



The influence of 3D body scans on body image for 18-22 age women

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Abstract: In this study we investigate the influence of 3D body scans on young female adults' body image. It contributes a deeper understanding on not only young female's body satisfaction but also their acceptance of 3D body scan technology, which provides information to guide future research and commercial applications of 3D body scan technology.

Review of Literature: In the last decade we have experienced a rapid growth of innovative adaptations of 3D body scan technology, both in academia and industry. Because of an increased demand for personalized design and clothing fit in recent years, 3D scanning and related technologies such as automated custom fit, fit evaluation, virtual try-on, size prediction, personal shopper services, and co-design have been receiving great attention. Therefore a comprehensive study of consumers' acceptance of 3D body scans is of great importance. Early research found that people were willing to try 3D scanning and see their body in 3D regardless of their BMI, however, this research was mainly based on participants' thoughts about 3D body scans after reading written scenarios or watching video images (Domina, et al., 2007; Lee, et al., 2011). A handful of studies have been conducted to examine whether people would maintain their interest in this technology once they have actually been scanned and viewed their body in 3D (Loker, et al., 2004). Some findings also indicated that body image may function as a mediator in peoples' acceptance of 3D body scan technology. However, whether and to what extent the novel experience of going through the 3D scanning process and viewing one's body in the 3D environment would affect people's perception of their own body is still questionable. In sum, it is of great value to examine the influence of 3D scans on body image, especially for young female adults who are concerned about body image and have great interest in clothing.

Methodology: 36 female undergraduate students in a northeastern university were recruited for this study. The average age was 19.8, average BMI was 21.5, average WHR (Waist to Hip Ratio) was 0.75. A two-session methodology was adopted. In session one, a questionnaire was distributed to each participant to collect demographic, general body satisfaction, and body cathexis data. They then changed into close fitting jeans and a tank t-shirt, and were body scanned. Participants were not shown their body scan at this point. Scans were converted into an image appropriate for use as a virtual fit avatar, a monochromatic smoothed image with holes filled. Participants were invited to return for session two, in which they were encouraged to rotate and observe their body in 3D for as long as they wished, and then asked to describe their impressions of the 3D image. The time participants viewed their image and their facial expressions were recorded by the researcher. Afterwards, participants completed another questionnaire measuring their general body satisfaction, body cathexis information, and their feelings about the 3D scan process.

Results and Discussion: A content analysis of qualitative data was completed using Atlas.ti and quantitative data were analyzed in SPSS to examine participants' reactions to their scan and whether their body satisfaction changed after viewing their scan image. In addition, we studied whether body image influenced acceptance of 3D scan technology. On average, participants examined their own 3D scan image for 40.4 seconds. The content analysis of participants' responses to 3D scans showed that manipulating one's own scanned body in a 3D environment was a completely new experience for participants. They were surprised by many previously unnoticed details of their body revealed by the 3D scan, which allowed participants to see their bodies from any angle. They reported unfamiliarity with their own bodies, especially in the areas of the abdomen, buttocks, thigh, and overall body proportions. Among 36 participants, 22 expressed negative feelings and/or showed discomfort in their facial expression when examining their 3D scans, generally commenting that they looked shorter and/or bigger than their imagined image of themselves. On the other hand, 9 participants showed no strong feelings and 5 participants maintained that viewing their 3D body scan was 'cool'. Quantitative data results indicated that participants had a neutral to a slightly positive reaction to the 3D body scanning process. Secondly, paired t-test results showed that overall body satisfaction decreased significantly after viewing 3D scans, although there were varied levels of changes among different body areas. Baseline body satisfaction was negatively correlated to BMI, but not to WHR. A strong positive correlation was found between baseline body satisfaction and comfort in seeing one's own 3D scan. Last but not least, it was found that for higher baseline body satisfaction, there was a higher tendency to choose a 3D scan over an image in a mirror or a 2D photograph. In sum, the results of this study showed that observing one's own body in 3D could decrease body satisfaction in general and influence people's reaction to 3D body scan technology.

Limitations: One limitation of this study is the lack of a control group. It is not clear whether the decreased body satisfaction was a result of the novel experience of viewing one's 3D scans or simply the self-evaluation process itself. Further research with more diversified population and larger sample size will provide more information.

References

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