

[Original Article]

The role of visual and verbal information on the functionality of shapewear in female consumers' online purchase decisions

Eonyou Shin[†], Ling Zhang^{*}, Chanmi Hwang^{**}, and Fatma Baytar^{***}

Assistant Professor, Dept. of Apparel, Housing, and Resource Management,
Virginia Tech, USA

Assistant Professor, Dept. of Apparel, Events, and Hospitality Management,
Iowa State University, USA^{*}

Assistant Professor, Dept. of Apparel, Merchandising, Design, and Textile,
Washington State University, USA^{**}

Assistant Professor, Dept. of Fiber Science & Apparel Design,
Cornell University, USA^{***}

Abstract

The purpose of the current study was to examine the role of information on shapewear's functionality in consumers' purchase decisions in an online shopping context. Through two steps of stimulus development process, four mock websites were developed to conduct a main study. In the main study, a 2 (visual information: absent vs. present images of the shapewear's functionality) x 2 (verbal information: absent vs. present descriptions of the shapewear's functionality) between-subject factorial design was employed to examine the impact of visual and verbal information regarding the functionality of shapewear on the consumer decision-making process (i.e., attitudes and purchase intentions). The results showed that verbal information about how shapewear reduces the size of specific body parts (i.e., waist, abdomen, hips, and thighs) were effective in increasing perceived attractiveness in an online context, which increased attitudes and purchase intentions. In addition, attitudes toward the shapewear mediated the effects of expected physical attractiveness on purchase intentions. The results of this study provided empirical support for the importance of expected physical attractiveness in consumers' online purchase decision on shapewear and useful managerial implications for enhancing the effectiveness of online shapewear presentations by including descriptions of the functionality of shapewear in decreasing the size of body parts.

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[†]Corresponding author
(eonyous7@vt.edu)

ORCID

Eonyou Shin
<https://orcid.org/0000-0002-6198-7000>
Ling Zhang
<https://orcid.org/0000-0003-2871-8383>
Chanmi Hwang
<https://orcid.org/0000-0002-6888-2682>
Fatma Baytar
<https://orcid.org/0000-0001-6666-2902>

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I. Introduction

Shapewear is a type of body-contouring garment that can be used to transform women's bodies to their ideal contoured body types (Usigan, 2018) and temporarily

reshape the body to achieve a desired fashionable figure (Indiaretailing Bureau, 2014). It has become increasingly popular with women in a wide range of age groups (Burns-Ardolino, 2007). Although the function of women's shapewear today does not cause dramatic changes in a woman's body, shapewear still serve as a way to create an ideal hourglass figure by slimming the stomach and waist areas or enhancing body curves (Zhang, Shin, Hwang, & Baytar, 2017).

Shapewear constitutes a large amount of the online market size in global and the US lingerie market and continues to grow every year. Global shapewear market size was estimated at USD 2.26 billion in 2018, and it will be rising at a market growth rate of 7.7% from 2019 to 2025 (Grand View Research, 2019). Orbis Research Report showed that the online global lingerie market size will reach \$72.1 billion by 2024, from \$33.4 billion in 2019, with a projected growth rate of 13.7% over the next five years. North America is the largest lingerie market due to a greater awareness of online purchasing options and high purchasing power, which includes \$720 million a year (Indiaretailing Bureau, 2014) and accounted for 38.9% of the global market share in 2018 (Orbis Research, 2019).

With an expected increase in online shapewear market (8.4% from 2019 to 2025), (Grand View Research, 2019), it is important to understand the kinds of information that help consumers make a purchase decision on their shapewear. Although between the lines it is advertised that shapewear would make wearer look thinner, on their websites e-tailers don't tell much about how exactly such change would occur. There is no way for female consumers to virtually try on shapewear in an online shopping context. This restriction may influence the consumers to assume or imagine greater or lesser effects of shapewear's functionality on their bodies, and subsequently affect their attitudes and purchase intentions toward the shapewear. There is no research investigating the effects of information regarding shapewear's functionality on consumers' purchasing behaviors and perceived greater

physical attractiveness when looking at the shapewear effect, which may result in positive attitudes and purchase intentions toward the shapewear. Therefore, the purpose of the current study was to examine the role of shapewear's performance information in consumers' purchase decisions in an online shopping context. In this study, we included explored if visual and verbal information about the functionality of shapewear to examine its influences on consumers' expected physical attractiveness, which in turn may affects their purchase intentions through attitudes toward the shapewear.

