

Body Shape Profiles of Overweight and Obese Women: Exploring Weight Perception and Apparel Shopping Behaviors

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Background and Research Purpose: Approximately 67% of the female population in the United States falls into the plus-size category, with the average American woman typically wearing sizes 16 to 18 (Hudson & Hwang, 2022). In response, major retailers such as Walmart, Nike, and Adidas have launched clothing lines specifically designed for plus-size individuals, reflecting their commitment to promoting size diversity (Ashley, 2020). To enhance understanding of the body shape attributes of plus-size female consumers and improve sizing systems tailored to their needs, researchers have analyzed the body shapes and proportions of overweight and obese women (Kumari & Anand, 2023; Park & Park, 2013; Song & Ashdown, 2011; Shin & Saeidi, 2022). Despite these efforts, limited research has examined how the body shape characteristics of overweight and obese female consumers influence their shopping behaviors. Therefore, this study aimed to address this gap by exploring the relationship between body shape profiles, weight perception, and apparel shopping behaviors, including store selection and apparel preferences.

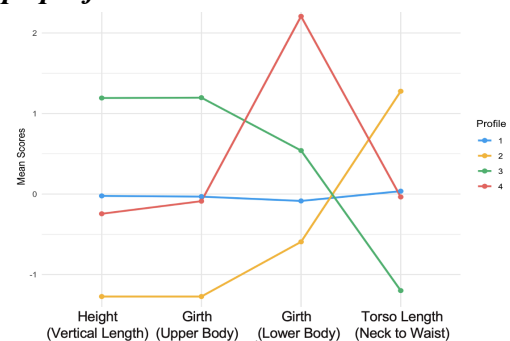
Analysis Methods: The data for this study were obtained from the SizeUSA national sizing survey, a comprehensive and representative database of body measurements for U.S. women. Body Mass Index (BMI), a reliable indicator of body fat, was used to categorize participants by weight (Song & Ashdown, 2011). The study included 2,898 female subjects aged 18 to 55 from the SizeUSA database, all with a BMI of 25 or higher (Shin & Saeidi, 2022). The participants' BMI ranged from 25.01 to 69.97. The analysis of body measurement data for these plus-size participants followed three key steps. First, exploratory factor analysis (EFA) was conducted to reduce 114 body dimensions into four latent factors: vertical measurements, upper body horizontal measurements, lower body horizontal measurements, and torso length measurements from the neck to the waist. Next, latent profile analysis (LPA) was performed using these four latent factors to identify four distinct body shape profiles. Finally, differences in weight perception, store selection, and clothing preferences among the participants were compared across the four identified body shape profiles.

Results: *Clustering plus-size women into distinct body shape profiles*

The results of the latent profile analysis (LPA) identified four distinct subpopulation groups among overweight and obese females, based on the distribution of vertical measurements, upper horizontal measurements, lower horizontal measurements, and torso length measurements (see Figure 1).

Figure 1

Four body shape profiles identified based on the distribution of four latent body dimension factors



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Table 1 provides a detailed breakdown of the distribution of subjects across these profiles, highlighting the key body shape characteristics associated with each group.

Table 1

Overview of body shape profiles

Group Label	Proportion	Body Measurement Latent Factors			
		Vertical Length	Upper Body Girth	Lower Body Girth	Torso Length
Proportionate, standard body dimensions	40.5% (n=1,173)	Average	Average	Average	Average
Shorter stature with a larger lower body and elongated torso	27.5% (n=798)	Very Low	Very Low	Low	High
Taller stature with a broader upper body and shorter torso	30.5% (n=883)	High	High	High	Low
Pronounced lower body and smaller upper body, resembling a pear shape	1.5% (n=44)	Slightly Low	Average	Very High	Average

Association between body shape profiles and weight perception

Body shape profiles among overweight female adults did not show significant differences in weight perception. However, within each body shape group, the four latent body dimension factors were positively correlated with weight perception ($B = 3.272$, $SE = 0.013$, $p < 0.001$).

Table 2

Parameter estimates of regression results

Variable	B	SE	P
Intercept	3.272	0.013	<0.001
Vertical Length	0.858	0.181	<0.001
Upper Body Girth	3.155	0.223	<0.001
Lower Body Girth	0.288	0.032	<0.001
Torso Length	4.122	0.330	<0.001
R ²	0.769		
F	50.87		

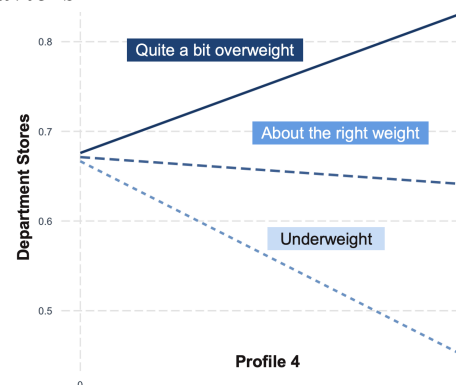
Furthermore, as overweight women age, they are more likely to perceive themselves as heavier or become increasingly conscious of their weight ($B = 0.023$, $SE = 0.009$, $p < 0.05$). Conversely, individuals with more active lifestyles were found to perceive their weight as lower ($B = -0.189$, $SE = 0.015$, $p < 0.001$).

Association between body shape profiles and apparel shopping behaviors

Body shape profiles revealed differences in department store preferences based on self-perceived weight. Individuals with a pear-shaped body type (Profile 4) who perceived themselves as overweight were more likely to shop at department stores, whereas those who did not perceive themselves as overweight were less likely to do so ($B = 0.398$, $SE = 0.178$, $p < 0.01$).

Figure 2

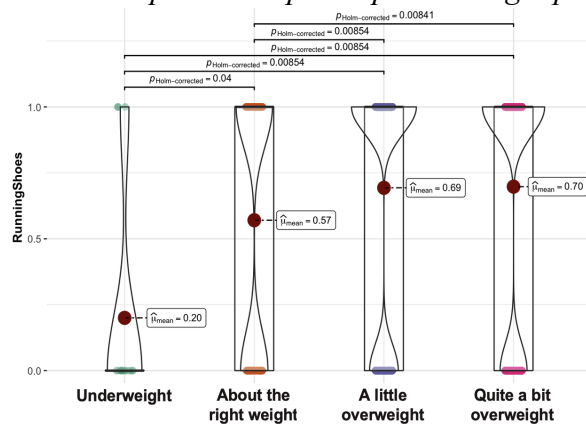
Relationship Between Self-Perceived Weight and Department Store Preferences for Profile 4



Additionally, body shape profiles significantly influenced running shoe purchase preferences ($F(3, 127.26) = 7.27$, $p < 0.001$, $\omega^2 = 0.13$). Individuals with a pear-shaped body type (Profile 4) were more likely to prefer running shoes compared to those with other body shape profiles. Compared to objective body shape profiles, weight perception demonstrated a higher effect size ($F(3, 67.42) = 11.47$, $p < 0.001$, $\omega^2 = 0.31$), suggesting that weight perception is a stronger predictor of running shoe preferences.

Figure 3

Relationship between participants' weight perception and running shoe preferences



Implications: Along with objective body shape characteristics, psychological factors such as weight perception and their influence on apparel shopping behaviors can guide brands and retailers in tailoring product offerings and marketing strategies to better address the needs of plus-size consumers. Extending this research to diverse demographic groups and international markets would help brands and retailers create more inclusive product offerings and campaigns.

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