EXPLORING BODY-RELATED ATTENTIONAL BIAS IN EARLY ONSET ANOREXIA NERVOSA USING VIRTUAL REALITY AND EYE-TRACKING

Mariarca Ascione[1], Marta Carulla-Roig[2], Franck Meschberger-Annweiler[1], Eduardo Serrano-Troncoso[2], Marta Ferrer-Garcia[1], Jose Gutierrez-Maldonado[1]

[1]University of Barcelona & Institute of Neurosciences; [2]Hospital Sant Joan de Déu of Barcelona

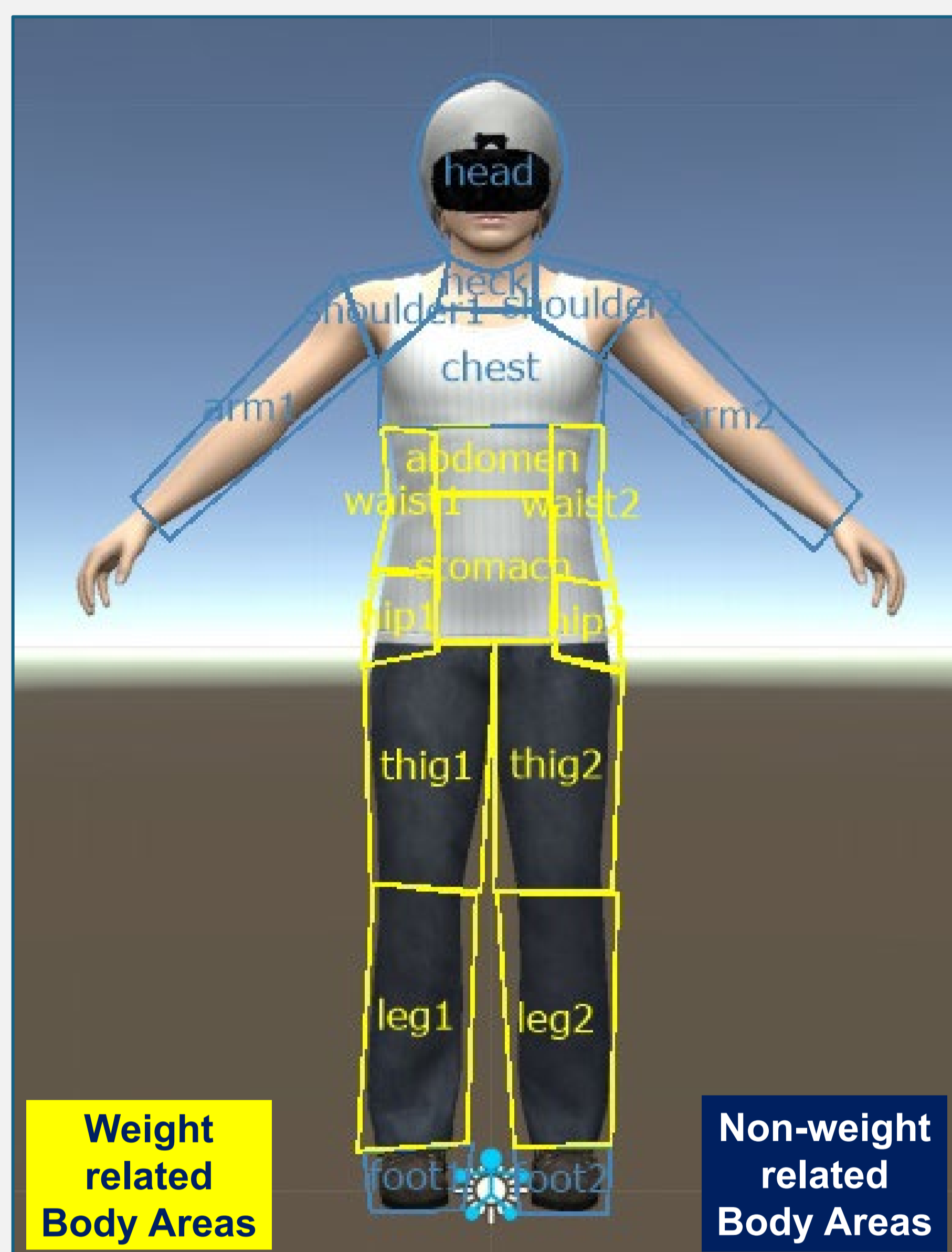**E**ating **D**isorders **R**esearch **S**ociety — UNIVERSITAT DE BARCELONA — Institut de Neurociències UNIVERSITAT DE BARCELONA — SJD Sant Joan de Déu Barcelona · Hospital