II. Literature Review

1. Visual and verbal information regarding the functionality of shapewear

The information on shapewear's performance can be presented in both visual and verbal form on a website, as with other apparel products. Verbal information refers to textual information (Kim & Lennon, 2008) and has been found to be an important factor in consumers' purchase decisions. In previous studies, researchers indicated that the amount of verbal information played a significant role in decreasing consumers' perceived risk and increasing their confidence, in turn enhancing their purchase intentions (Kim & Lennon, 2010).

Visual information refers to pictorial representations of a product, such as pictures, photos, or videos (Kim & Lennon, 2008), and can also be "any two dimensional representation in which the stimulus array contains at least one element that is not alphabetic, numeric, or arithmetic" (Lutz & Lutz, 1978, p. 611). Numerous studies in the areas of e-commerce and interactive marketing have shown that online visual atmospherics have a significant influence on consumer choice (e.g., Malthouse & Shankar, 2009). Unlike other apparel products, shapewear contains a functional component to shape or smooth the body. Therefore, in addition to verbal information regarding

the effects of shapewear, showing how the appearance of one's body is changed after wearing the garment would be an important element in consumers' purchase decisions.

2. Theoretical framework: Dual coding theory

Dual coding theory, introduced by Paivio (1971), explains how an individual processes visual and verbal information. Visual information and verbal information is processed and encoded differently. Nonverbal information (e.g., visual) is processed in a simultaneous manner while verbal information is sequentially processed. When it comes to encoding, visual information is encoded as both images and words while verbal information is encoded as mainly words. However, these two separate pathways to encode information are interconnected, not functionally independent (Paivio, 1971). As the first step of the encoding process (i.e., representational processing), visual information is processed through an imaginal system by activating an imaginal coding while verbal information goes through a verbal system by encoding a verbal form. In the second step of the encoding process, called referential processing, visual information is verbalized while verbal information is visualized, because the verbal and imaginal systems are connected. Lastly, at the associative processing stage, incoming visual and verbal information is combined with other stored information in the memory (Paivio, 1971).

In this current study, we used dual coding theory as a theoretical framework to explain the overall mechanism of how consumers process and encode visual and/or verbal information regarding shapewear's functionality in the online apparel retailing context. In previous studies, researchers have used the dual coding theory to examine how consumers process visual and verbal information in an online apparel shopping context (e.g., Kim & Lennon, 2008; Yoo & Kim, 2014). For example, Kim and Lennon (2008) used the dual coding theory as a theoretical framework to investigate effects of the size of pictures (i.e., visual in-

formation) and quality of product descriptions (i.e., verbal information) on consumers' purchase decision process (i.e., both cognitive and affective attitudes and purchase intentions). More detailed product descriptions significantly increased both cognitive and affective attitudes than less detailed product descriptions, while no significant effects of visual information on both dimensions of attitudes and purchase intentions (Kim & Lennon, 2008). Yoo and Kim (2014) examined which factors related to verbal and visual information were the most effective in facilitating mental imagery. They found a significant effect of visual information on mental imagery, meaning that consumers created higher mental imagery when they were exposed to an image of the apparel product with solid background compared to an image of the same product with concrete background of relevant consumption backgrounds (Yoo & Kim, 2014). However, concrete descriptions of consumption situations (i.e., verbal information) did not help consumers to create higher mental imagery than no descriptions (Yoo & Kim, 2014).

