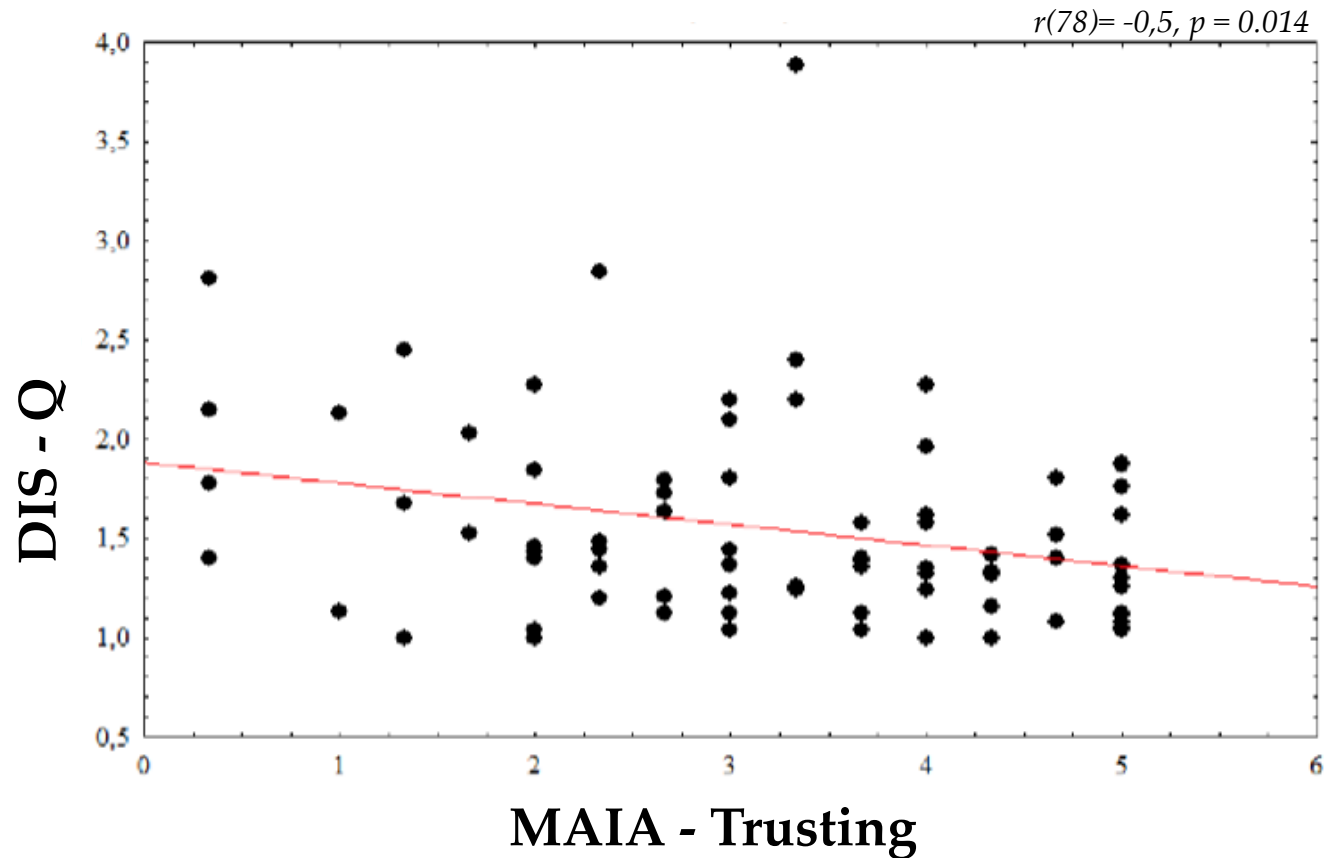
# Results: Affective States and Anxiety

Experimentally-induced dissociation reduces positive affective states but does not change negative affective states, state anxiety (STAI) and physiological activation indexes (Heart Rate and Heart Rate Variability).



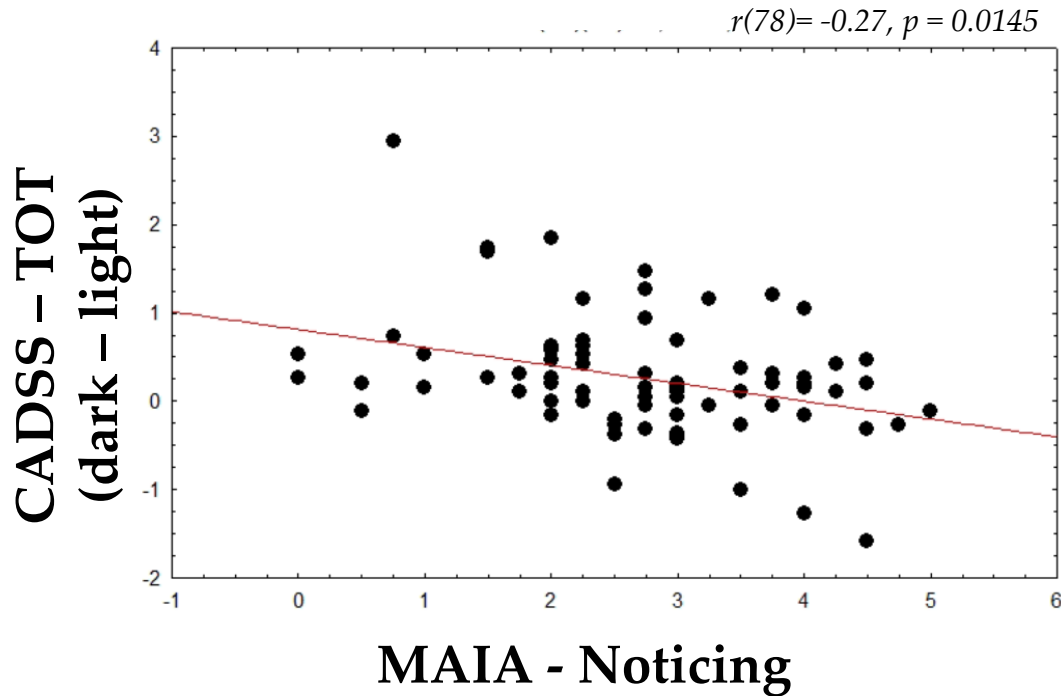
- No significant difference in negative affective states and anxiety in the 3 conditions (baseline, light, dark)
- Lower tendency to experience positive affective states during the experimental manipulation in the dark condition.
- No difference across conditions in the considered parameters (RMSSD, SDNN, LF/HF) and in mean HR

