

## The Influence of Body Mass Index on Ready-To-Wear Clothing Preferences of Young African-American Female Consumers

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### Abstract

Although consumers' body shapes are various, the sizes of bust, waist, and hips of ready-to-wear (RTW) are fairly standardized in the apparel manufactures' sizing charts, leading to clothing fit issues for many consumers. Body Mass Index (BMI) is an important factor that has an impact on body image perception, but there is little research on the influence of the obesity prevalence on RTW clothing preferences. The purposes of this study are to examine the correlation between African-American women's obesity prevalence represented by BMI and RTW clothing preferences such as store preference and clothing benefit sought as well as clothing fitting issue. This study finds that bust, waist, and thigh girths of the responders relatively misfit RTW clothing no matter which BMI group they belong to. Most responders reported that hip and abdomen girths are relatively good fit areas. Especially, the obese category (BMI of 30.00 or higher) respondents reported that they felt their clothing tight around most of the body parts, whereas they felt it comfortable or even loose around the waist. The obese respondents look for camouflage benefits from RTW clothing using it as a camouflage tool to hide their body shapes.

**Keywords:** Body Mass Index (BMI), Clothing Fit, Clothing Benefit Sought, Store Preference, Ready-to-Wear

### 1. Introduction

As a second skin of human body, people want not only to wear their clothing comfortably, but they also use clothing as a tool to enhance or conceal their body images or shapes (Kaiser, 1997). Consumers assume that the best choices of clothing preferences as well as the best-fit clothing help them to keep an ideal body image such as slenderizing bodies which make them look thinner or taller to the others (Kwon, 1994). These ideal body images are strongly related to self-perceptive body images rather than physical body types because consumers seem to be more concerned with how they look like psychologically when wear clothing (Grogan et al., 2013). In the last five decades, people's physical body sizes are getting bigger and heavier because of overeating and low physical exercises/activities (Shields, Carroll, & Ogden, 2011; Flegal et al., 2012; Chang & Lauderdale, 2005), resulting in a big change of their perceptive body images as well. However, clothing retailers are still using the standard sizes based only on people's physical body sizes without consideration of their weight which is one of the psychologically influencing factors on their perceptive body images (Bessellieu, 1997).

Body measurements are prerequisite to drafting of pattern in order to produce garments that are fitted to the body as well as to save manufacturers' time and materials. One of the potential tools for simple body measurements is the Body Mass Index (BMI), which is to measure one's body mass based on height and weight of a person, and correlates with ideal body shape and body image (Watkins, Christie, & Chally, 2008). BMI is used to assess whether an individual is underweight or overweight, but it is often used for the representation of the obesity prevalence in specific groups (CDC, 2022). Several studies have shown that BMI alone is not sufficient to represent the obesity prevalence in specific groups, (Capers et al., 2016; Wilson, Sargent, & Dias, 1994) because BMI does not account for certain parts of body such as abdominal adiposity or waist-to-hip ratio. However, despite such a limitation, BMI is still in widespread use due to its attractive advantages: simple, easy, inexpensive, and reasonably accurate measurements (Campos et al., 2006; CDC, 2022).

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Therefore, it is very valuable to investigate the influence of the prevalence of obesity represented by BMI on Ready-To-Wear (RTW) clothing preference.

For the study of the relation between obesity prevalence in specific groups and clothing preference, African-American consumers' group is very promising candidate because they have unique perceptive body images due to their high levels of self-esteem (Seo & Namwamba, 2018). Moreover, as the second largest minority market in US, the purchasing power of African-American consumers was forecast to be worth \$1.8 trillion by 2024 (Graham, 2022). In this way, African-American consumers for man important market segment in USA, and they have the unique characteristics of body shapes(Seo & Namwamba, 2018). However, the influence of BMI and RTW clothing preferences on African-American consumers is not examined yet. Hence, in this research we focused on the correlation between African-American women's obesity prevalence represented by BMI and RTW clothing preferences such as store preference and clothing benefit sought as well as clothing fitting issues. The findings in this research help the apparel industries and fashion practitioners to provide African-American women consumers with RTW clothing that they are physically and psychologically satisfied with.

## 2. Literature review

### 2.1 Body Mass Index (BMI)

Anthropometric measurements are used to give precise measurements across varying body sizes and proportions. Due to this flexibility that the measurement provides, Body Mass Index (BMI) measurement is widely accepted among nutritional status and health risks. Among the anthropometric measurements, BMI utilizes height and weight measurements to estimate underweight (BMI of 18.49 kg/m<sup>2</sup> or less), overweight (BMI of 25-29.9 kg/m<sup>2</sup>), obesity (BMI of 30 kg/m<sup>2</sup> or more), or normal weight/ desirable weight for height (BMI of 18.5-24.9 kg/m<sup>2</sup>)(Capers et al., 2016; CDC, 2022; Ogden et al., 2015; Chang & Lauderdale, 2005). Body shape sizes can vary among individuals even if the BMIs are identical (Capers et al., 2016). BMI is positively associated with figure ratings and a strong predictor of body image and size-perceptions (Cachelin et al., 2002). When viewing similar BMIs of European American and African-American women, African-American women tend to have smaller waist widths, increased leg fat, and smaller visceral fat when compared to European American women (Capers et al., 2016). Although African-American women with higher BMIs may not be satisfied with their overall appearance, they indicated more satisfaction with specific areas of their bodies (Falconer & Neville, 2000). Compared to other ethnic groups, African-American women have unique body shapes (Manuel, Connell, & Presley, 2010; Shin & Istook, 2007; Seo & Namwamba, 2018).

Professional researchers including in nutrition, health, and retail use the BMI to find out the relationship between health, obesity, body image, and body satisfaction in a large population (Flegal et al., 2012; Song& Ashdown, 2013). Overall, little research has been studied that relates to body shapes, clothing fit issues, and clothing benefits sought by BMI in young African-American consumers. Because of these issues, this research will explore the young African-American consumers' clothing fitting issues within the BMI.

