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Apparel design for zero waste: Exploring aesthetic preferences and purchase intentions as a function of zero waste design typicality and zero waste concept

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Significance. Zero waste (ZW) design, a part of the apparel sustainability movement, is a creative process that uses 100% of the fabric through various patternmaking processes, such as cut & sew, fully fashioned (knits), jigsaw puzzle, cradle to cradle, and “A Piece of Cloth (A-POC)” (Aakko & Niinimäki, 2012; Rissanen, 2008). This creative process influences the aesthetics of apparel produced because of design constraints related to textiles, patternmaking, and garment construction (Aakko & Niinimäki, 2012). Prior research in ZW apparel has focused on design, supply chains, sustainability, and environmental impacts (Aakko & Niinimäki, 2012; Rissanen, 2008). However, no studies have been conducted on factors influencing consumers’ aesthetic preferences or purchase intentions for ZW apparel.

Theory. To examine how aesthetics may impact ZW apparel preferences, Reber, Schwarz, & Winkielman’s (2004) processing fluency theory of aesthetic pleasure was employed as the theoretical framework in this study, where processing fluency refers to the speed of processing the stimulus. ZW designed apparel may be viewed as typical or atypical due to design processes but most are perceived as atypical due to their shape, seam placement, or design details. Reber, Schwarz, & Winkielman’s (2004) theory states that typical stimuli are generally preferred over atypical stimuli since the former are easier to process ‘perceptually’. However, the theory also posits that concept forming information that sheds light on the product’s intent can facilitate the ‘conceptual’ processing of the stimulus also leading to a more positive aesthetic experience. Based on the propositions of processing fluency theory, this study examines the individual and interaction effects of typicality (perceptual design factor) and the ZW design concept (conceptual design factor) on the aesthetic preference and purchase intention.

Method. Actual ZW dresses, the most prevalent ZW designed apparel, were chosen as the stimuli for this study. The dress stimuli were converted to black/white torsos of the garments to control for the effects of color and model. Pre-testing reduced the stimuli to nine images (5-typical; 4-atypical). The study employed a 2 (ZW concept: present vs. absent) x 2 (ZW design typicality: typical vs. atypical) x 2 (ZW dress length: long vs. short) mixed factorial experimental design using ZW design typicality and concept as between-subjects factors, and dress lengths as a within-subjects factor. Participants were presented with a ZW design apparel manufacturing concept or an equal length description of an apparel manufacturing system (ZW concept absent condition) followed by the stimuli of the typical or atypical ZW dresses. An online survey randomly assigned participants to each of the four experimental conditions where participants rated the dresses on a 7-point scale using existing measures of typicality (manipulation check), aesthetic preference and purchase intention (dependent variables), and fashionability, complexity, and novelty (control variables). They also rated the concept on its content. A total of

152 participants completed the survey. Manipulation checks for typicality and ZW concept were successful and scale reliability was confirmed ($\alpha > .70$) for all variables.

Results. The hypotheses were tested through repeated measures analysis of variance with dress lengths as a within-subjects factor, design typicality and concept as between-subjects factors, and aesthetic preference and purchase intention as the dependent variable. Results revealed a significant main effect for dresses on aesthetic preferences [Wilks' $\lambda = .962$, $F_{(1,148)} = 5.874$, $p = .017$]. There was a significant interaction for design typicality and ZW dresses on aesthetic preferences [Wilks' $\lambda = .895$, $F_{(1,148)} = 17.313$, $p < .001$]. Surprisingly, there was no significant interaction effect for concept and design typicality on aesthetic preferences of ZW dresses [Wilks' $\lambda = 1.000$, $F_{(1,148)} = .000$, $p = .984$]. Participants rated typical dresses significantly higher than atypical dresses for aesthetic preference ($M_{Typ} = 4.574$ vs. $M_{Atyp} = 3.135$). Additionally, typical ZW dress lengths were rated significantly higher than atypical for aesthetic preference ($M_{TypLong} = 5.007$ vs. $M_{AtypLong} = 3.021$; $M_{TypShort} = 4.141$ vs. $M_{AtypShort} = 3.249$) indicating a preference for typical ZW dresses, regardless of length. Next, results revealed a non-significant main effect for ZW dresses on purchase intention [Wilks' $\lambda = .998$, $F_{(1,148)} = .602$, $p = .602$]. There was a significant interaction for design typicality on purchase intention [Wilks' $\lambda = .887$, $F_{(1,148)} = 18.788$, $p < .001$] but a non-significant interaction effect for concept and design typicality on purchase intention [Wilks' $\lambda = 1.000$, $F_{(1,148)} = .028$, $p = .868$]. Purchase intention for typical ZW dresses were significantly higher than for atypical ones ($M_{Typ} = 3.392$ vs. $M_{Atyp} = 2.304$).

Conclusions and Implications. As the first study to investigate aesthetic preference and purchase intentions for ZW designed apparel, this study provides critical insights for ZW designers to better understand consumer preferences. Typical ZW dresses (long and short) were preferred aesthetically over atypical dresses, supporting and extending the processing fluency theory of aesthetic pleasure to a new domain (Reber, Schwarz, & Winkielman, 2004). Further, the ZW design concept did not make a difference to this typicality-based preference for ZW dresses. Purchase intentions for typical ZW long dresses were greater than atypical. The main take-away for designers of ZW apparel is the critical role that typicality plays in consumer's aesthetic preferences and purchase intentions for ZW apparel. To promote greater adoption of ZW designs, designers may want to moderate the atypicality of the designs they create by using strategies that 'balance' the atypical (e.g. seam placement) with the typical (e.g. shape and silhouette) within one design.

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