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Influences of Sex and BMI on Body Image, Weight Bias, Disordered Eating, and Psychological Well-Being: A Multivariate Analysis

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Abstract

Body image and mental health outcomes are influenced by both sex and body weight. This study investigated how sex and BMI category (participants classified with healthy weight, overweight, or with obesity) relate to body image, disordered eating, weight bias, global self-esteem and depression. Participants (N = 642; 278 (43.3%) males; 364 females (56,7%)) provided self-report measures of appearance satisfaction, body appreciation, overweight preoccupation, disordered eating scores, weight bias, depression, and self-esteem. The results indicated that women and participants classified with overweight and obesity based on BMI categories reported lower appearance satisfaction and body appreciation and a higher preoccupation with overweight and depression. Interaction effects showed that women participants with overweight and obesity reported particularly low appearance satisfaction and body appreciation. Individuals classified with healthy BMI category reported higher disordered eating scores than those classified with overweight. No significant effects were found for global self-esteem. These findings suggest that sex and BMI contribute to the study's variables of interest, with some effects more pronounced in women with a higher BMI. The results align with sociocultural theories of appearance pressure but indicate complexity in disordered eating patterns. The findings underscore the importance of adopting intersectional, weight-inclusive, and sex-responsive approaches in both research and clinical practice.

Keywords: body image; BMI; sex differences; weight stigma; disordered eating

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1. Introduction

Body image has been extensively studied as a crucial factor influencing psychological well-being, particularly among individuals classified with overweight BMI category or living with obesity [1,2]. Body image is defined as an individual's perception, thoughts, and feelings about their body and is shaped by multiple sociocultural influences, including media, peer interactions, and societal beauty standards [3]. Individuals who perceive their own bodies negatively often experience increased psychological distress, including depression, low self-esteem, and disordered eating behaviors [4].

The social construction of body ideals tends to favor thinness, particularly for women, leading to the stigmatization of higher body weight [5,6]. Studies have consistently shown that individuals classified with overweight and obesity based on BMI category face significant social stigma, discrimination, and bias [7]. This weight stigma is not only externally

imposed but is often internalized, a phenomenon known as weight bias internalization (WBI), which has been linked to various adverse psychological and behavioral outcomes [8]. Understanding how BMI category and sex interact to influence body image perceptions and psychological distress is essential for addressing the mental health challenges associated with body weight stigma.

A significant body of research has highlighted sex differences in body image concerns, with women consistently reporting lower body satisfaction and a higher preoccupation with overweight than men [9,10]. Women are more likely to internalize thinness as an ideal, experience greater pressure to conform to societal beauty standards, and engage in disordered eating behaviors to manage weight concerns [5,11]. In contrast, while body dissatisfaction also exists among men, it often manifests as a desire for muscularity rather than thinness [12].

Additionally, experiences of weight bias and stigma based on sex vary considerably. Women with higher BMIs are more likely to experience weight-based discrimination in multiple domains, including employment, healthcare, and social relationships [13]. Women with overweight and those living with obesity often also report greater levels of self-stigmatization and engaging in negative self-perceptions that reinforce societal weight biases [14]. In contrast, while overweight men may also experience weight stigma, societal norms tend to be more accepting of larger male body sizes, reducing the extent of weight-related psychological distress in men compared to women [10].

Beyond sex differences, BMI also significantly impacts psychological well-being and body-related attitudes. Studies have found that individuals with higher BMIs tend to report lower body appreciation, a higher fear of being fat, and greater weight bias internalization [8,15]. Disordered eating behaviors, including binge eating, restrictive dieting, and emotional eating, are also more prevalent among individuals classified with overweight and obesity based on BMI category, often as a response to body dissatisfaction and societal weight stigma [16,17].