### 2.2 Store preference

There are too many retail stores to purchase RTW clothing in the market area (Johnson et al., 2017; Dillahunty & Seo, 2019). Consumers have different reasons to choose various clothing retail stores. Old consumers like to shop their clothing through the TV, catalog or mail ordering because of its convenience, while young customers are less likely to select the catalog or mail ordering option (Shim &Kotsiopulos, 1992; Seo &Namwamba, 2014; Johnson et al., 2017). When consumers deeply consider their clothing and fashion, they prefer to shop for clothing at department and specialty stores (Seo Hathcote, & Sweaney, 2001; Seo & Namwamba, 2014; Johnson et al., 2017;Suk & Lee, 2018).Especially, young consumers are likely to shop at specialty and online stores (McKinney et al., 2004; Johnson et al., 2017) because of the bigger selection and larger assortments (Seo, 2016; Johnson et al., 2017). The other key factors of the store preferences in young consumers are brand names, store image, quality of products, and environmental cleanliness of the store when choosing the clothing stores (McKinney et al., 2004).

Furthermore, young consumers consider lower prices, travel time, convenience, short check-out lines, and parking cost when they select the store (Bukhari, Akram, & Hayat, 2021). The internet, which is a new way of shopping, meets the young consumers' desires for their store preferences (Johnson et al., 2017; Seo 2016). Some online stores, such as Amazon, provide variety of clothing products to capture and retain existing customers.Internet shopping has dramatically increased over the past several years in terms of sales and profits (Orendroff, 2019). Internet shopping is the perfect shopping method for all generation during the COVID-19 pandemic because consumers are looking for the safest way to shop so as to maintain social distancing protocol. Many young consumers consistently purchase their fashion clothing through internet (Bukhari, Akram, & Hayat, 2021). Hence, the internet retailing is going to be the top priority of a major clothing retail store.

Clothing retailers, who target young African-American women, need to understand their shopping behaviors, body shapes within BMI, and store preference for their own shopping and marketing strategies.

### **2.3 Clothing benefits sought**

With clothing, people can explain and show a lot of meaning, such as gender, religion, occupation, social status, and more, within a short time. Because clothing is an important tool in human life (Tortora & Eubank, 2010; Lennon et al., 2014), people are always looking for the various benefits from their clothing. They also want to express their self-esteem and self-image with clothing. Hence, many researchers have been studying the clothing benefits sought since the 1960s (Aiken, 1963; Park & Sullivan, 2009; Shim & Bickle, 1994; Kinley, 2010; Lennon et al., 2014). The results from many previous researches mention that consumers are looking for psychological benefits, functional benefits, and utilitarian benefits from their clothing to express their social status or personality (Park & Sullivan, 2009; Shim & Bickle, 1994). Depending on the different types of clothing benefits, people have different shopping habits and clothing fit preference (Kinley, 2010; Johnson et al., 2016). For instance, clothing wearers who are looking for relationship benefits prefer to dress up in tight fitting clothing for making an ideal body shape, hourglass shape, and they are more likely to shop in specialty stores or middle to high-end clothing stores (Kinley, 2010; Tiggemann, & Andrew, 2012). According to the results of Johnson et al., (2016), when young female consumers have a high level of clothing involvement, they actively use the clothing as a tool of fashion image. They try to express their personality and identity with the latest fashion. However, the low clothing involvement consumers use clothing as a tool of camouflage. They just attempt to hide their body shape or image by their clothing. Results from the prior studies (Johnson et al., 2016; Kinley, 2010; Frith, & Gleeson, 2008; Tiggemann, & Andrew, 2012) found that consumers were looking for different types of clothing benefits sought when they purchased and wore clothing. This research demonstrated that consumers should consider their body image and size to modify their body shapes with clothes, leading to an important relationship between body size and clothing benefits sought. In this regard, no research has been studied on the clothing benefits sought for young African-American consumers based on BMI categories.

### **2.4 Clothing fit issues**

Many previous researches demonstrate that many consumers complain about their clothing fit and the styles offered in the market. Clothing fit is the most crucial factor when consumers purchase their clothing (Pisut & Connell, 2007; Seo & Namwamba 2018). As some clothes are ill-fitting, customers return these clothes, causing the return rate of clothing by retail categories to be around 13% on 2017 (Appriss Retail, 2017; Mulpuru, 2017). Not surprisingly, consumers are always looking for well-fitting clothing for their body shape and size in the current market. Consumers' body sizes and shapes are various, but the standard clothing size in apparel industries used does not support all human body proportions among varying criticisms from clothing fit (Ashdown et al., 2004; Ashdown & O'Connell, 2006).

The other effect of clothing fit preference is the individual body shapes. The study of Seo and Namwamba (2018) reports that young African-American female consumers prefer to wear tight-fitting RTW clothing based on the individual's actual body shapes (rectangular, pear, and hourglass shapes). Their research finds that even though the young consumers have issues with the thigh fit around bust, waist, and hip girth in RTW clothing, the authors statistically report only bust girth is the most significant variable among three different types of body shapes. Knowledge of the individual physical body shapes is important because it greatly affects clothing fit preference. Respondents, who believe they have an hourglass body shape, are likely to wear close-fitting clothing, but the inverted triangle shaped respondents prefer to wear loose-fitting clothing (Anderson et al., 2001).

Clothing fit can influence perceived positive or negative body image. While some consumers expect RTW clothing to match desired fit preference, clothing that does not fit properly can lead to negative feelings which may be directed towards the body instead of towards the unsuitable clothing. Ill-fitting clothing, including name brand clothes that are irregular, could cause women to feel flawed and perceive their body in a negative image (Manuel, Connell, & Presley, 2010). The study of Manuel, Connell, and Presley (2010) associated fit preference with age, weight, and waist measurements and found that younger subjects (age 20-29) choose a tighter fitting garment compared to older women (age 30-39) who choose a looser fitting garment. A review of the above literature indicates that body shapes and body sizes are the important factors. This research uses the body sizes to investigate the body shapes and clothing fitting issues.

