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The Importance of Gender in Body Mass Index, Age, and Body Self-Perception of University Students in Spain

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Abstract: Body image is a fundamental factor that influences a person's self-image throughout life and at all stages of life. Self-perception of body image and body mass index may be related, as the way a person views him or herself can influence their eating behavior and level of physical activity, which in turn can affect their weight and BMI. The aim of this study is to find the association between body mass index, age, and body self-perception of university students, analyzing possible differences according to the gender of the students. In total, 312 students answered five sociodemographic questions in addition to the Multidimensional Body Self Relations Questionnaire, which consists of 45 questions grouped into four dimensions. Spearman's Rho test was used to analyze the association between each of the Multidimensional Body Self Relations Questionnaire (MBSRQ) factors and body mass index (BMI). Statistical differences were found in dimension 3 ($p < 0.01$) of the MBSRQ questionnaire with respect to BMI in both sexes, and in dimension 1 ($p < 0.01$), a significant difference was found in female students. With the male gender, significant differences were found between age and BMI (0.04). Consequently, the sex to which the student belongs conditions his or her BMI with the self-perceived body image, so lines of action should be developed to improve self-image.

Keywords: body image; body mass index; gender; university students; self-perceptions

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1. Introduction

A person's views, thoughts, and feelings regarding their body are referred to as their body image [1]. It can be negative or positive. Positivity toward one's physical appearance, including its distinctive features, usefulness, and capacities, is referred to as having a positive body image [2]. People who have a positive body image are at ease, self-assured, and content with their physique, being more aware of and able to challenge unhealthy or unrealistic societal appearance standards, such as the Western female thin ideal [3].

When one has unfavorable body perceptions and perceives a gap between their ideal and actual body, this is known as body dissatisfaction [1]. According to research, this dissatisfaction can start as early as age six, and people of all body types and ethnic backgrounds can experience it [4,5]. Furthermore, it can result in unfavorable effects on both physical and mental health, such as eating disorders [6], depression [7], anxiety, and low self-esteem [8]. Numerous studies have been conducted to support the link between media exposure and body dissatisfaction and disordered eating in women and girls [9–12]. Generally, the female sex is the most affected. Mass media is typically cited as

the most significant and pervasive social element contributing to body dissatisfaction [13]. Importantly, a number of studies show that positive body image is a distinct construct from negative body image, and is uniquely associated with a variety of traits (such as self-esteem and intuitive eating) over and above negative body image [14].

In this context, it is necessary to identify the factors that positively or negatively condition the corporal image. For example, the use of social networking sites has been linked to increased loneliness; moreover, social connectivity and wellbeing have reported both negative and positive effects [15]. In particular, it appears that a tendency to perform upward comparison—that is, comparing one's status on an appearance-related dimension to someone who is regarded to be superior on that dimension—is linked to a more unfavorable perception of one's body [16]. In this sense, negative psychological effects, such as greater body dissatisfaction, might result from repeated bad social situations [17]. In addition, one study [18] found no evidence that age significantly affects body image; in contrast, other research [19] indicates that older people tend to report having a more positive body image. In young people, body image has a big impact on self-confidence [20]. Although this component has been extensively researched in women, it is also a significant predictor of young men's psychological wellbeing [21]. Gender may have an impact on how people perceive healthy lifestyles and make health-related decisions, according to prior research [22–24]. In a study including 12 nations, Jaeger et al. [25] discovered that more western nations had slimmer female stereotypes and reported higher levels of body dissatisfaction; this finding raises the possibility that culture or ethnicity may affect body image stereotypes. Additionally, differences in body image might exist between a nation's many subcultures [26]. African American college students were found to have a more favorable body image than White students in three studies of women alone [27–29] and in two studies including men and women [30,31]. Although most studies to date have focused on women, some studies have found that European American males tend to have much higher body dissatisfaction rates than Black men [31,32]. This lends credence to the idea that race or ethnicity may influence body image satisfaction.

In terms of the level of development, it is found that between the ages of 12 and 18, a number of cultural, social, physical, and psychological changes that are characteristic of adolescence, interact specifically to develop body image [33]. Importantly, these bodily alterations also take place at the same time as increased exposure to and comparisons with cultural notions of beauty [34]. The social class to which a person belongs also has an impact on their body image [35]. According to the literature, compared with adolescents and young adults of greater socioeconomic position, adolescents and young adults of lower socioeconomic status are more likely to be overweight and believe they weigh less than they actually do [36]. This shows that adolescents and young adults from lower socioeconomic status groups may be more prone to have an inaccurate perception of their bodies, which can drive them to maintain their excess weight. Various studies state that there are also differences according to a person's sexual identity in relation to their body image [37]. On the other hand, there are four main ways in which self-compassion may work as a preventative measure against having a negative body image and developing eating disorders [38]. Self-compassion probably operates simultaneously through a variety of levels and channels [39].