Additionally, the relationship between BMI and self-esteem is particularly complex. While some research suggests that individuals with higher BMIs exhibit lower self-esteem due to weight-related stigma [18], other studies indicate that self-esteem is also influenced by factors such as body appreciation and weight bias internalization [11]. Importantly, the effects of BMI on psychological well-being may be moderated by sex, as women living obesity and being overweight tend to report higher levels of psychological distress than men classified in the same categories [10].

Research has consistently shown that sex differences in body image are moderated by BMI [4,13]. While women across all weight categories report greater body dissatisfaction and investment in appearance than men, these differences are most pronounced among individuals living with being overweight and obesity [4,13]. For example, studies have found that women living with being overweight and obesity experience heightened societal pressure to lose weight and are more likely to engage in disordered eating behaviors, such as binge eating and restrictive dieting, in an attempt to conform to the thin ideal [1,11]. In contrast, men living with being overweight and obesity, while still subject to some degree of stigma, often do not face the same level of social scrutiny or internalized weight bias as women [10]. Moreover, women with higher BMIs tend to report significantly lower body appreciation and self-esteem, as they face greater weight-based discrimination in professional, medical, and social settings [18]. Weight stigma is often compounded by sexism, leading to double discrimination against women living with being overweight and obesity, a phenomenon referred to as the "gendered nature of weight bias" [10]. Therefore, it is important to study BMI and sex together, rather than in isolation, to fully capture the psychological impact of body weight in different gendered contexts.

Another critical factor is weight bias internalization (WBI)—the extent to which individuals adopt societal weight-based stereotypes and apply them to themselves [14]. Studies suggest that WBI is not only more prevalent among individuals living with being overweight and obesity but also differs significantly by sex [8]. Women with obesity are more likely to internalize negative weight-related beliefs, leading to greater psychological distress, depression, and disordered eating [6]. Men, on the other hand, tend to experience less WBI, possibly due to differences in societal expectations surrounding body size—where larger male bodies are often associated with strength rather than stigma [12].

Weight-related anxiety and body dissatisfaction are also critical factors since studies have found that women, regardless of BMI, report significantly higher weight-related anxiety than men [5,9]. However, this effect is exacerbated in individuals living with being overweight and obesity, particularly women, who experience a greater fear of weight gain and stronger negative emotions about their bodies [15]. For men, body image concerns are more closely related to muscularity rather than weight per se, meaning that men living with being overweight and obesity may not experience the same levels of weight-related anxiety as women in the same BMI category [12]. This highlights the importance of examining sex and BMI as interacting variables, as their combined effect on psychological distress, weight-related anxiety, and self-esteem may be more significant than the independent effects of either factor alone [17].

While substantial research has examined the effects of BMI and sex on body image, disordered eating, and psychological distress, almost a decade has passed since the last known published article [19]. Furthermore, according to Argyrides et al. [20], Cyprus, the island country where the data were collected, presents a unique context for research on body image and eating behaviors for four key reasons. First, following the post-1974 economic growth in the southern (unoccupied) part of the island, there was a marked increase in the population's focus on physical appearance, self-presentation, and social image. Second, studies have shown that negative body image and disordered eating are highly prevalent in Cyprus, having the highest in Europe. Third, there is a general absence of a preventative mindset in the country, reflected in the lack of national prevention initiatives and the reduced attention given to body image and eating disorder topics within the school curriculum. Finally, Cyprus's consistently warm climate leads to the regular wearing of light and revealing clothing, which may further intensify appearance-related concerns [20].

Based on the above, the purpose of this study was to examine how sex and body weight, operationalized through BMI categories (classified with healthy weight, overweight, or obesity), influence key aspects of body image and psychological well-being. Specifically, the study aimed to explore both the independent and interactive effects of sex and BMI on satisfaction with appearance, investment in appearance, body appreciation, weight/shape-related anxiety, disordered eating scores, depression, global self-esteem, and weight bias. By examining the interaction between BMI category and sex, this study provides critical insights into which populations may be at the greatest risk of psychological distress and how interventions can be better tailored to address the intersection of weight and sex-related stigma.