## **3. Methodology**

### **3.1 Research questions (RQ)**

Based on the literature review, the following research questions are developed. This study aims to examine the influence of BMI on store preference, RTW clothing fit, and clothing benefit sought for African-American college consumers. The purposes of this research are:

- 1) To investigate their store preferences
- 2) To evaluate the read-to-wear (RTW) clothing fitting issues
- 3) To determine the clothing benefit sought for African-American female consumers relative to their body mass index (BMI).

This study used self-reported physical body characteristic of BMI (weight and height).

### 3.2 Sampling and data collection

For this study, participants have been recruited directly from two universities from various areas of colleges in the southeastern area of the US. The sample was restricted to African-American female consumers due to the large variability in the African-American female market with the strong purchasing power in the US (Repko, 2020). The convenience sample method was used for this study. After getting the permission from each class instructor to do the survey, the authors distributed questionnaires to participants during a regular class session. The questionnaire took 15-20 minutes to complete. In this study, a total of 167 females participated in the survey, and 154 samples were analyzed. The age ranged from 18 to 42 years, and 81.16% ( $n= 125$ ) of female students were between 19 and 24 years old. The major participants were single ( $n= 130$ , 84.42%) and full-time students ( $n= 145$ , 94.15%). The predominant participants were from College of Agriculture and Consumer Sciences (40.3%) and School of Nursing (34.4%).

### 3.3 Questionnaire design

The researchers created the questionnaire for this study. The questionnaire included 5 items on choices in regards to participants' self-reported body measurements (weight and height), where, and how often they check, 7 items measuring types of stores, 5 items on fitting problem of ready-to-wear (RTW) clothing in body (waist, hip, bust, abdomen, and thigh), 1 item to self-reported their body shape, 25 items assessing clothing benefit sought, and 10 questions about their demographics.

**3.1.1 Body Mass Index (BMI).** To access the BMI for African-American college consumers, participants' weight (pound) and height (inch) were self-reported in the questionnaire in this study. To make BMI scores credible, the participants answered how often and where they checked their weight and height in the questionnaire.

**3.1.2 Types of stores.** Seven different types of stores presented in the survey were the internet, catalog, discount (Wal-Mart, Target, Kmart, and more), department (May's, JCPenny, Dillard and more), specialty (XXI, GAP, Banana Republic, Abercrombie, Old Navy, and more), off-price (Marshall's and TJMaxx), and outlet stores (Tanger and Premium) (Shim and Kotsiopoulos, 1992; Seo, Hathcote, & Sweaney, 2001; Johnson et al., 2017). The researchers included one more option as another store option: the thrift store. The measurement scales for stores was a 7-point Likert-type scale (i.e. 1 = never to 7 = very often).

**3.1.3 Ready-to-Wear (RTW) clothing fit problems.** This research adopted the research questions from Pisut and Connell (2007). Because many people have clothing fit issues in their mid and lower body parts (Seo & Namwamba, 2018; Makhanya & Mabuza, 2020), the authors select 5 body parts (bust, waist, abdomen, hip, and thigh) for clothing fitting problems in questionnaire. To assess RTW clothing fit problems, the participants indicated their levels of loose/tight on a 7-point Likert-type scale. The scale ranged from "extremely loose" (lowest score = 1) to "extremely tight" (highest score = 7). This research did not consider the lengths of RTW clothing because no significant differences were found between clothing fit problems and lengths of clothing (Alexander, Connell, & Beth Presley, 2005)

**3.1.4 Clothing benefit sought.** The scales for what clothing benefits customers sought for was adapted from the previous research of Shim and Bickle (1994) and Kinley (2010). Twenty-five Likert-type statements were used to measure clothing benefits and what customers sought in apparel products. Participants indicated the degree of agreement for each given statement of what customers sought for on a 7-point scale ranging from strongly disagree (low score = 1) to strongly agree (high score = 7).

### 3.4 Data Analysis

Standardized statistical procedures were used to construct indices, check for outliers and influential data points, and summarize distribution of responses. Data was analyzed with SPSS statistics software. Data analysis was performed using frequencies, factor analysis, reliability, multivariate analysis of variance (MANOVA), and univariate analysis of variance (ANOVA).

**3.4.1 Factor analysis and reliability for clothing benefit sought.** A principal component factor analysis with varimax rotation employed 25 clothing benefits sought statements to identify dimensions. Items loading less than .60 on a single factor was eliminated for this study. The Eigen-values greater than 1.00 were adopted. Table 1 revealed all measurements of factor analysis and reliabilities (Cronbach's alpha). This study identified five factors to describe clothing benefit sought: (1) Fashionability, (2) Appeal to the Opposite Sex, (3) Camouflage, (4) Emphasizes Body, and (5) RTW Satisfaction with Fit. Each factors were separately tested the reliability in Cronbach's alpha coefficient. The range of Cronbach's alpha coefficients were between .574 and .854.

**Table 1** Principal Component Factor Analysis Results of Clothing Benefits Sought.

| <i>Factor Name</i>                    | <i>Items</i>   | <i>Factor Loading</i>                     | <i>Eigen-values</i> | <i>Percentage of Variance</i> | <i>Alpha Coefficient</i> |
|---------------------------------------|--|---|---------------------|-------------------------------|--------------------------|
| Factor 1<br>Fashionability            | I try something new in each season's fashions.<br>I am willing to try new clothing fashion ideas.<br>I try to select updated fashions & accessories.<br>I try to select clothes that portray a fashionable image.<br>I buy clothes that emphasize my femininity. | 0.829<br>0.789<br>0.769<br>0.768<br>0.695 | 3.891               | 29.932                        | 0.854                    |
| Factor 2<br>Appeal to Opposite Sex    | Dressing to appeal to the opposite sex is important to me.<br>I dress to impress the opposite sex.   | 0.833<br>0.865                            | 1.783               | 13.717                        | 0.757                    |
| Factor 3<br>Camouflage                | I try to cover my figure flaws with clothing.<br>I select clothes that will camouflage my figure problem.  | 0.897<br>0.887                            | 1.558               | 11.985                        | 0.775                    |
| Factor 4<br>Emphasizes Body           | I tend to select clothes that fit tightly to my figure.<br>I like to select clothing which emphasizes my waist   | 0.836<br>0.768                            | 1.297               | 9.976                         | 0.643                    |
| Factor 5<br>RTW Satisfaction with Fit | I am satisfied with the fit at my thigh in ready-to-wear clothing.<br>I am generally satisfied with the pant lengths in ready- to wear clothing.   | 0.817<br>0.808                            | 1.041               | 8.005                         | 0.574                    |