INTRODUCTION

The rise of early onset anorexia nervosa (EOAN) poses concerns due to its impact on development. EOAN is a complex condition that is not fully understood, including its distinctive features such as attentional bias (AB). AB towards one's body, particularly to weight-related parts (e.g., thighs, stomach, etc.), contributes to body dissatisfaction and unhealthy eating behaviors.

Weight related Body Areas — Non-weight related Body Areas

OBJECTIVE

This study uses virtual reality (VR) and eye-tracking (ET) technology to explore differences in AB toward the body according to the age of onset of AN.

METHOD

Thirty-nine AN patients were divided into:

early onset group - **EOAN**	aged 12-14	N 11
typical onset group -**TOAN**	aged 15-17	N 28

PROCEDURE

1. **Generation of the avatar shape from the patient's real silhouette**
2. **Immersion in a virtual reality environment**
3. **Embodiment in a real-size body virtual avatar reflected in a mirror**
4. **Full body ownership illusion**
5. **Assessment of attention toward body parts using VR and ET**
6. **Assessment of body-checking behaviors →** Body Checking Questionnaire


Patient's perspective of the virtual environment.
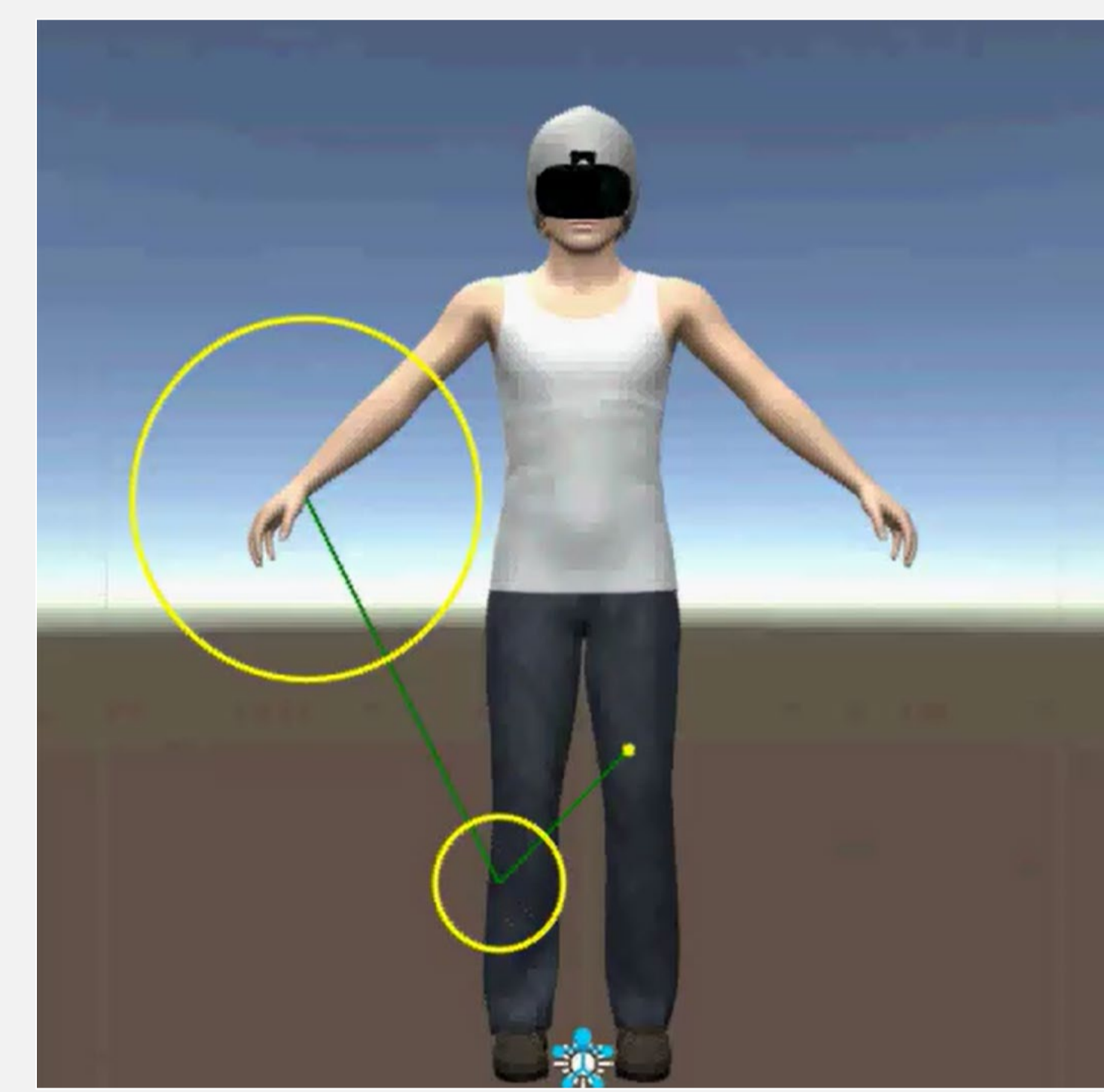
Assessment of attention towards the body using an ET device integrated within the VR headset.