2. Materials and Methods

2.1. Participants

This study utilized a convenience sample of 642 adults (see Table 1) who were native Greek speakers, ranging in age from 18 to 66 years (M = 30.90, SD = 7.76). Among the participants, 278 (43.3%) were male and 364 (56.7%) were female. Regarding body mass index (BMI), the average was 25.45 (SD = 5.32), with 5.0%, based on the BMI categories

established by the Centers for Disease Control and Prevention, classified as underweight (BMI < 18.5), 50.8% within the normal range (BMI between 18.5 and 24.9), 26.4% as overweight (BMI between 25 and 29.9), and 17.8% meeting the criteria for obesity (BMI $\geq$ 30). Because of the low number of underweight individuals, they were not included in the final analysis. In terms of education, 73.4% had completed higher education, including some with master's or doctoral degrees, while 29% had finished secondary education (high school or technical school), and only 1% had completed elementary education.

Table 1. Demographic characteristics of participants.

Characteristic	N	%
Total Sample	642	100
Sex		
Male	278	43.3
Female	364	56.7
Age		
Mean (M)	30.9	
Standard Deviation (SD)	7.76	
BMI Category		
Underweight (BMI < 18.5)	32	5
Healthy weight (BMI 18.5–24.9)	326	50.8
Overweight (BMI 25–29.9)	170	26.4
Obesity (BMI $\geq$ 30)	114	17.8
Education		
Higher Education (including master's or doctoral degrees)	471	73.4
Secondary Education (high school or technical school)	186	29
Elementary Education	6	1

2.2. Measures

Participants provided demographic information via a questionnaire; this included their sex, height, weight, education level, and marital status. Body Mass Index (BMI) was calculated using their self-reported height and weight (kg/m^2).

Weight Bias Internalization: The Greek adaptation of the Modified Weight Bias Internalization Scale (WBIS-M) was used to assess the extent to which individuals internalize weight-related stereotypes [21,22]. The scale consists of 11 items adapted from the original version to be applicable across all bodyweight categories. Responses are rated on a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree), with higher scores indicating lower internalized weight bias. The scale demonstrated excellent internal reliability (Cronbach's $\alpha = 0.94$).

Disordered Eating: The Greek adaptation of the Drive for Thinness subscale from the Eating Disorders Inventory-3 (EDI-3) [23–25] was used to evaluate dysfunctional eating behaviors. The EDI-3 is a widely recognized self-report measure that assesses disordered eating scores and related psychological characteristics. The Drive for Thinness subscale, rated on a 5-point Likert scale (0 = always to 4 = rarely or never), measures concerns related to weight and dieting, with higher scores reflecting greater dysfunction. The Greek version demonstrated excellent internal reliability ($\alpha = 0.96$).

Global Self-Esteem: The Greek version of the Rosenberg Self-Esteem Scale—RSES–[26–28] assessed participants' global self-esteem. This measure consists of 10 items evaluating self-perceptions, rated on a 4-point Likert scale (1 = strongly agree to 4 = strongly disagree), with higher scores indicating greater self-esteem. The Greek RSES demonstrated strong internal reliability ($\alpha = 0.81$).

Body Appreciation: The Greek version of the Body Appreciation Scale-2 (BAS-2) [29–31] was used to measure positive body image, including self-acceptance and respect for one's

body regardless of weight or shape. The 10-item scale is rated on a 5-point Likert scale (1 = never to 5 = always), with higher scores reflecting greater body appreciation. The Greek BAS-2 demonstrated strong psychometric properties and high internal consistency ($\alpha = 0.92$).