#### 4. Results

According to the results of the self-reported questionnaire, this research accepts participants' weight (lb) and height (inch). Table 2 and 3 indicate more than 80% of participants check their weight in their home or visited hospital/ clinic at least once a month. Most of participants ( $n= 120$ ) measure their height at the hospital/ clinic as shown in Table 4. Based on the participants' responses of weight in pounds and height inches, this study calculates BMI scales ( $BMI= 703 \times \text{Weight (lbs)} / [\text{Height (in)}]^2$ ). The average height is 63.92 inch (162.54 cm) and weight is 162.79 lb (73.84 Kg). Table 5 displays four BMI groups (Underweight (UW), Normal weight (NW), Overweight (OW), and Obesity (OB)) for this study.

Fig. 1 shows the BMI scale from 16.1 to 40.2. The mean BMI is 28.02 ( $SD= 6.58$ ), which is the overweight category according to the Center for Disease Control (Flegal et al., 2012). Note that UW group has only two participants ( $n=2$ , 1.3%) in this study, thus statistical analysis of this group needs to be treated with caution as to the result.

**Table 2** Number of check the participants' weight

| How Often          | Frequency ( <i>n</i> ) | Percent (%) | Cumulative Percent (%) |
|--------------------|------------------------|-------------|------------------------|
| Every Day          | 7                      | 4.5         | 4.5                    |
| Once/ Week         | 26                     | 16.9        | 21.4                   |
| Twice/ Month       | 8                      | 5.2         | 26.6                   |
| <b>Once/ Month</b> | <b>89</b>              | <b>57.8</b> | <b>84.4</b>            |
| Other              | 24                     | 15.6        | 100.0                  |
| Total              | 154                    | 100.0       |                        |

**Table 3** Location of check participants' weight

| Where            | Frequency ( <i>n</i> ) | Percent (%) | Cumulative Percent (%) |
|------------------|------------------------|-------------|------------------------|
| Home             | 75                     | 48.7        | 48.7                   |
| Hospital/ Clinic | 57                     | 37.0        | <b>85.7</b>            |
| GYM              | 14                     | 9.1         | 94.8                   |
| Other Place      | 8                      | 5.2         | 100.0                  |
| Total            | 154                    | 100.0       |                        |

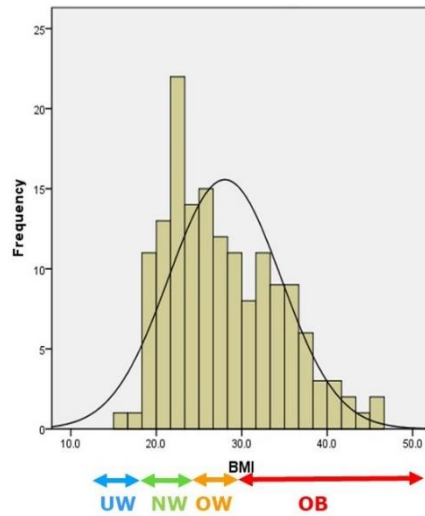
**Table 4** Location of check participants' height

| Location                 | Frequency ( <i>n</i> ) | Percent (%) | Cumulative Percent (%) |
|--------------------------|------------------------|-------------|------------------------|
| Home                     | 14                     | 9.1         | 9.1                    |
| GYM                      | 5                      | 3.2         | 12.3                   |
| <b>Hospital / Clinic</b> | <b>120</b>             | <b>77.9</b> | <b>90.3</b>            |
| Work                     | 1                      | .6          | 90.9                   |
| Other Place              | 14                     | 9.1         | 100.0                  |
| Total                    | 154                    | 100.0       |                        |

**Table 5.**Body Mass Index (BMI) Group

| BMI Groups                            | Frequency ( <i>n</i> ) | Percent (%) | Cumulative Percent (%) |
|---------------------------------------|------------------------|-------------|------------------------|
| Underweight (UW): below18.49          | 2                      | 1.3         | 1.3                    |
| Normal weight (NW) :18.50 – 24.99     | 58                     | 37.7        | 39.0                   |
| Overweight (OW): 25.00 – 29.99        | 40                     | 26.0        | 64.9                   |
| Obesity (OB): BMI of 30.00 or greater | 54                     | 35.1        | 100.0                  |
| Total                                 | 154                    | 100.0       |                        |

**Fig. 1.** Body Mass Index (BMI) Scale



**RQ 1- Store preference**

The results of MANOVA and ANOVA on the types of stores display in Table 6. The result of Wilk’s Lambda for the MANOVA reveals that the types of stores are significantly differed by four BMI groups (UW, NW, OW, and OB) ( $F= 2.51, p = .000$ ). Individual ANOVA shows that four BMI groups are significantly different on three types of stores; Department Store ( $F= 3.13, p \leq .05$ ), Discount Stores ( $F= 8.18, p \leq .001$ ), and Off-Price Stores ( $F= 2.20, p \leq .1$ ). The OW group has higher mean score on Department Stores ( $M = 5.08$ ), and the OB group has higher mean scores on Discount Store ( $M = 5.67$ ) and Off-Price Stores ( $M = 4.85$ ). The UW group has the lowest mean scores on Department Store ( $M = 3.50$ ) and Off-Price Stores ( $M = 3.50$ ). The NW group has the lowest mean score on Discount Store ( $M = 3.85$ ).