3. Effects of visual and verbal information regarding the functionality of shapewear on physical attractiveness

According to the most cultural norms, physical attractiveness includes attributes of a narrow BMI range representing thin body shape, which is consistent with thin fashion and glamour models in the advertisements. The features of female physical attractiveness have been studied by numerous researchers including breast size (Furnham, Dias, & McClelland, 1998), hair color (Cunningham, Druen, & Barbee, 1997), shape of the face (Grammer & Thornhill, 1994; Perrett et al., 1998), leg-to-body ratio (Sorokowski et al., 2011), body mass index (BMI) (Tovee, Maisey, Emery, & Cornelissen, 1999; Wang et al., 2015), and waist-to-hip ratio (WHR) (e.g. Schmalt, 2006; Singh, 1993; Singh, 1994; Tassinary & Hansen, 1998; Tovee, Edmond, & Vuong, 2012). Early studies focused on WHR as

the most reliable indicator of female physical attractiveness. An optimal WHR around 0.7 has been interpreted as the most attractive because higher values of WHR are related to the risks of cardiovascular disease and reproductive problems (Schmalt, 2006; Terry, Page & Haskell, 1992; Wang et al., 2015). In recent research using digital photographs and 3D virtual avatar, researchers found that BMI replaced WHR to become the most important predictor to judge female physical attractiveness (Fan, Liu, Wu, & Dai, 2004; Swami, Caprario, Tovee, & Furnham, 2006).

In recent studies using images of 3D scanned bodies, Lim and Chun (2015) found significant differences in waist, abdomen, and hip areas when wearing the shapewear compared to without the shapewear. Zhang et al. (2017) investigated physical attractiveness using both WHR (i.e., objective measure of physical attractiveness) and interviews (i.e., subjective approach) to find out why and how female consumers think their bodies when wearing a shapewear. They found that female consumers felt their bodies more attractive when wearing the lower body shapewear than without wearing the shapewear because the shapewear made their bodies slimmer and smoother and emphasized body curve. Interestingly, the results of their study showed that female consumers reported subjectively perceived physical attractiveness although their WHR was not changed significantly when wearing the shapewear compared to without wearing the shapewear (Zhang et al., 2017).

Related to subjective physical attractiveness, many studies in advertising have also found that women and adolescent girls are frequently dissatisfied with their own attractiveness (Cohn & Adler, 1992; Dijkstra & Barelds, 2011; Grogan, 2016) and perceive the ideal body type as thinner than their own actual body size (Cohn & Adler, 1992; Davis, 1997; Grogan, 2016; Tiggemann, 1992; Zhang et al., 2017). Given that one of the purposes of wearing shapewear would be to look slimmer, an image of a 3D scanned body showing the differences between before and while wearing

shapewear may draw more attention to the product and block out other competing stimuli. Because pictures serve as a direct predictor of imagery (Paivio, 1971; Yoo & Kim, 2014), visual information can lead individuals to engage in imagination of interacting with the product (Tucker & Ellis, 1998). Providing a visual representation of the shapewear's functionality on a website may allow female consumers to visualize how much the shapewear would make their bodies look slimmer and more hourglass-like, which in turn may increase their expected physical attractiveness.

Thus, Hypothesis 1 was proposed:

Hypothesis 1. Compared to individuals exposed to no visual information, those exposed to visual information regarding the functionality of the shapewear will expect greater physical attractiveness.

Verbal information has been also important in evoking imagery processing (Paivio, 1971). Concrete verbal information was found to be more effective than abstract verbal information, which evoked imagery processing and discursive processing simultaneously (Kim, 2019; Yoo & Kim, 2014). In Yoo and Kim's (2014) study, verbal product information activated both affective and cognitive attitudes. In a study by Kim (2019), concrete verbal stimuli (e.g., "gathered puff sleeve with tiered ruffle lace single button cuff", p. 366) was more effective in evoking both imagery and discursive processing compared to abstract verbal stimuli (e.g., "sophisticated style instantly creates a polished look", p. 366). Similarly, providing a verbal description of the shapewear's effects on a website (e.g., specific information about the decrease in size of specific body parts) may help individuals imagine their bodies when wearing the shapewear, which may improve their perceived physical attractiveness. Female consumers exposed to verbal information regarding the shapewear's effects may have greater expected perceived physical attractiveness than those given no

information regarding the shapewear effect. Thus, Hypothesis 2 was proposed:

Hypothesis 2. Compared to individuals exposed to no verbal information, those exposed to verbal information regarding the functionality of the shapewear will expect greater physical attractiveness.

