**Perceived body size affects implicit food preferences: a virtual full body illusion study**

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Introduction
The study aimed at investigating whether and how modulating the perceived body size affected implicit attitude towards one’s own body and implicit food preferences. We used Full body illusion (FBI) procedure in immersive virtual reality to induce embodiment of virtual avatars with different body size and evaluated its effect on the abovementioned implicit processes.

Methods
21 right-handed females (18-25 y.o.) without an ED diagnosis (according to Eating Disorder Inventory) and with normal BMI participated in two sessions of the FBI procedure with embodiment of Fat or Slim avatar (avatar’s size was, respectively, 30% larger or smaller compared to participant’s real body size). Embodiment was triggered by synchronous visuotactile stimulation. Participants reported perceived size of their thighs before and after the stimulation (Self-esteem measure, SE). After the stimulation, they also reported subjective ownership (SoO) ratings and completed Brief implicit association test (BIAT) for measuring the attitude towards one’s own body (PBI-BIAT) and an ideal body image (IBI-BIAT), and Food Preference Approach-Avoidance Test (FP-AAT) for measuring implicit food preferences for high-calorie (HC) and low-calorie (FC) food. We compared the SE, SoO, BIAT and AAT results between Fat and Slim conditions.

Results
The FBI results showed that the SE was significantly higher for Fat avatar compared to Slim (i.e., higher overestimation of one’s own thighs size). SoO was comparable between conditions. No differences between Fat and Slim avatars were observed in PBI-BIAT or IBI-BIAT. In turn, AAT for HC food showed significantly faster reaction times, i.e., stronger approach reaction, after embodiment of Slim avatar than the Fat one. No such difference was present for low-calorie food.

Conclusions
The results showed that embodying a Fat avatar induced a greater variation in the perception of one’s own body size. The implicit body image was not affected by embodying an avatar of any size. Crucially, modulating the perceived body size influenced implicit food preferences when the virtual body was Slim, specifically for high-calorie food. This suggests a complex relation between the perception of one’s body and food choices, with a possible influence of the social stereotypes.

**Keywords**: Full Body Illusion, Body Representation, Food Preferences