

Investigating Body Image Disturbance in Anorexia Nervosa Using Biometric Self-Avatars in Virtual Reality

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Anorexia nervosa (AN) is a serious eating disorder that goes along with underweight and high rates of psychological and physical comorbidity. Body image disturbance is a core symptom of AN, but as yet distinctive features of this disturbance unknown. This study uses individual 3D-avatars in virtual reality to investigate the following questions: (1) Do women with AN differ from controls in how accurately they perceive their body weight? (2) Do women with AN generally perceive bodies of their own shape differently than controls or only when viewing their own body?

We investigate 25 women with AN and 25 healthy controls. Based on a 3D body scan, we create individual avatars for each participant. The avatar is manipulated to represent +/- 5%, 10%, 15% and 20% of the participant's weight. Additionally, for the control task, we manipulate identity of the avatar using a standard texture. Avatars were presented on a stereoscopic life-size screen. In the two-alternative forced choice (2AFC) task, participants see each avatar 20 times for two seconds. After each presentation, they have to decide whether that was the correct or a manipulated avatar. In the Method of Adjustment (MoA) task, participants are asked to adjust each avatar to match both, the correct size and their ideal size. In the control task, participants memorize the body with standard texture and afterwards perform the same 2AFC and MoA tasks with respect to the memorized body. Additionally, eating pathology, body dissatisfaction and self-esteem are assessed.

First results from 19 women with AN and 16 controls show a tendency of patients to be accurate or to underestimate their current body size as compared to controls. In the control task, both groups accurately memorized and estimated the avatar's weight. Our preliminary results indicate that body image disturbance in AN is not due to a general deficit in body size perception, but limited to the own person and influenced by evaluation.