According to the dual coding theory, a combination of verbal and visual information is the best way to represent and process information (Paivio, 1971). Because both visual and verbal information is firstly processed in each different system but connected each other, visual information is verbalized while verbal information is visualized through referential processing. For example, visual information on the shapewear's functionality can be encoded as verbal information about size difference while verbal information on the shapewear's functionality can be encoded for mental images of the shapewear's functionality through the referential processing. When presenting visual and verbal information on the shapewear's functionality together, the referential processing may occur simultaneously in both systems (Paivio, 1971). Through referential processing, individuals may use the given information (i.e., visual and verbal) on the shapewear's functionality to envision and/or guess the changes in their bodies when wearing the shapewear. Visual information helps individuals engage in dual coding, which creates high levels of retention, because both visual and verbal information are stored in long term memory (Kizilcec, Papadopoulos, & Sritanyaratana, 2014; Sharps & Price, 1992). Kim and Lennon (2008) supported the interaction effect between texts (amount of information) and images (picture size) on consumer purchase decision process in an online apparel shopping context. Thus, Hypotheses 3 was proposed to examine the combined effects of verbal and visual shapewear effect information on consumers' expected physical attractiveness:

Hypothesis 3. Visual and verbal information regarding the functionality of the shapewear will interact to increase expected physical attractiveness.

4. Effect of perceived physical attractiveness on attitudes and purchase intention towards shapewear

From the perspective of information processing, attitude is formed by cognitive responses as a result of different levels of information processing (MacInnis & Jaworski, 1989). The expected physical attractiveness by consumers may serve an important role in making purchase decision on the shapewear in the context of online apparel shopping where information about experiential attributes (e.g., fit, comfort, and quality) is unavailable. Since shapewear's functionality is an important piece of information that can help consumers imagine how their bodies would change when wearing shapewear, consumers who would perceive greater attractiveness because of the shapewear may likely form favorable attitudes toward it. Thus, Hypotheses 4 was proposed:

Hypothesis 4. Expectations of perceived attractiveness increase attitudes toward the shapewear.

Numerous studies in retailing have examined the relationship between attitude and patronage intentions, because attitude serves as a strong and useful indicator of consumers' likelihood to shop at a particular retailer (Korgaonkar et al., 1985; Pan & Zinkhan, 2006). Most attitudinal research suggests that attitude is a central construct in the formation of an individual's behavioral intentions, which in turn influences behavior (Bagozzi, 1981; Bentler & Speckart, 1979). As suggested earlier, online consumers' attitudes towards a product may influence their product purchase intentions. Thus, Hypotheses 5 was proposed:

Hypothesis 5. Attitudes toward the shapewear will

increase purchase intentions toward the shapewear.

III. Method

This study used a web-based experimental design with two pilot tests of stimulus development and a main study. Specifically, two steps in stimulus development were performed to select the shapewear and develop information to be presented in the main study. The main study was conducted to examine the effect of visual and verbal information regarding the shapewear's functionality on female consumers' purchase decisions toward the shapewear.

1. Stimulus development

1) Step 1: Selecting the shapewear

The first pilot test was conducted to select types of shapewear to be used in the main study. A web-based survey was sent to female undergraduate and graduate students, faculty, and staff through the email system at a large Midwestern University in the United States and a total of 525 respondents completed the survey. The average age of the participants was 31 ($S=12.2$). Most of the participants were Caucasian American ($n=455$, 86.7%) followed by Asian/Asian American ($n=34$, 6.5%) and Latino/Hispanic American ($n=11$, 2.1%).

Among the 525 respondents, 144 (27.4%) preferred to wear high-waist thigh shapewear followed by regular waist pants ($n=120$, 22.9%), regular waist thigh ($n=114$, 21.7%), and high waist pants ($n=81$, 15.4%). High-waist thigh shapewear was chosen for the main study as participants rated the most-preferred type of shapewear. High-waist thigh shapewear with 83% nylon and 17% Lycra fiber and super-control was purchased in a range of sizes for the stimulus development in Step 2.