It should also be borne in mind that exercise is one of the most effective lifestyle choices for promoting health and well-being [40]. Additionally, regular exercise has been linked to psychological advantages such as less anxiety and depression, increased self-esteem, better sleep, and a higher quality of life in terms of one's health [41,42]. However, rather than the quantity or frequency of exercise, it seems that the relationship between exercise and markers of health and well-being related to food and body image depends on the motivations behind a person's desire to engage in physical activity (PA) [43]. Moreover, many people do not understand the terms "overweight" and "obesity" as determined by body mass index (BMI). According to several research studies, [44] adults' judgments of their weight status are incorrect. BMI is a health risk indicator [45] and has been widely

evaluated in previous studies [46,47] for its links to quality of life. However, there is not much work on this population. In this ever-changing society, it would be interesting to know the relationship between self-image and BMI, because it would provide information on the current state of university students in Spain and thus promote healthy lifestyles at this age. As a result of all this, the main objective of the study is to find out the associations between body image and BMI of university students in Extremadura, analyzing possible differences according to sex.

2. Materials and Methods

2.1. Participants

Participants were selected using a non-probability sampling method based on convenience sampling [48]. The sample consisted of 312 students from the Faculty of Teacher Training at the University of Extremadura (Spain), specializing in Early Childhood Education and Primary Education.

2.2. Procedure

Accessing the sample involved the collaboration of six professors from the Faculty of Teacher Training who teach in the specialties of Early Childhood Education and Primary Education. These professors sent the URL for accessing the Multidimensional Body Self Relations Questionnaire (MBSRQ) instrument to the students via the virtual classroom set-up for their subject. In addition, they were asked to inform the students of the aim of the study and the procedure for accessing the questionnaire if they wished to collaborate with the study. Participation was voluntary and students had to sign a consent form in order to be accepted into the study.

The questionnaire was developed using the Google Forms tool, which allowed us to store all the responses in the same database, as well as facilitating the administration of the instrument among the students [49,50]. It consisted of five sociodemographic questions and the MBSRQ, preceded by an informed consent form that they had to accept in order to continue. The average time required to complete the questionnaire was 10 min. All data were collected and processed anonymously, respecting the ethical principles of the laws in force. Data were collected from 29 January 2022 to 3 March 2022.

2.3. Instruments

For sociodemographic characterization, a questionnaire was designed with five questions relating to participants' sex, age, weight, height, and field of study.

The validated questionnaire of the Spanish version of the MBSQ [51], composed of 45 items grouped into 4 factors, was used. Dimension 1, "Subjective Importance of Corporality", consists of 30 items that analyze concern about physical appearance, behaviors oriented towards maintaining physical shape, concern about weight and dieting, concern about health and illness, and self-rated attractiveness of different body areas. Dimension 2, "Behaviors aimed at maintaining physical fitness", consists of seven items assessing self-perceived fitness and fitness orientation. Dimension 3, "Self-rated physical attractiveness", consists of three items assessing self-rated physical attractiveness. Finally, dimension 4, "Care of physical appearance", is composed of five items assessing concern for physical appearance. The indirect items were reversed. Responses used a Likert scale (1–5), with 1 being "strongly disagree", 2 "disagree", 3 "indifferent", 4 "agree", and 5 "strongly agree". The authors reported a Cronbach's alpha value of 0.94 for the first factor, 0.80 for the second, 0.70 for the third and 0.84 for the last. The overall reliability of the questionnaire version obtained a Cronbach's alpha value of 0.88 [51].

2.4. Statistical Analysis

The SPSS statistical software version 23 for MAC (IBM SPSS, Chicago, IL, USA) was used to analyze the data collected. It was determined that the distribution of the data of the continuous variables did not meet the assumption of normality after using the

Kolmogorov–Smirnov test. Consequently, it was decided to use non-parametric tests. Spearman's Rho test was used to assess the association between each of the MBSRQ factors and BMI. A significance level was set at the ** $p < 0.01$ and * $p < 0.05$. Correlation coefficients were interpreted following the thresholds proposed by Mondragón-Barrera [52]: 0.00, no correlation; 0.01–0.10, low; 0.11 to 0.50, medium; 0.51 to 0.75, considerable; 0.76 to 0.90, very high; and 0.91 to 1.00, perfect. Finally, the reliability of each of the factors was calculated using Cronbach's alpha. The reference values used were those given by Nunnally and Bernstein [53], who indicated that reliability values between 0.70 and 0.90 can be considered satisfactory. Continuous variables are presented as median and interquartile range, and categorical variables are presented as number and percentages.

3. Results

Table 1 shows the sociodemographic characterization of the sample.

