

An Exploratory Study of the Impact of Optical Illusion Garments on Women's Self-Perceptions

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Although previous research provides insight into how women construct and idealize their appearance through clothing, the connection to the design elements of a garment is lacking. Using an exploratory approach, this study, theoretically grounded in the self-discrepancy theory (Higgins, 1987), investigated women's perceptions of their body shapes. The aim of this study was to explore these perceptions through garments created with optical illusion prints or patterns. The following research questions were explored: RQ1: How do optical illusion garments affect the visual perception of body shape? RQ1a: Does the effect of optical illusion garments vary depending on body shape (hourglass, rectangle, and spoon)? RQ2: Do optical illusion garments positively or negatively affect a woman's perception of her body shape? RQ3: Do optical illusion garments aid the wearer in moving from their actual self toward their ideal self? RQ4: Do optical illusion garments increase a woman's body satisfaction?

To begin, the researcher created seven digital optical illusion garments based on previously established illusions and color theory principles. The digital illusion garments (see images to the right) represented the following illusions: (1) Helmholtz horizontal stripes, (2) Helmholtz vertical stripes, (3) MacKay's Rays, (4) Muller-Lyer up arrows, (5) Muller-Lyer down arrows, (6) Simultaneous Contrast, and (7) Spatial Effects. Next, potential participants were screened (stage one) in order to determine if they met the established selection criteria. The screening process included a short survey and a semi-structured interview. The women were also body scanned to determine their body shape.



There were two main criteria that participants had to meet in order to qualify to participate in the second stage of this study. First, based on their body scan, participants had to have body measurements that classified them as either: hourglass, rectangle, and spoon (see image of all three body shapes depicted in the MacKay's Rays illusion garment). Mathematical equations derived from the female figure identification technique (Simmons, 2002) were used to determine body shape category. Second, participants had to have a height and weight measurement that categorized them as having a normal Body Mass Index (BMI). A normal BMI was required of participants in order to control for body size and help to diminish high levels of potential body dissatisfaction. A total of (N=15) women were selected to participate in the second stage of this study. Five women from each of the three body shape categories were selected. In the second stage of this study, the women participated in an in-depth semi-structured interview while viewing a personalized avatar (created from their body scan) depicted in the

seven different optical illusion garments created by the researcher. The following themes emerged: (1) Perception of Self, (2) Clothing and the Body, (3) Defining Ideals, (4) Optical Illusion Applications, (5) Preferences by Body Shape Category, (6) Effects of Wearing Optical Illusions, and (7) A More Ideal Self.

The first theme, *Perception of Self*, examined participants' responses to viewing their personal avatars. The second theme, *Clothing and the Body*, explored these women's beliefs about how clothing can affect the way in which their body shape is perceived. *Defining Ideals*, theme three, discovered how the participants defined ideal body shape personally and for the society to which they belong. Theme four, *Optical Illusion Applications*, explored research question one, by examining the effect of how optical illusions influence visual perception of body shape. This section explored each of the optical illusions individually, and examined emerging trends for each optical illusion. The fifth theme, *Preferences by Body Shape Category*, explored the next research question (RQ1a) by examining differences between body shape categories. Each body shape category (hourglass, rectangle, and spoon) was examined individually, and trends found within each shape category were explored. The second research question was explored in theme six, *Effects of Wearing Optical Illusions*. This theme examined whether optical illusion garments positively or negatively affected the women's perception of their body shapes. Finally, theme seven, *A More Ideal Self*, explored the final two research questions by addressing whether optical illusions can aid in achieving a more ideal body shape, and whether body shape satisfaction increased.

Overall, results from this study revealed a consensus among all participants indicating that optical illusion garments are a viable way to achieve the perception of a more ideal body shape. Optical illusion garments were found to conceal flaws, accentuate different areas of the body, balance proportions, and create a greater sense of an hourglass shape. Thus, it was revealed in some cases, based on body shape and personal preferences, that optical illusion garments had the ability to increase a woman's body satisfaction.

As an exploratory study, the main contribution of the current study was two-fold. First, the study helped to establish the examination of optical illusion garments as a feasible research topic for exploring women's self-perceptions of their own body shapes. Second, the current study helped to further establish a methodology that can be used in future research. The use of technology in the current study allowed for many traditional practices to occur in a digital environment. Additionally, this study provides support for the use of avatars as a representation of self for the purpose of trying on and evaluating clothing. This method of using technology to create digital garments, and allowing participants to digitally try on garments is relatively new to the field when it comes to design research. The current study provides a methodological framework for future research examining the creation and implementation of digital garments to be viewed on virtual bodies.

Higgins, E. T. (1987). Self-Discrepancy: A theory relating self and affect. *Psychological Review*, 94(3), 319-340.

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