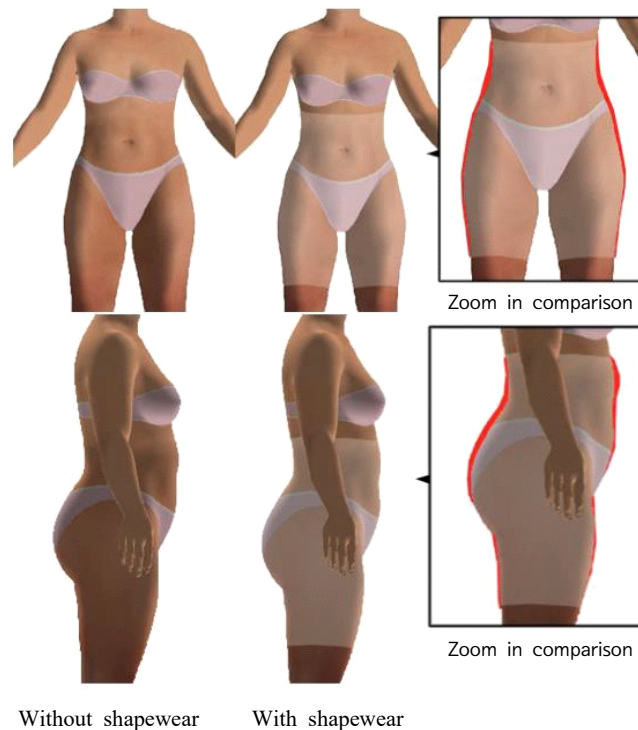
2) Step 2: Developing visual and verbal information on the shapewear's functionality

In the second step, we developed visual and verbal stimuli to be used in the main study. Visual stimuli, consisting of images of a 3D virtual body model wearing a dress with and without shapewear, were developed using EFI Optitex 2D/3D PDS software. Female undergraduate students were recruited for the 3D body scanning sessions via snowball sampling initiated by class announcements.

Thirteen female participants took part in the 3D body scanning sessions. After signing informed consent forms, participants were first asked to change from their street clothing to a crop bra and a pair of tight-fitting bike shorts a pair of tight-fitting bike shorts in a light color for the body-scanning procedure before wearing the shapewear. The scan process was then repeated with the same shorts and a crop bra while wearing the high-waist thigh shapewear. In order to get accurate results, participants were scanned three times during each body scanning session (before and after wearing the shapewear). Key measurements of the middle and lower body (e.g., stomach, abdomen, waists, hips, and thigh) were extracted from the body scans.

Among the thirteen participants, we selected a participant with a pants size of 8 for visual stimuli for the main study because consumers tend to be fairly positive to models with the average level of physical attractiveness, meaning average in body size. We included the 3D scanned images of participants (i.e., front and side views) with and without the shapewear as the visual stimuli. For each view, a "zoom-in comparison" was created to highlight body differences (red-lined areas) when wearing the shapewear (Fig. 1).

When we developed verbal stimuli we used the body measurement changes of the selected participant based on her the 3D body scanning data. "The High Waist Thigh Slimmer is a high-waist body shaper that invisibly sculpts curves and smooths trouble spots. It controls the midriff, hips, and thighs without showing any lines. After wearing this shapewear you will notice a decrease of 0.8-1.4 inches on the waist, 0.4-0.5 inches on the thighs, 0.5-1.8 inches on the stomach, and



<Fig. 1> Visual stimuli for shapewear functionality (front views and size views)

0.3-2.1 inches on the hip (if your pants size is 8). The effects will differ according to your size and body”.

2. Mock website development

The developed stimuli using visual and verbal information in Steps 1 and 2 were used in the mock website. In addition, an image of a female model wearing the high-waist tight shapewear and verbal product descriptions (i.e., size, color, price, details, care instructions, and size charts) were chosen and adapted from existing online retailer websites. The model, who appeared to be a size 8-10, was chosen to minimize differences between the model and the 3D scanned models created during the pilot test. Four mock websites were developed for the different conditions, which are (1) with both visual and verbal information about the shapewear’s effect, (2) with only visual information about the shapewear’s effects, (3) with only verbal information about the shapewear’s

effects, and (4) without any visual or verbal information about the shapewear’s effects.