Satisfaction with Appearance, Investment in Appearance, and Weight/Appearance-Related Anxiety: Three of the five subscales of the Greek version of the Multidimensional Body-Self Relations Questionnaire—Appearance Scales (MBSRQ-AS) [32–34] was used to assess various aspects of body image: Appearance Evaluation (AE), measuring satisfaction with one's appearance; Appearance Orientation (AO), evaluating the degree of investment in one's appearance; and Overweight Preoccupation (OP), assessing anxiety related to weight and appearance. Items were rated on a 5-point Likert scale, with some items ranging from 1 = absolutely disagree to 5 = absolutely agree, and others from 1 = never to 5 = very often. Higher scores on these subscales indicate greater satisfaction with appearance, more investment in appearance, and higher appearance-related anxiety. The Greek MBSRQ-AS demonstrated very good reliability (AE: $\alpha = 0.81$, AO: $\alpha = 0.82$, OP: $\alpha = 0.80$).

Depression: The Greek version of the Center for Epidemiological Studies-Depression Scale—CES-DS [35–37] was used to measure depressive symptoms. The scale consists of 20 items rated on a 4-point Likert scale (0 = rarely or never, less than one day per week, to 3 = most of the time, 5–7 days per week), with total scores indicating symptom severity. Higher scores indicate more depressive symptomatology. The Greek CES-D demonstrated strong psychometric properties and high internal reliability ($\alpha = 0.95$).

2.3. Procedure

This study adhered to the ethical guidelines of the Declaration of Helsinki (1975) and received approval from the Cyprus National Bioethics Committee (EEBK OP 2020.01.0122). Participation was voluntary, with informed consent obtained from all participants, and no financial incentives were provided. Recruitment utilized a snowball sampling method, with study invitations distributed via email to students and staff at a private university, as well as social media posts. Participants completed the questionnaires electronically. Inclusion criteria included any Greek-Cypriot over the age of 18 whose first language was Greek.

2.4. Data Preparation and Statistical Analysis

Prior to analysis, the normality of the data was assessed for each dependent variable using a visual inspection of histograms, Q-Q plots, and the Shapiro–Wilk test. A General Linear Model (GLM) was conducted to examine the effects of sex, BMI category, and their interaction on the psychological outcomes. The independent variables in the model were sex (Man, Woman), BMI category (Healthy weight, Overweight, or Obesity), and their interaction, while the dependent variables consisted of weight-biased internalization, disordered eating, global self-esteem, body appreciation, appearance satisfaction and investment, overweight preoccupation, and depression. The assumptions of homogeneity of variance and multicollinearity were also checked prior to the analysis. Levene's test confirmed the assumption of equal variances, and variance inflation factors (VIFs) indicated that multicollinearity was not a concern. Statistical significance was determined using an alpha level of 0.05, with partial eta squared used to report effect sizes. The observed power was high across all tests, further supporting the reliability of the findings. Data analysis was conducted using SPSS 26.0 software.

3. Results

The 2 × 3 MANOVA showed that significant main effects were observed for several variables, with key interaction effects between sex and BMI categories. The analysis follows for each variable of interest separately.

