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# Optical illusion textile prints: A case study of body shape

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### Optical illusion textile prints: A case study of body shape

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Optical illusions can be used to change the visual perception of body shape. According to Fan, Yu, & Hunter (2004) there are very few people that have a perfect body and most people would like to improve their appearance through the use of clothing. One of the best ways to conceal body flaws or attract attention to a section of the body is through the use of color and pattern. Using line to move the eye across the body becomes very important when wanting to create the perception of a certain body shape. An optical illusion can be used to change the shape of the body, hide problem areas, or change the perception of proportions in the body. Therefore, this study proposed the following research questions: How does optical illusion textile prints affect the way in which different body shapes are perceived? Some additional questions that this study aims to investigate are: How does the scale of the textile print change the perception of body shape?  How does each textile print vary when applied to different body shapes and how is the perception of each shape changed? Does the application of optical illusions camouflage body shape?

A case study with a five participant focus group was conducted in order to gain a better understanding of how optical illusion textile prints can influence the way in which the body is perceived. The participants gathered for one hour and viewed 42 different combinations of three body shapes, four textile prints, and three different scales of those prints.

Optitex was used to construct three avatars that represented hourglass, spoon, and rectangle shape, which are the most common body shapes among women today (Simmons, Istook, & Devarajan, 2004). The bust-waist-hip measurements for the hourglass shape were 36"-26"-36". The measurements for the spoon body shape were 34"-28"-40" and the rectangle measurements were 36.5"-33"-36". Four optical illusion textile prints were created using Adobe Illustrator and Photoshop and represent different shapes and lines that can be placed on the body. The prints were identified as square, stripe, zigzag, and circular. The prints were created in black and white in order to eliminate any distraction that color may have caused. The principles of color theory state that the contrast between black and white can fatigue the eye receptors which results in a visual illusion creating a sense of movement. The four different prints were presented in three different scales (1,1, 3,3  and 5,5). Viewing the prints in different scales allowed for determination of the greatest visual impact of the optical illusion prints.  A basic sheath dress pattern was used for the garment that was digitally sewn onto the avatars. The pattern pieces were adjusted in order to present each of the three body types in a well fit garment.
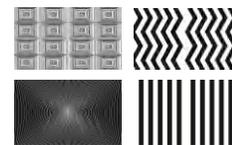
The focus group participants viewed the avatar body unclothed and were asked to identify characteristics and differences between hip, bust and waist. They were able to identify each of the bodies as the anticipated body shape and named them correctly. The participants then

viewed the avatars dressed in solid black and white in order to have a comparison when viewing them in the optical illusion prints. The following themes emerged: (1) perception of width and length, (2) print design, and (3) shape effect.

The first theme of perception of width and length addressed the idea that the optical illusion print could add width or length to the body shape. When it came to the visual effect of added length the group thought that in general "those [prints] that emphasized the vertical [line] were most successful". The focus group participants talked extensively about how the optical illusion print could change the way in which the body shape was perceived by accentuating or camouflaging the width and length of the body. For example, when the spoon shaped body was viewed wearing the large scale stripe print it was noted by one participant that "it makes her shoulders look wider which makes her hips look more balanced".

The second theme that emerges was print design. The elements of the print that were most impactful were "the way it moved the eye, placement of the print [on the body], and scale of the print". In regards to their preference for scale they "could not say one [scale] over the other looked better because it really depended on print". The zigzag print created the most visual change for all three body types because of diagonal lines which creates a strong optical illusion while keeping the eye moving across the body. Also, color was mentioned a factor of print design and that the placement of large blocks of color can change the way the body is seen. One participant said, "I would say even for color, just where you have white, like large on the shoulders changed the way we see it".

The finally theme of shape effect referred to how each body shape was effected by the optical illusion prints and how they were compared to each other. The focus group recognized that the avatars "maintain their [body] shapes, but [with the optical illusion print applied body shape] is not the first thing you see about them, maybe it draws the eye to a different part of the body rather than what you would assume to be their problem area". In regards to body shape "with the rectangle, the print had much more of an option or much more of an ability to change the way the body was perceived…especially with the zigzag print". They pointed out that "the spoon could get really wide hips [in the stripe print]". In regards to the hourglass they stated that "nothing made her look horrible, but nothing made her look better" and that "you could one ruin her figure it seemed". When viewing the hourglass shaped body in the square print one participant noted, "she just looks flat and wide, this is really not doing anything for her figure". In conclusion the group believed that "if you want to attempt to emphasize something different [about your body] you need to go with a print that would pull the eye somewhere different".

This study contributed to close the gap in the literature because there was limited research in the field of textile and apparel management that looked at how textile prints containing principles of optical illusions changed the visual perception of body shape. It also had implications for apparel manufactures as it identified which how the body can be perceived when a print is applied. Finally, it was important for consumers to recognize their own body shape and be able to identify how textile prints interact with their body's and how they were being perceived.

References
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