Participants were presented with the following scenario before browsing the mock websites; “You have been given a \$50 gift certificate to make a purchase of shapewear from the website ‘www.style.com.’ Recently, you have recognized the need for shapewear but you find that you can only purchase the shapewear online. You are planning to purchase the shapewear from an online apparel store with this gift certificate.”

3. Main study

A 2 (visual information: absent vs. present images of the shapewear’s effects) x 2 (verbal information: absent vs. present descriptions of the shapewear’s effects) between-subject factorial design was employed to examine the impact of visual and verbal shapewear effect information on the consumer decision-making

process.

After obtaining an IRB approval, we sent invitation emails to 10,000 female undergraduate and graduate students, faculty, and staff who were 18 years of age or older, randomly selected from a list obtained from the registrar of a large Midwestern university in the US. Recipients who were willing to participate in the study visited the URL provided in the invitation email. At the URL, participants were first directed to an informed consent form. After agreeing to participate, they were asked to read the scenario. Then, they were then randomly directed to one of the four mock websites. After browsing the mock websites, a web-based survey on Qualtrics was shown to participants. In the web-based survey, participants were asked to answer several questions regarding their perceived physical attractiveness, attitudes toward the shapewear, and purchase intentions toward the shapewear. Questions about the individual's demographic questions were also asked. To increase the level of participation, four participants received a \$10 gift card from a coffee retailer through random drawings.

4. Instruments

The instruments measured three dependent variables (i.e., perceived physical attractiveness, attitude toward the shapewear, purchase intention toward the shapewear). In addition, shapewear usage behavior, online shopping experience, and demographic information were gathered.

Perceived physical attractiveness (i.e., consumer's perception of their physical attractiveness when wearing the shapewear) was measured using the items adopted from Loken and Peck (2005). The four items were measured: "I feel I may have a number of good physical features after wearing the shapewear", "I may have a positive attitude toward my body after wearing the shapewear", "I think that I may be pretty attractive after wearing the shapewear", "On the whole, I may be satisfied with the way I look after wearing the shapewear".

Four items measuring attitude toward the shapewear were adopted from Jiang and Benbasat (2007), Kempf and Smith (1998): "The shapewear that I've just seen is good", "I have formed a favorable impression toward the shapewear that I've just seen", "I like the shapewear that I have just seen", "I find the shapewear that I have just seen pleasant." Purchase intention toward the shapewear was measured using four items adopted from various studies (Coyle & Thorson, 2001; Dodds, Monroe, & Grewal, 1991; Putrevu & Lord, 1994): "It is likely that I would buy this shapewear", "If I wear going to buy a shapewear, I would consider buying this shapewear", "I would definitely try this shapewear", "I would be willing to buy the shapewear". All the items were measured on a seven-point Likert type scale (1: strongly disagree to 7: strongly agree).

5. Data analysis

Cronbach's alpha was used to evaluate reliability of the six variables (perceived performance risk, perceived physical attractiveness, attitude toward the shapewear, attitude toward the website, purchase intention toward the shapewear, and patronage intention toward the website). We conducted confirmatory factor analysis (CFA) to assess Unidimensionality, convergent validity, and discriminant validity using Mplus 8.0 (Muthén & Muthén, 2007).

In Part 1, the effects of verbal and visual information about shapewear performance on expected physical attractiveness (Hypotheses 1-3) were tested using univariate analysis of variance (ANOVA). In Part 2, we used (CFA) and structural equation modeling (SEM) Mplus to test Hypotheses 4 and 5. Descriptive statistics were generated using SPSS to analyze participants' demographic information.

IV. Results

1. Sample

A total of 454 participants responded to the survey,

out of which 433 responses were usable. Participants ranged in age from 18 to 70 years old ($M=30$ years old). The majority of the respondents were Caucasian American ($n=386$, 89.1%), followed by Asian/Asian American ($n=19$, 4.4%), and Latino/Hispanic American ($n=8$, 1.8%). Participants were mostly undergraduate students ($n=191$, 41%), followed by staff ($n=127$, 29.3%), graduate students ($n=56$, 12.9%), and faculty ($n=38$, 8.8%). The weight of the participants ranged from 97 lbs to 320 lbs ($M=156.8$ lbs and their height ranged from 4'9" to 7' ($M=5'3"$). A little more than half of the participants ($n=228$, 52.7%) reported that they had never worn shapewear prior to this study. A majority of the participants ($n=317$, 74.2%) indicated that they purchase clothing online one to two times a month, followed by those who never shop online ($n=82$, 19.2%), and those who shop online three to four times a month ($n=21$, 4.9%).