RESULTS

The EOAN group exhibited shorter fixation duration (t(37) = 2.6, p = .01) and marginally fewer fixations duration (t(37) = 1.8, p = .07) on weight-related body parts than the TOAN group. No differences were found between the EOAN and TOAN groups in attention to non-weight-related body parts for both total fixation time (t(37) = -.56, p = .58) and number of fixations (t(37) =.32, p = .75). Moreover, the EOAN group displayed marginally lower body-checking behaviors compared to the TOAN group (t(37) = 1.8, p = .07).

Total Fixation Time (ms) on weight-related body parts — TOAN, EOAN

Number of Fixations on weight-related body parts — TOAN, EOAN

Body-Checking Behaviors — TOAN, EOAN
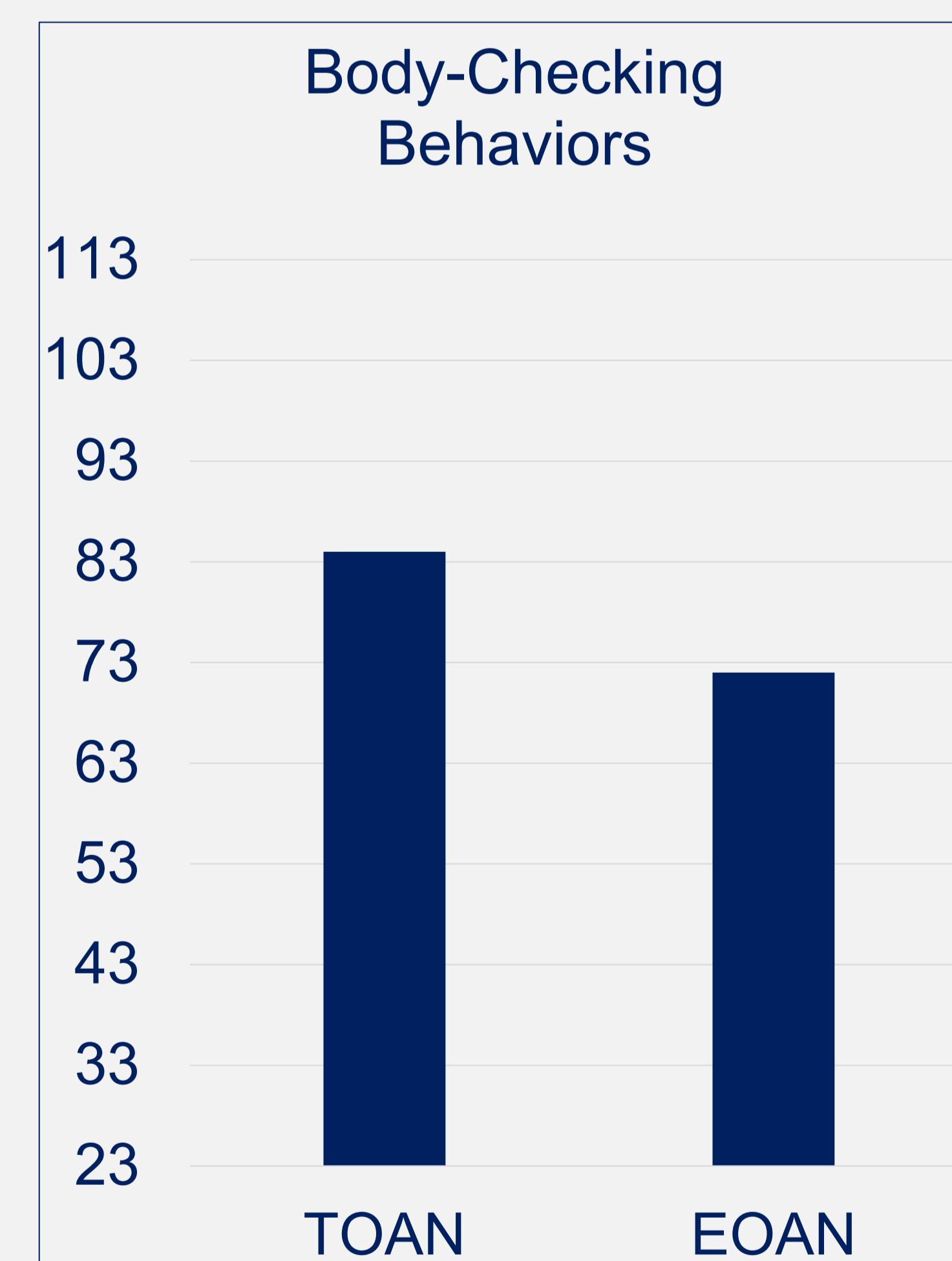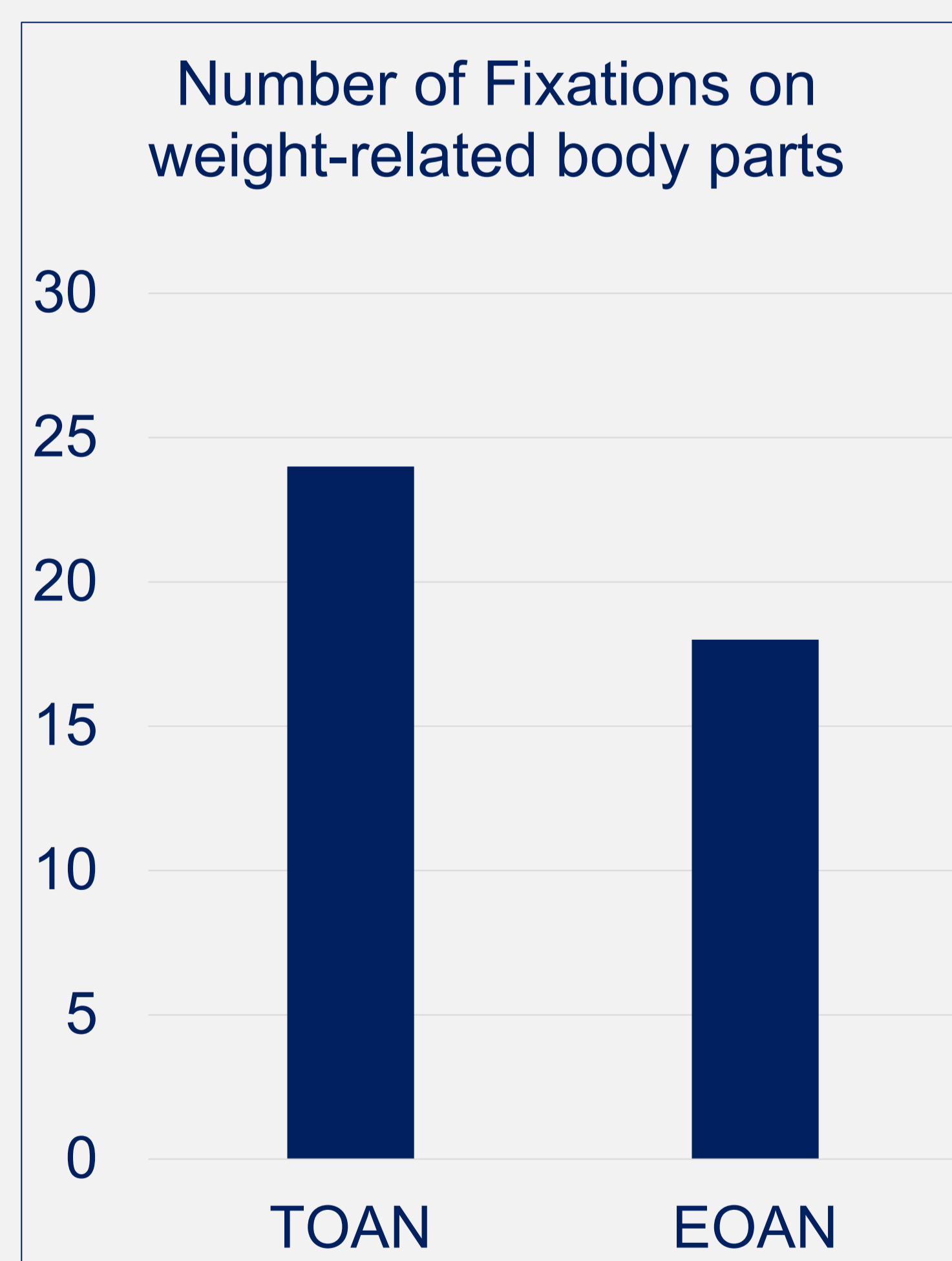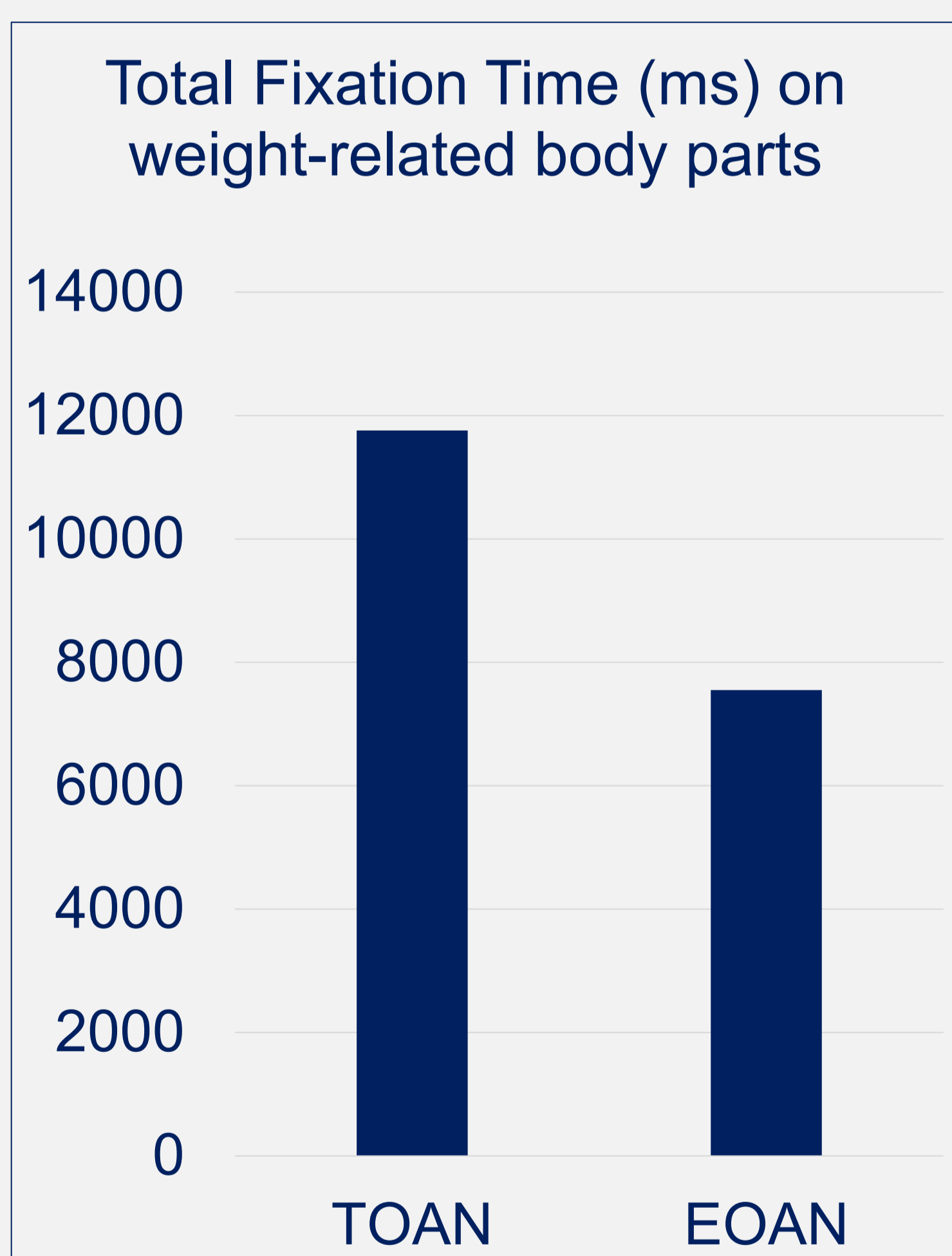
DISCUSSION