**Table 6** Results of MANOVA and ANOVA for RQ1

|                          | BMI Group Means Scores |              |              |              | Univariate F   | Multivariate F |
|--------------------------|------------------------|--------------|--------------|--------------|----------------|----------------|
|                          | UW<br>(n=2)            | NW<br>(n=58) | OW<br>(n=40) | OB<br>(n=54) |                |                |
| <b>Types of Stores</b>   |                        |              |              |              |                | <b>2.51***</b> |
| Department Stores        | <b>3.50</b>            | <b>4.14</b>  | <b>5.08</b>  | <b>4.89</b>  | <b>3.13**</b>  |                |
| Specialty Stores         | 4.00                   | 5.45         | 5.33         | 5.04         | .85            |                |
| Discount Stores          | <b>5.00</b>            | <b>3.85</b>  | <b>4.85</b>  | <b>5.67</b>  | <b>8.18***</b> |                |
| Off-Price Stores         | <b>3.50</b>            | <b>4.00</b>  | <b>4.25</b>  | <b>4.85</b>  | <b>2.20*</b>   |                |
| Outlet Stores            | 5.00                   | 4.47         | 4.60         | 4.41         | .12            |                |
| Catalog or Mail Ordering | 1.00                   | 3.60         | 4.08         | 3.41         | 1.55           |                |
| Internet                 | 7.00                   | 5.89         | 5.65         | 5.13         | 1.36           |                |

Note: Scores ranged from 1 (*Never*) to 7 (*Very Often*).

\*\*\*.  $p \leq 0.001$

\*\*..  $p \leq 0.05$

\*.  $p \leq 0.1$

**RQ 2- RTW clothing fitting issues**

The results of Wilk’s Lambda for the MANOVA, four BMI groups are significantly different on five body parts ( $F= 2.21, p = .006$ ). Individual ANOVA indicates that all four BMI groups are significantly different on 5 body parts; Bust ( $F= 6.26, p \leq .05$ ), Waist ( $F= 2.99, p \leq .05$ ), Abdomen ( $F= 4.15, p \leq .05$ ), Hip ( $F= 3.65, p \leq .05$ ), and Thigh ( $F= 4.30, p \leq .05$ ). The OB group has the highest mean score on 5 body parts; Bust ( $M= 5.11$ ), Waist ( $M= 4.13$ ), Abdomen ( $M= 4.63$ ), Hip ( $M= 4.85$ ), and Thigh ( $M= 5.17$ ).

The NW group has the lowest mean score on Waist ( $M= 3.40$ ), whereas the UW group has the lowest mean scores on Bust ( $M= 3.50$ ), Abdomen ( $M= 3.50$ ), Hip ( $M= 4.00$ ), and Thigh ( $M= 4.00$ ). See Table 7 for the results of MANOVA and ANOVA.

**Table 7** Results of MANOVA and ANOVA for RQ2

|                   | BMI Group Means Scores |                  |                  |                  | Univariate<br>F | Multivariate<br>F |
|-------------------|------------------------|------------------|------------------|------------------|-----------------|-------------------|
|                   | UW<br>( $n=2$ )        | NW<br>( $n=58$ ) | OW<br>( $n=40$ ) | OB<br>( $n=54$ ) |                 |                   |
| <b>Body parts</b> |                        |                  |                  |                  |                 | <b>2.21**</b>     |
| Bust              | <b>3.50</b>            | <b>4.17</b>      | <b>4.53</b>      | <b>5.11</b>      | <b>6.26**</b>   |                   |
| Waist             | <b>4.00</b>            | <b>3.40</b>      | <b>3.68</b>      | <b>4.13</b>      | <b>2.99**</b>   |                   |
| Abdomen           | <b>3.50</b>            | <b>3.97</b>      | <b>4.30</b>      | <b>4.63</b>      | <b>4.15**</b>   |                   |
| Hip               | <b>4.00</b>            | <b>4.12</b>      | <b>4.40</b>      | <b>4.85</b>      | <b>3.65**</b>   |                   |
| Thigh             | <b>4.00</b>            | <b>4.38</b>      | <b>4.75</b>      | <b>5.17</b>      | <b>4.30**</b>   |                   |

Note: Means with the same superscript indicate significant differences between the groups.

Scores ranged 1 = *Extremely Loose*, 4= *Good Fit*, and 7 = *Extremely Tight*

\*\* $p \leq 0.05$

### RQ 3- Clothing benefit sought

An overall difference in clothing benefits sought at the MANOVA level ( $F= 3.68, p = .000$ ) is found across the four BMI groups. Individual ANOVA further reveals that the four BMI groups are significantly different on one of the five factors; Camouflage ( $F= 18.06, p = .000$ ). As compared to other participants, the OB has higher mean scores on camouflage ( $M= 5.19$ ). Of all the groups, the UW respondents have the lowest mean score on camouflage ( $M= 1.25$ ). The Table 8 summarizes the results of MANOVA and ANOVA.

**Table 8** Results of MANOVA and ANOVA for RQ 3

|                                 | BMI Group Means Scores |                  |                  |                  | Univariate<br>F | Multivariate<br>F |
|---------------------------------|------------------------|------------------|------------------|------------------|-----------------|-------------------|
|                                 | UW<br>( $n=2$ )        | NW<br>( $n=58$ ) | OW<br>( $n=40$ ) | OB<br>( $n=54$ ) |                 |                   |
| <b>Clothing Benefits Sought</b> |                        |                  |                  |                  |                 | <b>3.68***</b>    |
| Fashionability                  | 5.40                   | 5.17             | 5.00             | 5.17             | 0.22            |                   |
| Appeal to the Opposite Sex      | 3.50                   | 4.21             | 4.00             | 4.02             | 0.40            |                   |
| <b>Camouflage</b>               | <b>1.25</b>            | <b>3.28</b>      | <b>4.45</b>      | <b>5.19</b>      | <b>18.06***</b> |                   |
| Emphasizes Body                 | 4.25                   | 4.61             | 4.03             | 4.06             | 1.90            |                   |
| RTW Satisfaction with Fit       | 6.00                   | 4.58             | 4.59             | 4.50             | 0.73            |                   |

Note: Scores ranged from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*).