2. Measurement model specification

We conducted CFA for three latent constructs with 12 items using the maximum likelihood estimation in Mplus. Results indicated that the model had a satisfactory fit to the data ($\chi^2=199.952$, $df=51$, $p\leq .001$, RMSEA=.08 [90% C.I.=(.07; .09)], CFI=.97, TLI=.96, SRMR=.03). CFA of the measurement model also assessed convergent validity and discriminant validity. According to the results of CFA, convergent validity was achieved (all path coefficients $\geq .72$, $p\leq .001$). Discriminant validity was also confirmed because the corresponding correlation coefficient between factors were smaller than the square root of the AVE for each construct.

3. Hypotheses testing

There were two parts to hypothesis testing. In Part 1, hypotheses were tested using a two-way ANOVA to examine the effects of verbal and visual information regarding shapewear performance on expected physical attractiveness. There was no main effect of visual information regarding the shapewear's func-

tionality on expected physical attractiveness ($M=4.45$, $SD=1.26$, $M=.55$, $SD=1.04$) [$F(1, 425)=.705$, $p=.401$, partial $\eta^2=.001$]. Moreover, expected physical attractiveness was not significant different whether or not participants were exposed to visualized body changes between the before and after images of models wearing the shapewear. It was surprising that no main effect for visual information was found, despite findings from previous literature supporting the effectiveness of visual information. Thus, Hypothesis 1 was not supported.

There was a significant main effect for verbal information regarding shapewear performance on expected attractiveness [$F(1, 425)=4.45$, $p=.036$, partial $\eta^2=.010$]. Participants who were exposed to written information regarding the shapewear's functionality expected greater attractiveness when wearing the shapewear ($M=4.63$, $SD=1.09$) than those who were not exposed to the verbal information regarding the shapewear's functionality ($M=4.37$, $SD=1.19$). Thus, Hypothesis 2 was supported. However, because there was no interaction effect of visual and verbal information regarding shapewear performance on expected attractiveness [$F(1, 425)=.35$, $p=.56$, partial $\eta^2=.001$], Hypothesis 3 was not supported.

An additional analysis was performed to see if there were simple main effects between any two of the four conditions. The results of post hoc tests using LSD multi-group comparison to examine pairwise-group differences between all four groups revealed that the mean values of expected physical attractiveness were significantly different ($\Delta M=.36$, $p<.05$) between participants exposed to visual or verbal information condition ($M=4.36$, $SD=1.46$) and those exposed to both visual and verbal information ($M=4.72$, $SD=1.07$). There were no differences in expected physical attractiveness if participants were exposed to either visual ($M=4.39$, $SD=1.16$) or verbal information ($M=4.54$, $SD=1.36$) compared to those who did not see both visual and verbal information.

In Part 2, Hypotheses 4 and 5 investigated the rela-

tionships between expected physical attractiveness, attitudes toward the shapewear, and purchase intention for the shapewear. The results of SEM using maximum likelihood showed the model had an adequate fit to the data ($\chi^2=183.806$, $df=52$, $p\leq.001$, CFI=.97, TLI=.96, and RMSEA=.08, SRMR=.04).

The expected perceived attractiveness evoked by information about shapewear performance was positively associated with attitudes toward both the shapewear ($\gamma=.663$, $SE=.031$, $t=21.226$, $p<.001$). Attitudes toward shapewear was positively related to purchase intentions toward the shapewear ($\beta=.709$, $SE=.029$, $t=24.594$, $p<.001$). Purchase intentions toward the shapewear had a positive effect on patronage intentions toward the website. Thus, Hypotheses 4 and 5 were supported.