1. Satisfaction with Appearance: There were significant main effects of sex [$F(1, 604) = 69.83$, $p < 0.001$, partial $\eta^2 = 0.10$], and BMI category, [$F(2, 604) = 76.24$, $p < 0.001$, partial $\eta^2 = 0.20$], as well as a significant interaction, [$F(2, 604) = 11.33$, $p < 0.001$]. Overall, men reported significantly higher satisfaction with their appearance (M = 24.77, SD = 4.54) than women (M = 21.42, SD = 5.14). In terms of BMI, individuals with a healthy weight reported greater satisfaction (M = 25.96, SD = 4.14) than those who were living with being overweight (M = 23.22, SD = 4.61) or obesity (M = 20.08, SD = 5.75), with satisfaction decreasing as BMI levels increased. The interaction indicated that BMI had a stronger negative impact on satisfaction for women than for men. For instance, women living with obesity reported particularly low satisfaction (M = 17.74, SD = 5.75), compared to men in the same category (M = 22.42, SD = 4.61). This suggests that higher body weight is especially damaging to women's satisfaction with their appearance.
2. Investment in Appearance: Significant main effects were observed for sex, [$F(1, 604) = 57.41$, $p < 0.001$, partial $\eta^2 = 0.09$] and BMI, [$F(2, 604) = 5.69$, $p = 0.004$, partial $\eta^2 = 0.02$], as well as a significant interaction [$F(2, 604) = 4.09$, $p = 0.017$]. Specifically, women reported higher investment in their appearance (M = 35.49, SD = 5.42) than men (M = 31.52, SD = 6.10), indicating that women generally place more importance on appearance-related behaviors. Furthermore, participants with healthy BMI invested more in appearance (M = 34.59, SD = 5.33) than those living with being overweight (M = 32.90, SD = 5.79) and obesity (M = 33.03, SD = 5.60). The interaction revealed that investment remained relatively stable across BMI for women, but declined slightly for men with higher BMI. This suggests that cultural pressures to maintain appearance may be more consistent for women, regardless of body size.
3. Weight/Shape-Related Anxiety: The model revealed significant main effects for both sex [$F (1604) = 55.16$, $p < 0.001$, partial $\eta^2 = 0.08$] and BMI category [$F (2604) = 28.33$, $p < 0.001$, partial $\eta^2 = 0.09$]. No significant interaction between sex and BMI category was found ($F (2604) = 2.14$, $p > 0.119$). For both sexes, individuals classified within the overweight and obesity categories based on BMI experienced more anxiety, with a stronger effect observed in women. Additionally, women reported significantly higher appearance-related anxiety (M = 11.55, SD = 3.54) than men (M = 9.26, SD = 3.31). Lastly, weight/shape-related anxiety increased with BMI, where healthy-weight participants reported the lowest anxiety (M = 8.98, SD = 2.91), while individuals living with obesity reported the highest (M = 11.14, SD = 3.88). The non-significant interaction suggests that the pattern of increasing overweight preoccupation with BMI was similar for men and women.
4. Body Appreciation: The model revealed significant main effects for both sex [$F (1604) = 25.95$, $p < 0.001$, partial $\eta^2 = 0.04$] and BMI category [$F (2604) = 51.52$, $p < 0.001$, partial $\eta^2 = 0.15$] on body appreciation, along with a significant interaction between sex and BMI category, $F (2604) = 3.46$, $p = 0.032$). Men expressed a greater appreciation of their bodies (M = 38.02, SD = 6.88) compared to women (M = 34.48, SD = 7.31). Participants with a healthy BMI reported higher body appreciation (M = 39.82, SD = 6.28) than those living with being overweight (M = 37.69, SD = 6.79) or obesity (M = 31.23, SD = 8.32). The interaction effect showed that body appreciation declined more steeply for women than for men as BMI increased. Women living with obesity reported

particularly low body appreciation (M = 29.77, SD = 8.72), whereas men remained more stable.