Table 1. Sample characterization (N = 312).

Variable	Categories	N	%
Gender	Men	134	42.9
	Women	178	57.1
Educational specialty	Childhood education	187	59.9
	Primary education	125	40.1
Variable		Me	IQR
Age		21	4
Body Mass Index		22.95	4.80

N: number, %: percentage, Me: median, IQR: interquartile range, (percentile 75–percentile 25).

Table 2 shows the descriptive data based on the median and interquartile range of BMI according to sex and educational specialty.

Table 2. Descriptive data on BMI according to sex and educational specialty.

	BMI Me (IQR)			
	Men	**Women**	**Childhood Education**	**Primary Education**
BMI	22.98 (3.95)	22.74 (5.45)	22.98 (5.04)	22.85 (4.89)

BMI: body mass index, Me: median, IQR: interquartile range (percentile 75–percentile 25).

Spearman's Rho test was used to analyze the relationship between the different dimensions of the MBSRQ and age and the variable BMI (Table 3). Mean, inverse, and significant associations were found for dimensions 1, "Subjective Importance of Corporality", and 3, "Self-rated Physical Attractiveness" with BMI. As BMI increases, scores on these two factors decreases. This association was stronger for women than for men. A significant direct association was also found between the variable age and BMI.

Finally, the reliability results for each of the dimensions were: "Subjective importance" = 0.79; "Behaviors aimed at maintaining physical fitness" = 0.82; "Self-rated physical attractiveness" = 0.82; and "Care for appearance" = 0.83. The coefficient value for the construct as a whole was 0.82. The values were calculated from Cronbach's alpha, considered satisfactory according to Nunnally and Berstein [53].

Table 3. Correlation between Age, MBSRQ dimensions and BMI.

Dimensions	BMI ρ (p)	BMI ρ (p)	
		Men	Women
(1) Subjective importance of corporality	−0.17 (0.02)	0.08 (0.537)	−0.29 (<0.01)
(2) Behaviors aimed at maintaining physical fitness	0.02 (0.658)	0.08 (0.522)	−0.08 (0.273)
(3) Self-rated physical attractiveness	−0.27 (<0.01)	−0.13 (0.30)	−0.37 (<0.001)
(4) Care of physical appearance	−0.06 (0.228)	0.21 (0.09)	−0.08 (0.268)
Age	0.11 (0.04)	0.25 (0.003)	−0.01 (0.917)

The correlation is significant at the $p < 0.01$; $p < 0.05$. Each MBSRQ score obtained is based on a Likert scale (1–5): 1 "Strongly disagree", 2 "Disagree", 3 "Indifferent", 4 "Agree", 5 "Strongly agree".

4. Discussion

The main findings found significant mean and inverse associations for dimensions 1, "Subjective Importance of Corporality" and 3, "Self-rated Physical Attractiveness" with BMI. As BMI increases, scores on these two factors decrease. This association was stronger in women than in men.

In this respect, studies of university/college students—with samples that were disproportionately made up of women—have provided scant information about young men's viewpoints in obesity-related research [54]. Studies have been found in Spanish universities that show a high percentage of inactivity among students [55]. Similar studies showed that the prevalence of overweight and obesity among students is rising in both developed and developing nations due to changes in lifestyle, poor dietary choices, physical inactivity, the frequent skipping of a healthy breakfast by university students, a high consumption of carbonated soft drinks, and a strong propensity for eating out [56]. This high degree of physical inactivity among undergraduate students can be attributed to internal impediments such as apathy toward physical activities, or external barriers such as time constraints or a lack of social support [57]. According to Gomez Lopez, Gallegos, and Extremera [58], the perception of exterior barriers is more significant than the perception of internal constraints. In this regard, Greaney et al. [59] included lifestyle duties, female partners' effect on sedentary behaviors, and a dislike of the flavor of nutritious foods as main barriers. By contrast, achieving sporting goals, treating medical difficulties (e.g., long-term health), and improving appearance, were the main motivators [60].

Regarding dimension 1, "Subjective Importance of Corporality", in general, for both men and women, higher BMI has been shown to be closely associated with higher body dissatisfaction [61], as is the case in our findings. In particular, these have become very important constructs in contemporary Western societies [13]. Furthermore, the tendency to link physical attractiveness with positive personal qualities became a cultural stereotype not only in western culture, but also globally [62]. Utilizing social media is linked to body image issues, especially if users are carrying out certain types of activities on social media, such as comparing their appearance to others [63–66], being these results are comparable to those from conventional media (e.g., magazines [67]). This is problematic since among young women, self-objectification and body dissatisfaction are significant predictors of disordered eating and depression [68]. According to studies carried out on both men and women, girls and women deal with body dissatisfaction to a larger extent than do boys and men [69], and they are more focused on looks than are boys and men [70]. Additionally, among young women [71], body image problems are particularly prevalent. In contrast, women use cues related with female mate value to evaluate the fitness of their rivals, whereas men use cues connected with male mate value. So regardless of a person's sex, male and female ratings of their sexual appeal frequently agree [72].