An ad-hoc mediation test was conducted to enhance understanding of the results. Following Preacher and Hayes' (2008) bootstrap procedure, we tested whether or not the extent to which attitudes toward the shapewear mediated the effects of expected physical attractiveness on purchase intentions. The results showed a significant and partial indirect effect of expected physical attractiveness on purchase intentions through attitudes toward the shapewear ($b=.50$, $t=7.206$, $p<.001$) and a significant direct effect of physical attractiveness on purchase intentions ($b=.17$, $t=2.099$, $p<.05$).

V. Conclusions and Implications

This study investigated the influence of information regarding shapewear functionality on female consumers' online purchase decisions. The effects of both visual and verbal information in relation to the effects of shapewear were examined using a 2 (visual: absent vs. present) x 2 (verbal: absent vs. present) between-subject design. We included a detailed description of the shapewear's effects on specific body parts (i.e., stomach, waist, hip, thighs) as verbal information. As for visual information on the shapewear's per-

formance, we used 3D body scanning technology that revealed the changes in one's body both before and after wearing the shapewear. In particular, the study focused on whether and what kind of information increases women's expected attractiveness as a function of shapewear in an online shopping context, and whether such information enhances attitudes and purchase intentions toward the shapewear. The results provided empirical evidence that written information and the combination of written and pictorial information about how shapewear reduces the size of specific body parts (i.e., waist, abdomen, hips, and thighs) were effective in increasing perceived attractiveness in an online context, and increased attitudes and purchase intentions. The findings partially supported dual coding theory (Paivio, 1971) in that individuals process two formats (i.e., visual and verbal) of information differently and separately.

The results of this study provided empirical support for the importance of expected physical attractiveness and have useful managerial implications for enhancing the effectiveness of online shapewear presentations. While many online shapewear retailers do not present information about shapewear's functionality, despite the fact that it is a major motivation for wearing shapewear, this study shows that specific verbal information to describe shapewear's functionality in decreasing the size of particular body parts can help consumers evaluate how shapewear would perform on their bodies to increase physical attractiveness. Thus, the results of this study suggest that online retailers can enhance consumers' expected benefits of wearing shapewear (i.e., attractiveness) by including written descriptions of how much the shapewear will change the consumer's body in terms of size reduction.

Also, contrary to previous research findings (Yoo & Kim, 2014), this study found that visual information (i.e., images) regarding the shapewear's functionality did not influence expected physical attractiveness. It is possible that the pictures of shapewear used in this

study did not include sufficient detailed information about how much the size of the body would be changed. This implies that in-depth textual information may be more effective in helping consumers imagine the shapewear's functionality in an online shopping context. Additionally, the results of SEM demonstrated that expected attractiveness increased attitudes and intentions toward purchasing the shapewear. This finding provides empirical support for the importance of expected attractiveness in online presentation of shapewear in terms of increasing consumers' attitudes and purchase intentions.

VI. Limitations and Future Research

This study had several limitations. The scope of the study was limited because participants were females recruited from a single Midwestern university. This group may not be the representative of all female online shoppers in the U.S. Thus, future research should include a more diverse group of online shoppers for greater generalizability.

Another limitation pertained to the type of pictures used. We used realistic 3D scanned data from a participant's body in the stimulus development to create verbal information by extracting body measurements before and after wearing the lower body shapewear and visual information by creating a Caucasian 3D model. This could be a reason for the insignificant results of the effect of visual information on expected physical attractiveness. The insignificant effects of images resulted in because participants might notice less differences in body changes when exposed to visual information compared to verbal information of size changes. Further, if other's 3D scanned body shown in image looked different from participants' own body, it might make them difficult to imagine and relate changes in their own bodies. Thus, future studies should consider using participants' own images of their bodies to present information on shapewear's functionality, to see how effective it is in en-

hancing expected attractiveness.

This study examined the effects of absence and presence of visual and verbal information on physical attractiveness. Mental imagery is an important factor when consumers shop online and therefore future research should explore more on how verbal and visual information is processed from consumers' mental imagery perspectives. Lastly, the amount of verbal information and the quality of visual information (e.g., movement and posture) should be explored to improve our understandings of the role such information that plays in shapewear's online purchase decisions.

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