# Interoceptive Sensibility (MAIA - Trusting) – but not Interoceptive accuracy (HCT) - is negatively associated with trait dissociation (DIS-Q).

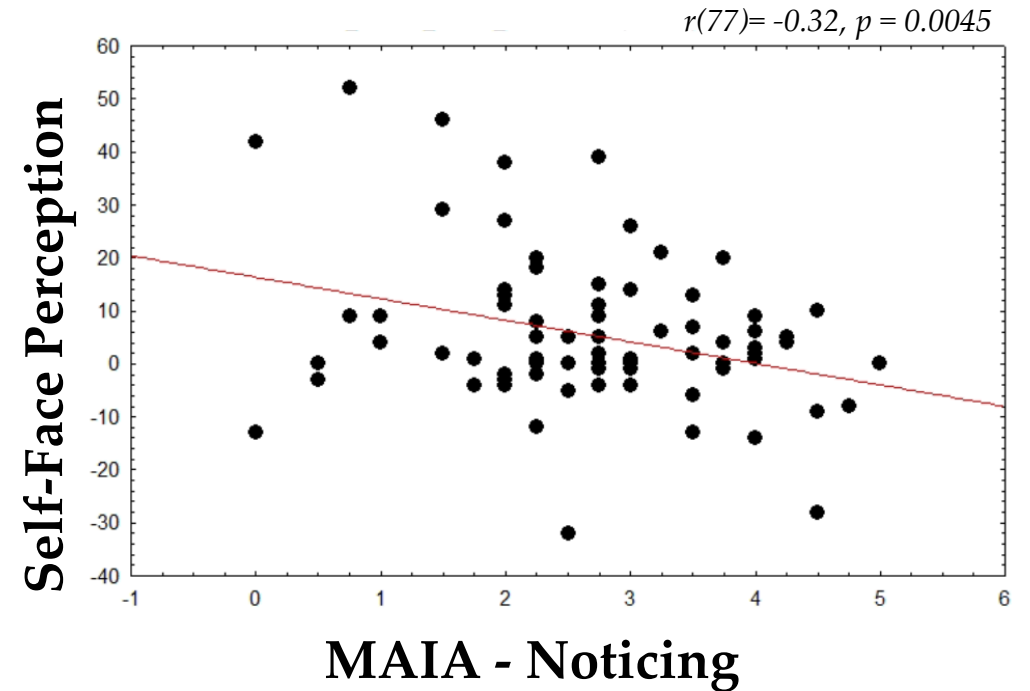


The more participants experience their body as safe and trustworthy, the less they tend to dissociate.

# Interoceptive Sensibility (awareness of bodily sensations; MAIA - Noticing) - but not accuracy (HCT) – is negatively associated with State Dissociation (CADSS) and self-face perception.



The more participants are aware of uncomfortable, comfortable, and neutral body sensations, the less they tend to dissociate.



The more participants are aware of uncomfortable, comfortable, and neutral body sensations, the less they experience alterations in self-face perception

# Discussion

- The experimental manipulation induces state dissociation (CADSS) and alterations in self-face perception in neurotypicals.
  - Replication of previous findings (*Caputo, 2010*)
- Evidence of a relationship between interoception (sensitivity) and dissociation (trait/state).
  - MAIA – Trusting is associated with trait dissociation. Similar relationships are also present in patients (*Pick et al., 2020; Machorrinho et al., 2022*) and neurotypicals (*Maqueda et al., 2015*).
  - MAIA – Noticing is associated with state dissociation and alterations in self-face perception, in contrast with another study on vicarious pain responders (*Bowling et al., 2019*).

# Thank you for your attention!

A special thank to...



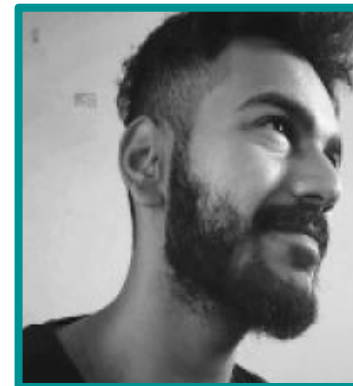
**Sofia Ciccarone**



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**Ilaria Bufalari**



**Anand Rai**