Continuing with dimension 2, "Behaviors aimed at maintaining physical fitness", Peterson et al. [73] add that sedentary behaviors have grown in prevalence around the

globe, adding new perspective to how young adult university students—an understudied population—understand sedentary behaviors. The findings showing university students are both very active and excessively sedentary are in line with those of another study [74], despite the fact that there have not been many recent studies specifically assessing sedentary behaviors among this population of young adults, although there is some proof that taking pauses from sedentary activity is linked to a healthier BMI [75]. Research suggests that college students and other young adults do not typically adhere to suggestions for PA although PA may help students deal with perceived stress and problems more efficiently [76]. According to Irwin's [77] review of PA, more than half of students in the United States and Canada did not participate in enough PA to be healthy. Female freshmen's PA and fitness levels decreased after the move from home to college, according to a study that examined these changes [78]. In addition, Campbell et al. [79] discovered that women felt they needed to engage in more activity to lower their perceived levels of stress. Men were also discovered to be less stressed than women [79] and to engage in greater physical exercise [80,81]. Evidence from Spain indicates that a significant portion of inactive students (75%) are aware of the advantages of consistent PA [82], that extrinsic motivation predominates in the early stages of development for PA, and that intrinsic motivation is crucial for progress towards the maintenance stage [83]. Men who participated in sports believed they had stronger physical capabilities and more dynamic movement than men who did not. On the other hand, women differed from non-athletes in terms of BMI and sport-related physical self-esteem, with non-athletes exhibiting a greater body silhouette and lower sport-related fitness self-esteem. Non-athletes also had the highest body weight values, wished to be thin, and displayed the greatest dissatisfaction with their physique, whereas female athletes perceived themselves as having a greater body silhouette than men [84].

In dimension 3, "Self-rated physical attractiveness", researchers have reported that women, compared with men of the same age and level of education, frequently wish to be thinner or to lose weight, regardless of whether it is necessary [85,86], experiencing greater dissatisfaction with their body [87]. Contrarily, men may be heavily influenced by masculine stereotypes, leading them to strive to be stronger [88], even while they value their physical capabilities [89] and are happier with their physical appearance than women [90]. BMI and perceived attractiveness were correlated. The findings revealed that those who had a lower BMI generally thought themselves to be more physically beautiful [91]. In contrast, a different study [92] demonstrates that in contemporary society, the pressure from social stereotypes regarding physical attractiveness is nearly equal for men and women.

Finally, dimension 4, "Care of physical appearance", and, similar to our study, Sherry et al. [93] discovered that socially dictated perfectionism was linked to higher levels of inaccurate views about the significance, influence, and meaning of physical beauty in one's life, and they did not find any gender differences. Nor did Hanson Frieze, Olson, or Russell [94] find differences between men and women in their concern about physical appearance. Higher degrees of body dissatisfaction with muscularity, body fat, and height were linked to perfectionism in male students [95]. Men are most concerned about health problems that could have an impact on their athletic ability and physical appearance [96]. Women who exercised to reduce body fat, tone their bodies, and become more physically appealing, were also concerned with how others evaluated them [97]. According to Taylor et al. [98], both mindful eating and BMI do not significantly correlate with the whole spectrum of eating disorder symptoms.

In this study, as in others, several limitations have been found. Firstly, the sample selected was only from the Faculty of Teacher Training of the Community of Extremadura in the specialties of Early Childhood and Primary Education, so the faculty in which they studied, their specialty, and their age may have had an influence, as well as the sociodemographic variables that determine the results achieved. Secondly, the sample was compiled by means of convenience sampling, so the results must be portrayed with caution. Finally, it is important to highlight the lack of previous studies assessing these issues in

national university students. Some future lines of research would be to extend the sample to a national level in all educational specialties, in order to find out the reality that university students have about body image and to check whether their age has an influence. To this end, an agreement could be reached with other researchers in the different autonomous communities to collect all the necessary data. Subsequent studies should take into account the influence of social networks and the time they spend on them, the motivations they have for PA, the diet they follow, and the most common barriers to a healthy lifestyle.

5. Conclusions

This study shows that BMI may influence the body self-perception of Spanish university students, especially women. In addition, age is also a variable that could affect BMI, being more significant in men. Therefore, it would be important to instill a healthy lifestyle throughout life, as well as non-sexist education and appropriate motivators to improve their body image. It is necessary to involve all administrations, the media and family members in order to achieve this.

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