These findings suggest that the age of AN onset may influence some specific behavioral tendencies and attention patterns related to body parts and body-checking. EOAN patients may divert attention away from weight-related body parts, potentially as a coping mechanism, with decreased engagement in body-checking behaviors. This pattern may temporarily relieve emotional distress caused by thoughts about weight and body shape. Although this study offers valuable insights and highlights the potential impact of VR with ET on future eating disorder research, additional research is necessary to validate and further build upon these findings.

REFERENCES

- Modan-Moses D, Yaroslavsky A, Kochavi B, Toledano A, Segev S, Balawi F, Mitrany E, Stein D. Linear growth and final height characteristics in adolescent females with anorexia nervosa. PLoS One. 2012;7(9):e45504. doi: 10.1371/journal.pone.0045504.
- Smith, E., Rieger, E., 2006. The effect of attentional bias toward shape- and weight-related information on body dissatisfaction. The International journal of eating disorders, 39(6), 509–515. doi: 10.1002/eat.20291.
- Ascione M, Carulla-Roig M, Miquel-Nabau H, Porras-Garcia B, Meschberger-Annweiler FA, Serrano-Troncoso E, Ferrer-Garcia M, Moreno-Sánchez M, Gutierrez-Maldonado J. Attentional Bias Modification Training Based on Virtual Reality and Eye Tracking in Anorexia Nervosa Patients. J Clin Med. 2023 Sep 12;12(18):5932. doi: 10.3390/jcm12185932.

Mariarca Ascione
ascione.m@ub.edu