\*\*\*.  $p \leq 0.001$

## 5. Discussion and Implications

In this study, we investigate the influence of BMI on RTW clothing preferences such as store preference, clothing benefits sought, and clothing fitting issues among African-American female consumers. To obtain the reliable BMI categories and scores, each participant frequently checked her weight at least once a month at the convenient places (Table 2 and 3) in consideration of weight fluctuations. More than 60% of the participants in this study were in overweight and obesity categories as shown in Table 5 and Fig. 1. The average of BMI was 28.02, which was lower than the average of BMI in Southeastern regions (over 30.0 BMI) of the US (CDC, 2020) because the participants in this study were oriented to young female consumers.

The smallest size is the underweight (UW) group ( $n=2, 1.3\%$ ) in this study. Even though they prefer to purchase their clothing at internet, discount and outlet stores (Table 6), this group does not provide any significant meaning with the statistical analysis due to only two participants in this group. Instead, this result suggests that the UW group portrays a unique body physique that should not be ignored.



The Normal Weight (NW) group has the largest ( $n=58$ , 37.7%) participants in this study. Participants in the NW group are also interested in the newest fashion trend (Table 8), and they frequently visit the internet and specialty stores to buy their clothing (Table 6). This group might use the RTW clothing to emphasize their body shapes. They did not have RTW clothing fitting problems around hip, bust and thigh girth (group mean from 4.12 to 4.38  $\approx$  median), but they relatively felt a loose fit around the waist ( $M=3.40$ , Table 7) compared to other body parts.

The Overweight (OW) group has 26.0% ( $n=40$ ) of total participants in this study. Compared with the types of stores of the other three groups, participants in the OW group most often visited department stores to purchase their clothing (Table 6). They also preferred to shop their clothing at the specialty and internet stores. Participants in the OW group felt their clothing tighter than “Good Fit = 4” around most of body parts except for the waist. Especially, they felt their clothing tightest around the thigh (group mean = 4.75) among the body parts. On the other hand, they still felt slightly loose fit around the waist (Table 7). This can be understood from the result of Table 8, which is that participants from the OW group (higher BMI score group) are interested in the camouflage benefit (group mean = 4.45) using their clothing. That is, they want RTW clothing tighter around the waist to create a physical body shape which they want to have. Overall, participants in the OW group are satisfied with the RTW clothing even though they felt their clothing tight around most of their body parts.

The Obesity (OB) group ( $n=54$ , 35.1%) are the second largest BMI group in this study. Compared to other BMI groups, the discount stores are the most favorite shopping place to participants in the OB group as shown in Table 6 (Types of Stores). Similarly to the OW group, participants in OB group also felt RTW clothing too tight around most of body parts (group means range from 4.63 to 5.17), while they felt slightly tight around the waist (group mean = 4.13  $\approx$  median). Interestingly, the OW group was particularly looking for the camouflage benefits (group mean = 5.19) compared to other BMI groups. Participants in the OB group preferred to hide their body imperfections with RTW clothing. The statistical results seem to suggest that most participants in the OB group have trouble finding well-fitting clothing in market places.

In the present time, the young Africa-American female consumers easily access online stores through their electronic devices, such as smartphone, iPad, and computer. As shown in Table 6, the participants in this study are more like to purchase their clothing at online stores, which are the most favored stores among young consumers, even though they cannot feel, touch or try on the clothing through the internet. Young consumers easily scan the latest fashion and shop their clothing through the internet during their free time, whereas the catalog or mail order routes are of much less interest as shopping methods. These results are consistent with the previous research conducted by Seo & Namwamba (2014), Nielsen Report (2016), and Johnson et al., (2017). In addition, many young Africa-American female consumers prefer to shop their clothing at discount or off-price stores at a reasonable price due to financial reasons and other issues (Table 6). Interestingly, this study found that participants with higher BMI scores were highly influenced by a factor of ‘camouflage’ in clothing benefit sought (Table 8). This study indicates that clothing benefits sought is a useful psychographic tool to understand African-American female consumers.

This research is valuable because it is the first to explore clothing fit preferences in relation to BMI scores from young African-American female consumers. As shown in Table 7, most young female consumers had an experience in their clothing that somehow misfits them no matter which BMI group they belong to. Interestingly, most participants felt their clothes tight around whole body parts (bust, abdomen, hip, and thigh) except for the waist (Table 7). Participants in most of the BMI groups felt relatively comfortable fit around the waist girth without complaint of tight fitting. In general, most participants were satisfied with RTW clothing fit even though they felt their clothes tight or loose. This result is consistent with the result of previous study of Shin and Damhorst (2018).

The clothing fit is an important factor for people to look better in their clothes. The young Africa-American female consumers in this study usually used RTW clothing to create a body shape which they want to have. Specifically, the higher the female consumers’ BMI scores, the more likely they are to wear loose fitting RTW clothing to hide their body shapes. That is to say, as shown in Table 8, participants in higher BMI scores are especially looking for camouflage benefits from the RTW clothing. This research indicates that most young Africa-American female consumers consider RTW clothing as a tool to express their personality and to reflect the latest fashion trends, while they do not prefer to wear RTW clothing for an appeal to the opposite sex (Table 8).

The findings in this research will contribute to recognition of RTW clothing preferences of young African-American female consumers as a reference. When designing RTW clothes, it is recommended for apparel designers to consider up-to-date young consumers' clothing preferences based on the impact of body cathexis. The apparel industries and manufacturers need to be concerned about their RTW clothing fit issues by incorporating both actual and psychological body images in order to capture more target young African-American consumers. Well-fitting clothes with comfortable function as well as the latest trend will be the key attributes for young African-American female consumers' desirousness for apparel products in all retail markets. The results of this study provide the store managers and manufacturing marketers with deep understanding of young African-American consumers' store preferences for clothing shopping, so that they can create winning product assortment strategies.