5. Disordered Eating: The model revealed significant main effects for both sex [F (1604) = 54.72, $p < 0.001$, partial $\eta^2 = 0.08$] and BMI category [F (2604) = 24.64, $p < 0.001$, partial $\eta^2 = 0.08$]. No significant interaction between sex and BMI category was found (F (2604) = 1.99, $p > 0.05$). Men living with being overweight and obesity (M = 20.58, SD = 6.37 and M = 19.61, SD = 6.41, respectively) exhibited lower disordered eating scores compared to men with healthy BMI (M = 23.39, SD = 5.37). Similarly, women living with being overweight and obesity (M = 14.65, SD = 6.68, M = 16.38, SD = 6.63) also reported lower disordered eating scores than women classified as having a healthy BMI (M = 19.67, SD = 6.82). Interestingly, regardless of sex category, participants living with being overweight and obesity had significantly lower disordered eating scores in both sexes, even though the discrepancy was higher in women.
6. Global Self-Esteem: The analysis did not reveal any significant main effect on sex or BMI category or interaction ($p > 0.05$). The lack of significant findings indicates that global self-esteem is not significantly influenced by either sex or BMI category or their interaction.
7. Depression: The model revealed significant main effects for sex [F (1604) = 22.46, $p < 0.001$, partial $\eta^2 = 0.04$] but not for BMI category [F (2604) = 4.344, $p = 0.077$] or their interaction (F (2604) = 1.62, $p > 0.05$). Women reported significantly more depressive symptoms (M = 19.64, SD = 7.11) than men (M = 15.39, SD = 6.35), consistent with broader mental health trends. Although the effect of BMI was not significant overall, descriptive patterns showed that women living with obesity reported the highest depression levels (M = 22.23, SD = 7.90), suggesting a potential cumulative effect of body dissatisfaction and sex.
8. Weight Bias: The model revealed significant main effects for both sex [F (1604) = 38.63, $p < 0.001$, partial $\eta^2 = 0.06$] and BMI category [F (2604) = 60.28, $p < 0.001$, partial $\eta^2 = 0.17$] on weight bias, along with a significant interaction between sex and BMI category, F (2604) = 10.61, $p < 0.001$). Men reported more weight bias (M = 56.42, SD = 8.09) than women (M = 49.90, SD = 8.23), and participants with a normal BMI showed more bias (M = 60.11, SD = 6.69) than those living with being overweight (M = 52.46, SD = 8.46) or obesity (M = 46.92, SD = 9.22). The interaction indicated that the sex difference in weight bias was especially pronounced in the group living with obesity: men living with obesity reported a mean of 51.85 (SD = 9.55), while women with obesity scored a mean of 42.00 (SD = 8.72). This may reflect internalized stigma and broader sex norms about body weight.

4. Discussion

This study examined the effects of BMI category and sex on a broad set of body image, disordered eating, weight stigma, and psychological well-being variables in a Cypriot sample. The findings build upon and extend prior literature by highlighting key psychosocial patterns in a context that has been underexamined in recent years, despite being one of the most affected European nations in terms of body image and disordered eating [20]. Furthermore, the current study contributes to the literature, as Weinberger et al.'s [19] last major synthesis was published almost a decade ago.

Significant main effects were found for both sex and BMI category on satisfaction with appearance, investment in appearance, weight/shape-related anxiety, body appreciation, depression, disordered eating scores, and weight bias. Furthermore, several significant interaction effects emerged—particularly for appearance satisfaction, body appreciation, and weight bias—suggesting that the psychological consequences of BMI differ between

men and women. Women and individuals living with being overweight or obesity were found to be at significantly greater risk of body dissatisfaction and related psychological distress. Women living with being overweight and obesity consistently reported the lowest scores across measures of body image satisfaction and body appreciation and the highest levels of weight bias—confirming long-standing observations of a double burden of appearance pressure and weight stigma based on sex [10,31]. This interaction effect suggests that interventions aimed at improving mental health and body image must attend to the heightening effects of sex and weight-based marginalization. These findings largely reinforce previous research demonstrating that women are more likely than men to internalize sociocultural body ideals, resulting in heightened investment in appearance, self-objectification, and vulnerability to body dissatisfaction [4,5]. Men generally reported higher appearance satisfaction and body appreciation, consistent with studies suggesting men are less influenced by cultural pressure to conform to thinness, and may even benefit from a broader ideal that includes muscularity and "bulk" [11,38]. Similarly, individuals living with being overweight and obesity, regardless of sex, reported significantly higher levels of weight/shape-related anxiety and lower satisfaction with appearance and body appreciation. This aligns with meta-analytic reviews indicating that a higher BMI is associated with increased psychological distress, in part due to social devaluation and internalized weight stigma [39,40].

