

## The Influence of Female Body Size and Rater Sex on Perceived Leadership Ability

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**Abstract:** This study explores whether body size, measured in Body Mass Index (BMI), of a female leader impacts a rater's perception of leadership abilities. Cadets were randomly assigned a survey that included an Officer Record Brief and an image of a female officer with a BMI of 19, 23, or 27. Participants then completed the Leader Perception Scale, which consists of rating 23 competencies and attributes on a 7-point Likert scale. A Kruskal-Wallis test was performed to analyze the effect what factors affected perceived leadership ability. Rater sex had a statistically significant effect on perceived leadership abilities ( $p = 0.026$ ). Additionally, leader BMI had a statistically significant effect on fitness rating ( $p < 0.001$ ). The results highlight both sex-specific differences in perceived leadership, and the dissonance between military fitness requirements and social preference for female bodies.

**Keywords:** BMI, Female Leader, Leader Perception

### 1. Introduction and Background

The human brain uses learned patterns and assumptions to simplify the world. A variety of physical traits have been found to impact the perceptions of non-physical attributes of individuals, including leadership attributes (Zebrowitz & Montepare, 2008; Re et al., 2013 & Korenman et al., 2019). For example, specific facial cues are indicative of stereotypical assumptions toward individuals (Zebrowitz & Montepare, 2008), and gender congruent faces receive more favorable ratings of leadership qualities (Korenman et al., 2019). Leadership perceptions are also influenced by a person's stature, with taller individuals having a higher perception of leadership qualities when compared to shorter individuals (Blaker et al., 2013). Leaders who are physically fit are viewed in higher regard over leaders who are not as physically fit, especially during periods of tension and conflict (Murray, 2014). Merritt and Lynch (2020) also found a correlation between a leader's body size and their perceived leadership ability. Within the military, Army Regulation 600-9 (2013) stresses exhibiting a fit appearance, and establishes height and weight standards by age and sex. This study assesses how the body size, measured in Body Mass Index (BMI), of a female leader impacts a rater's perception of leadership abilities.

### 2. Methodology

The research team created an electronic survey in Qualtrics. The survey included basic demographic questions and select portions of an Officer Record Brief (ORB, the military equivalent of a resume). The research team also used three sets of images. Each set included a frontal, right side, and posterior view of a female officer from the neck down. All three images were Caucasian females, between the ages of 30-35, each of whom had given birth  $> 1$  year but  $< 3$  years prior, and all three were wearing an Army Physical Fitness Uniform. The BMI of the officer was either 19, 23, and 27. These BMIs were selected

because they represent the approximate minimum, midpoint, and maximum allowable BMI for a female per AR 600-9. Participants were shown the ORB along with a randomly assigned set of image. Participants then rated the leader using the Leadership Perception Scale (Korenman, et al., 2019), which asked them to assess the leader on 23 competencies and attributes using a 7-point Likert scale. Higher scores indicated a more favorable rating.

Responses were collected from 376 cadets at the United States Military Academy. A perceived leadership ability rating was calculated by averaging the 23 individual ratings. The R statistical package (R core team, 2022) was used for all data analysis. The data was analyzed based on rater sex (males, N = 201; females, N = 175) and BMI of the images (N = 123, 126, and 127 for BMIs of 19, 23, and 27, respectively), as well as interaction. In addition to the overall perceived leadership ability rating, individual competencies and attribute scores were also examined. Because the data was non-normal, a Kruskal-Wallis test was used to analyze differences between sub-populations, and a Dunn test with a Bonferroni adjustment was used for post-hoc testing.

### 3. Results

The overall perceived leadership ability rating for all participants was 5.39 ( $SD = 0.71$ ) out of 7 possible points on the Likert scale. Rater sex had a statistically significant effect on perceived leadership abilities ( $\chi^2 = 4.93$ ,  $p = 0.026$ ,  $df = 1$ ). Male respondents gave a mean rating of 5.32 ( $SD = 0.74$ ), while female respondents gave a mean rating of 5.48 ( $SD = 0.68$ ). Body Mass Index did not have a statistically significant impact on perceived leadership abilities ( $\chi^2 = 0.242$ ,  $p = 0.88$ ,  $df = 2$ ). The interaction between sex and BMI was also tested, but the result was not significant ( $\chi^2 = 6.89$ ,  $p = 0.22$ ,  $df = 5$ ).

The rater sex also had a statistically significant effect on six the individual attributes. For each, male respondents provided a lower rating than female respondents. These included demonstrates fitness ( $\chi^2 = 4.77$ ,  $p = 0.028$ ,  $df = 1$ ), demonstrates the Army values ( $\chi^2 = 3.86$ ,  $p = 0.049$ ,  $df = 1$ ), extends influence beyond the chain of command ( $\chi^2 = 5.64$ ,  $p = 0.017$ ,  $df = 1$ ), demonstrates confidence ( $\chi^2 = 4.16$ ,  $p = 0.041$ ,  $df = 1$ ), demonstrates discipline ( $\chi^2 = 4.02$ ,  $p = 0.040$ ,  $df = 1$ ), and prepares self ( $\chi^2 = 11.98$ ,  $p < 0.028$ ,  $df = 1$ ).

Leader BMI was statistically significant for the attribute of fitness ( $\chi^2 = 27.00$ ,  $p = 0.026$ ,  $df = 1$ ). The post-hoc testing revealed significant differences between BMIs 19 and 23 ( $p < 0.001$ ), 19 and 27 ( $p < 0.001$ ), and 23 and 27 ( $p < 0.001$ ). Overall, the BMI of 19 earned the highest fitness ratings (mean = 5.73,  $SD = 0.906$ ), followed by the BMI of 23 (mean = 5.34,  $SD = 1.13$ ) and the BMI of 27 (mean = 4.98,  $SD = 1.26$ ). Additionally, the interaction between rater sex and leader BMI was significant ( $\chi^2 = 32.33$ ,  $p < 0.001$ ,  $df = 5$ ). Post-hoc and visual analysis indicates that male fitness ratings decrease more sharply as BMI increases when compared to female fitness ratings.

### 4. Discussion and Recommendations

The results of this study indicate that the sex of the rater influences their perception of a leader. In this study, only images of Caucasian females were tested. As such, the research cannot conclude if the difference in ratings is related to the sex of the leader (i.e., females are rated lower than males) or the sameness between the rater and the leader (i.e., females rate females higher, and males rate males higher). Additional studies with images of Caucasian males may provide more insight, provided the same Officer Record Brief is used throughout. This also applies when considering in specific attribute scores as they relate to rater sex.

The difference in fitness rating with regard to leader BMI is especially interesting in the context of the Army Combat Fitness Test (ACFT), the Army's objective fitness evaluation. Recent studies show that individuals with higher BMI tend to perform better on events like the medicine ball throws, sled drags, and deadlifts, which represent half the events on the ACFT (Pierce, et al., 2017; Pierce, et al., 2018). However, the literature surrounding female body image and body size preferences consistently shows that smaller bodies, and therefore lower BMIs, are preferred in females (Fallon & Rozin, 1985; Leavy, et al., 2009). This highlights the dissonance between military fitness requirements and social preference for female bodies.

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