## 6. Limitation and suggestions for future study

This study is limited to the participants in the southeastern area of the US with convenience sample for this study ( $n=154$ ), that cannot be representative of the whole African-American female population. Especially, this research includes the smallest group of underweight participants, who are the minority in African-American female consumers. This underweight African-American consumers need to be deeply investigated with a bigger sample size for the future research. The other limitation of this study is the low Cronbach's alpha values in factor analysis of clothing benefits sought. Although the Cronbach's alpha values are low (0.643 and 0.573), this study accepted the values because it was within the acceptable range, from 0.45 to 0.98 (Taber, 2018). Future research may need to consider a bigger sample size to get the good alpha values. The statistical results of RTW clothing fitting issues were obtained on only main 5 body parts (bust, waist, abdomen, hip, and thigh) for this study. Future research needs to overcome these limitations and even further, investigate the correlation between the obesity prevalence and RTW clothing preferences among wider ethnicities, ages, and regions. This research can be also strengthened with actual body measurements or shapes by measuring through a 3-dimensional (3D) body scanner. This future research will improve deep understanding of RTW clothing preferences of diverse consumers, who want to wear a well-fitting RTW clothing in retail markets. In addition, the psychographic research of clothing benefits sought for ethnic and demographic differences needs to be conducted for future research and for better understanding the target markets.

## 7. Conclusion

In this research, we investigate the influence of African-American women's obesity prevalence represented by BMI on RTW clothing preferences such as types of stores, clothing benefit sought, and clothing fitting issue. Due to the unique perceptive body image of African-American females, they have distinct RTW clothing preferences dependent on each BMI group they belong to. African-American female consumers wear their RTW clothing, often in order to create a perceptive body image which they assume to have or want to have. Such tendency to wear bring to feeling relatively loose fit around the waist in all BMI groups, and especially more searching for the camouflage benefits in higher BMI groups. This research demonstrates that most African-American female consumers prefer to wear their RTW clothing to express their personality with the latest fashion trends instead of sexual appeal. This study aims to enlighten the apparel industries on young African-American female's RTW clothing preferences associated with their body image perception.

### Acknowledgements:

This work was supported by the PROPEL Education Now Designed for the Future Center and the USDA National Institute of Food and Agriculture, Evans-Allen project accession number: 1016007.

### Statements and Declarations

#### Competing Interests

The authors declare that they have no competing interests.

#### Ethical approval

This research was conducted under the approval and supervision of our University Institutional Review Board regarding ethical issues including consent to participate.

## References

- Aiken Jr, L. R. (1963). The relationships of dress to selected measures of personality in undergraduate women. *The Journal of Social Psychology*, 59(1), 119-128.
- Alexander, M., Jo Connell, L., & Beth Presley, A. (2005). Clothing fit preferences of young female adult consumers. *International Journal of Clothing Science and Technology*, 17(1), 52-64.
- Anderson, L. J., Brannon, E. L., Ulrich, P. V., Presley, A. B., Woronka, D., Grasso, M., & Stevenson, D. (2001). Understanding fitting preferences of female consumers: Development of an expert system to enhance accurate sizing selection. *National Textile Center Annual Report*, 198, 1-10.
- Ashdown, S. P., & O'Connell, E. K. (2006). Comparison of test protocols for judging the fit of mature women's apparel. *Clothing and Textile Research Journal*, 24(2). 137-14.
- Ashdown, S.P., Locker, S., Schoenfelder, K., and Lyman-Clarke, L. (2004). Using 3D Scans for fit analysis, *Journal of Textile and Apparel Technology and Management*, 4: 1-12.
- Bessellieu, L. D. (1997). The meaning of weight and body image in African-American women. (Unpublished master's thesis). Auburn University.
- Bukhari, A., Akram, M., & Hayat, A. (2021). University Student's Behavior Towards Online Shopping during COVID-19 Pandemic in Lahore, Pakistan. *Multicultural Education*, 7(10), 852-858.
- Cachelin, F. M., Rebeck, R. M., Chung, G. H., & Pelayo, E. (2002). Does ethnicity influence body- size preference? A comparison of body image and body size. *Obesity research*, 10(3), 158-166.
- Campos, P., Saguy, A., Ernsberger, P., Oliver, E., & Gaesser, G. (2006). The epidemiology of overweight and obesity: public health crisis or moral panic?. *International journal of epidemiology*, 35(1), 55-60.
- Capers, P. L., Kinsey, A. W., Miskell, E. L., & Affuso, O. (2016). Visual Representation of Body Shape in African-American and European American Women: Clinical Considerations: Supplementary Issue: Health Disparities in Women. *Clinical Medicine Insights: Women's Health*, 9, 63-70.
- CDC: Centers for Disease Control and Prevention (2020). Adult obesity prevalence maps. *Centers for Disease Control and Prevention*. [Online] Available: <https://www.cdc.gov/obesity/data/prevalence-maps.html> (September 21, 2020)
- CDC: Centers for Disease Control and Prevention (2022). About Adult BMI. *Centers for Disease Control and Prevention*. [Online] Available: [http://www.cdc.gov/healthyweight/assessing/bmi/adult\\_bmi/?ref=driverlayer.com](http://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/?ref=driverlayer.com) (June 3, 2022).
- Chang, V. W., & Lauderdale, D. S. (2005). Income disparities in body mass index and obesity in the United States, 1971-2002. *Archives of internal medicine*, 165(18), 2122-2128.
- Dillahunty, T. J., & Seo, J. I. (2019). Clothing Involvement Profiles of African-American Students for Marketing Strategies. *International Journal of Marketing Studies*, 11(1), 1-10.
- Falconer, J. W., & Neville, H. A. (2000). African American college women's body image: An examination of body mass, African self- consciousness, and skin color satisfaction. *Psychology of Women Quarterly*, 24(3), 236-243.
- Flegal, K. M., Carroll, M. D., Kit, B. K., & Ogden, C. L. (2012). Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999-2010. *Jama*, 307(5), 491-497.
- Frith, H., & Gleeson, K. (2008). Dressing the body: The role of clothing in sustaining body pride and managing body distress. *Qualitative Research in Psychology*, 5(4), 249-264.
- Graham, K. (2022). Analysis: Black consumers empowered by “selfless” spending. *NIQ*. [Online] Available: <https://nielseniq.com/global/en/insights/analysis/2022/black-consumers-empowered-by-selfless-spending/> (Feb. 9, 2022)
- Grogan, S., Gill, S., Brownbridge, K., Kilgariff, S., & Whalley, A. (2013). Dress fit and body image: A thematic analysis of women's accounts during and after trying on dresses. *Body image*, 10(3), 380-388.
- Johnson, C., Banks, L., Smith, D., & Seo, J-I. (2017). The effect of product involvement on store preference and clothing benefits sought for African-American female students. *Journal of Applied Business Research (J-ABR)*, 33(1), 107-114.
- Kinley, T. R. (2010). Fit and shopping preferences by clothing benefits sought. *Journal of Fashion Marketing and Management: An International Journal* 14(3), 397-411.
- Lennon, S. J., Johnson, K. K., Noh, M., Zheng, Z., Chae, Y., & Kim, Y. (2014). In search of a common thread revisited: What content does fashion communicate? *International Journal of Fashion Design, Technology and Education*, 7(3), 170-178.
- Makhanya, B. P., & Mabuza, D. C. (2020). Body cathexis and fit preferences of young South African women of different body shapes and ethnicity. *International Journal of Fashion Design, Technology and Education*, 1-8.