The interaction effect found for weight bias supports evidence that people with a lived experience of weight stigma—namely, those living with being overweight or obesity—are less likely to endorse weight-biased attitudes [14]. This may reflect empathy, shared experiences, or a reduced investment in distancing oneself from negatively stereotyped outgroups [41]. Contrary to traditional expectations, disordered eating scores were significantly lower among individuals living with being overweight and obesity than those classified with healthy BMI. This finding contradicts research suggesting higher body weight to be a risk factor for disordered eating [16,42] but is consistent with other findings that show healthy-weight individuals often experience significant pressure to maintain their body shape, leading to restrictive or compensatory behaviors that meet the threshold for disordered eating—behaviors often normalized or even encouraged in health and fitness discourse [43]. This apparent contradiction may also reflect the underdiagnosis and underreporting of disordered eating scores in higher-weight populations, possibly due to stigma or a lack of recognition of behaviors as problematic [44]. It underscores a key gap in clinical assessment tools, which may be implicitly weight-biased and less sensitive to how disordered eating manifests across body types. Additionally, the absence of significant effects on global self-esteem suggests that body dissatisfaction does not necessarily translate into lower global self-worth, particularly when individuals derive esteem from domains other than physical appearance [45,46]. This calls for a more nuanced understanding of how body image and self-esteem interact.

The observed interaction effects support intersectional and embodiment theories, suggesting that body-related experiences are not only additive but multiplicative when individuals occupy multiple marginalized statuses [17,47]. For example, women with obesity showed particularly poor outcomes, consistent with objectification theory and research on compounded stigma [5,48]. Women may experience more chronic surveillance and body monitoring due to socialization into appearance norms, with these pressures exacerbated when their bodies diverge from cultural ideals of thinness and beauty. For men, BMI also impacted body image and mental health, though to a lesser degree. The gap in body appreciation and investment in appearance between healthy men and men living with being overweight and obesity suggests that sociocultural expectations around fitness, leanness, and muscularity are increasingly affecting male populations [38], albeit not yet to

the extent seen in women. Taken together, the findings align with those reported in earlier international research, suggesting that key sex and BMI-related patterns in body image, disordered eating, and psychological well-being have remained largely stable over the past decade. Importantly, the replication of these effects within the Cypriot context reinforces their cross-cultural relevance and highlights the applicability of established models to this unique sociocultural setting.

Despite the valuable insights gained, this study has several limitations. Firstly, self-reported height and weight were used to calculate BMI, which may not be always accurate. Individuals often underreport weight and overreport height, leading to potential misclassification in BMI categories [49]. This introduces measurement error and may dilute observed effects, especially in populations sensitive to weight stigma. Secondly, the study's cross-sectional design precludes causal inferences, and future longitudinal work is needed to assess how sex and BMI interact over time to shape body image and mental health. Thirdly, the binary operationalization of sex also excludes non-binary and sex-diverse individuals, whose experiences with body image and weight stigma may be qualitatively different and are deserving of focused investigation [50]. Moreover, the use of BMI as a proxy for body size fails to capture other relevant dimensions of physicality such as fat distribution, muscle mass, and metabolic health [51]. Finally, the study's exclusive use of the "drive for thinness" subscale from the Eating Disorders Inventory [25] to assess disordered eating may introduce bias by centering primarily on thin-ideal internalization, potentially overlooking other important aspects of disordered eating, such as bulimic behaviors and overall body dissatisfaction [25].

Future research should prioritize longitudinal and experimental designs to clarify causal pathways and intervention efficacy. Additionally, it is essential to incorporate marginalized groups, including racial/ethnic minorities, LGBTQ+ individuals, and those living in larger bodies, into both the design and evaluation of mental health programs. Understanding how sociocultural pressures and stigma interact with individual-level factors will lead to more effective, compassionate, and equitable mental health care. Additionally, other variables that may play a role in further understanding these concepts, such as a loss of control while eating or perceived (or subjective) weight status, can be assessed, as it has been found to be one of the factors leading to poor well-being, in addition to BMI [52].

The findings underscore the importance of adopting intersectional, weight-inclusive, and sex-responsive approaches in both research and clinical practice. Interventions such as the Body Project [53], body functionality programs [54], and Health at Every Size [55] are well-positioned to address the psychological toll of appearance ideals without reinforcing harmful weight norms.

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