BODY BASED MENTAL IMAGERY AND ITS RELATIONSHIP TO BODY IMAGE DISTURBANCE AND INTEROCEPTION FROM ADOLESCENCE TO LATE ADULTHOOD

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Background

- Body image disturbance (BID) refers to the distortion of perception, behaviour, or cognition related to weight or shape (Posavac, 2002).

- Negative body attitudes tend to arise in early adolescence and appears stable from mid to late adolescence into adulthood (Runfola et al, 2013)

- However, there is limited understanding of body image in late adult populations and the role of body memory in own body mental imagery.

- **The allocentric lock** model of BID indicates that **body surveillance** behaviours cause individuals to engage in **3rd person (allocentric) viewpoints** of the self. This leads to a prioritization of **external signals (exteroception)** at the cost of **internal signals (interoception),** causing a deficit in the ability to update **allocentric body memory** with inputs from perception (Riva, 2012).

- Therefore, this study aims to investigate the relationship between awareness of one's internal physiological state (interoceptive awareness) and the ability to mentally represent one's body in space.

- This will provide novel insights into the developmental aspect of BID and identify the crucial pre-clinical markers of BID as a core aspect of eating disorder behaviours.

Research questions

1. What is the relationship between **interoceptive awareness** and the ability to mentally **represent one's body in space**

2. Does **BID** predict performance in **mental imagery tasks**?

3. How is BID and body based mental imagery ability affected by **age**?

Methods

Design and sample: This is a within-subjects cross sectional study and the target sample size is 1200 female participants. Grouped by age we will have 200 subjects per 6 target age groups: Young teens (13 – 15), Older teens (16-18), Young adults (19-24), Adults (25-39), Middle adults (40-59), Older adults (60-75)

Methods: This is an **online study** hosted on **Pavlovia** and **Qualtrics**. Adult participants will be recruited on **Prolific**

Body image disturbance will be measured using:
- The Objectified consciousness questionnaire (McKinley, 1996)
- The Body shape questionnaire (Cooper et al, 1986)
- The Body Image State Scale (Cash, 2002)

Interoception will be measured using:
- The Multidimensional Assessment of Interoceptive Awareness (MAIA-2) (Mehling et al, 2018)

Body based mental imagery will be measured using:

The Own Body Transformation task (OBT) (Blanke, 2005):

- The task involves making left-right hand judgements of forward facing, side facing and backward facing figures displayed on a screen; these are thought to require either **egocentric or allocentric** transformations

- Participants are instructed to judge on which hand a star is placed if their own bodies were positioned in the same way.

- The reaction time and accuracy in which participants make these judgments will provide data on mental imagery specific to own body and spatial rotation ability.

- Stimuli are computer generated avatars varied by weight +/- 5 BMI points above or below the "normal" BMI (BMI;22) (e.g underweight = 17 BMI, overweight = 27 BMI) (*See figure 1):* this is to look at the role of external body related information as a moderator of task performance and BID

- A control block consisting of a "which side" judgement as opposed to a "which hand" judgement was also given to ascertain spatial compatibility and hand dominance

Figure 1. Stimuli used in the OBT, Made on Bodyvisualizer Participants perform this task for 96 trials with 60 control trials

Hypotheses:
1. Performance in body based mental imagery task will vary with age and level of Body Image disturbance:
a. Reaction time difference between front and back facing bodies will increase with age.
b. Reaction time difference will positively predict BID/significantly differ according to level of BID
c. Reaction time difference between overweight and underweight bodies will be moderated by BID
2. Body Image Disturbance scores will be predicted by interoceptive awareness and own body imagery scores (reaction time difference, accuracy).
3. OBT performance (Accuracy) will correlate with interoceptive awareness.

Analysis Plan

Analyses will be conducted in R:

- The difference between front-facing and back-facing accuracy responses will be calculated.

- **Mixed model ANOVAS** will be conducted for the OBT task to look at within subject's effects of: Position (egocentric/allocentric) x Age (6X2 ANOVA)

- A **Linear regression model** will be built: Age, Interoceptive awareness, BID Score (sum of scores from the questionnaires) will be entered as predictors

- OBT task: back-facing and front-facing difference will be entered as the outcome variable.

- A **correlation** analysis will also be conducted to look at the relationship between BID scores and OBT reaction times for avatar weight

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