

## **The Influence of Personal Body Mass Index on Body Size Perception of Self and Other in Females**

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Previous research has suggested that body size estimates are biased towards an average reference body: a pattern that is predicted by a known perceptual error in psychophysical judgments, called contraction bias. Accordingly, bodies thinner than the average should be overestimated, and bodies bigger than the average should be underestimated. Previous studies have mainly focused on self-body size evaluation of patients with body image disturbances. In this study, we tested healthy females varying in body mass index (BMI) to investigate whether personal body size influences accuracy of body size estimation and sensitivity to weight changes of self and other, in a normal population. Using a 4D full-body scanning system that records participants' body geometry and texture, we created personalized avatars varying in body weight based on a statistical body model. In several psychophysical experiments, we presented the stimuli on a stereoscopic, large-screen immersive display, and asked participants to respond to whether the body they saw was their own (Experiment 1) or was identical to a body they had memorized (Experiment 2 & 3). Importantly, the underlying body shape of the avatars in Experiment 2 and 3 were the same, but the texture was altered (self vs. other) to investigate the influence of identity on body size perception. Contrary to what is suggested by the contraction bias hypothesis, our results demonstrated that participants varying in BMI veridically perceived body size of an avatar with their own identity and another identity. However, we found that people with higher BMIs were more willing to accept bigger bodies than their own. Interestingly, even though the same body shapes were presented in Experiment 2 and 3, the effect of BMI on sensitivity was only apparent when participants were aware that they were viewing their own body.