- Manuel, M. B., Connell, L. J., & Presley, A. B. (2010). Body shape and fit preference in body cathexis and clothing benefits sought for professional African-American women. *International Journal of Fashion Design, Technology and Education*, 3(1), 25-32.
- McKinney, L. N., Legette-Traylor, D., Kincade, D. H., & Holloman, L. O. (2004). Selected social factors and the clothing buying behaviour patterns of black college consumers. *The International Review of Retail, Distribution and Consumer Research*, 14(4), 389-406.
- Mulpuru, S. (2017). Think Tank: The Opportunity in Online Returns for Apparel Retailers, *WWD*. [Online] Available: <https://wwd.com/business-news/business-features/sucharita-mulpuru-think-tank-returns-10939339> (July 6, 2017).
- Nielsen (2016). Nielsen 2016 Report: Young Connected and Black: African-American Millennials are driving social change and leading digital advancement. [Online] Available: <http://www.ethnifacts.com/Nielsen-African-American-Consumer-Report-Oct-2016.pdf> (October 17, 2016).
- Ogden, C. L., Carroll, M. D., Fryar, C. D., & Flegal, K. M. (2015 November). Prevalence of obesity among adults and youth: United States, 2011-2014. *U.S. Department of Health and Human Services, Centers of Disease Control and Prevention*.
- Orendroff, A (2019). The state of the ecommerce fashion industry: Statistics, Trends & Strategy. *Shopifyplus*, [Online] Available: <https://www.shopify.com/enterprise/ecommerce-fashion-industry> (Jan, 2019)
- Park, H. H., & Sullivan, P. (2009). Market segmentation with respect to university students' clothing benefits sought: Shopping orientation, clothing attribute evaluation, and brand repatronage. *International Journal of Retail & Distribution Management*, 37(2), 182-201.
- Pisut, G., & Connell, L. J. (2007). Fit preferences of female consumers in the USA. *Journal of Fashion Marketing and Management: An International Journal*, 11(3), 366–379.
- Repko, M. (2020). As Black buying power grows, racial profiling by retailers remains persistent problem. *CNBC*. [Online] Available: <https://www.cnn.com/2020/07/05/as-black-buying-power-grows-racial-profiling-by-retailers-remains-a-problem.html#:~:text=Black%20buying%20power%20was%20%241.4,to%20%241.8%20trillion%20by%202024>. (July 5, 2020)
- Seo, J-I. (2016). Internet Shopping Behaviors of Generation Y African-American Based on Apparel Production Involvement. *International Business Research*, 9(9), 64-77.
- Seo, J-I. Hathcote, J. M., & Sweaney, A. L. (2001). Casualwear shopping behavior of college men in Georgia, USA. *Journal of Fashion Marketing and Management*, 5(3), 208–222.
- Seo, J.-I., & Namwamba, G. W. (2018). Fit issues in ready-to-wear clothing for African-American female college students based on the body shapes. *International Journal of Fashion Design, Technology and Education*, 11(2), 160-168.
- Shields, M., Carroll, M.D., & Ogden, C. L. (2011). Adult obesity prevalence in Canada and the United States. U.S. Department of Health and Human Services. Retrieved from <http://www.cdc.gov/nchs>
- Shin, E., & Damhorst, M. L. (2018). How young consumers think about clothing fit?. *International Journal of Fashion Design, Technology and Education*, 11(3), 352-361.
- Shin, S. J. H., & Istook, C. L. (2007). The importance of understanding the shape of diverse ethnic female consumers for developing jeans sizing systems. *International Journal of Consumer Studies*, 31(2), 135–143.
- Shim, S., & Bickle, M. C. (1994). Benefit segments of the female apparel market: Psychographics, shopping orientations, and demographics. *Clothing and Textiles Research Journal*, 12(2), 1-12.
- Shim, S., & Kotsiopoulos, A. (1992). Patronage behavior of apparel shopping; part I. Shopping orientations, store attributes, information sources, and personal characteristics. *Clothing and Textiles Research Journal*, 10(2), 48-57.
- Song, H. K., & Ashdown, S. P. (2013). Female apparel consumers' understanding of body size and shape: Relationship among body measurements, fit satisfaction, and body cathexis. *Clothing and Textiles Research Journal*, 31(3), 143-156.
- Suk, S., & Lee, Y. J. (2018). Male consumers' clothing consumption values and perceived importance of store attributes by store type preferences. *Journal of Fashion Business*, 22(5), 15-31.
- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in science education*, 48(6), 1273-1296.
- Tiggemann, M., & Andrew, R. (2012). Clothing choices, weight, and trait self-objectification. *Body image*, 9(3), 409-412.
- Tortora, P.G., & Eubank, K. (2010). *Survey of historic costume* (5<sup>th</sup> Ed.). New York, NY: Fairchild.
- Watkins, J. A., Christie, C., & Chally, P. (2008). Relationship between body image and body mass index in college men. *Journal of American College Health*, 57(1), 95-100.
- Wilson, D. B., Sargent, R., and Dias, J. (1994). Racial differences in selection of ideal body size by adolescent females. *Obesity Research*, 2(1), 38-43.