Title

Body image-related cognitive fusion as a main mediational process between body-related experiences and women's quality of life

Authors

Cláudia Ferreira [a]

Inês A. Trindade [a *]

[a]Cognitive-Behavioural Research Centre, University of Coimbra, Coimbra, Portugal.

CINEICC, Faculdade de Psicologia e Ciências da Educação,

Universidade de Coimbra

Rua do Colégio Novo, Apartado 6153

3001-802 Coimbra, Portugal

Telephone: (+351) 239851450

Fax: (+351) 239851462

[*]**Corresponding Author:**

Email: ines.almeidatrindade@gmail.com

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Abstract

Purpose: Although the experience of body image has been considered an important indicator of women's psychological quality of life (QoL), it has also been suggested that the impact of unwanted body-related experiences on QoL may be mediated by emotional regulation processes. The aim of the current study was therefore to explore for the first time the role of body image-related cognitive fusion on these associations.

Methods: This study comprised 779 young females who completed self-report measures. A path analysis was conducted to explore whether BMI, body dissatisfaction, and feelings of inferiority based on physical appearance would impact on psychological QoL through body image-related cognitive fusion.

Results: The model explained 39% of psychological health, and revealed an excellent fit. Results showed that BMI did not directly impact on psychological health. Furthermore, the effects of increased body dissatisfaction and feelings of inferiority based on physical appearance on psychological health were fully and partially mediated by body image-related cognitive fusion, respectively.

Conclusions: These findings suggest that the presence of body image-related negative experiences does not necessarily lead to impairment in women's quality of life, which is rather dependent upon one's ability to observe these unwanted experiences as transient and subjective. Therefore, intervention programs aiming at increasing women's quality of life should focus on targeting emotional regulation processes in

order to develop the ability to pursue life goals and values, even in the presence of unwanted experiences concerning body image.

Key-words: quality of life; psychological health; body image-related cognitive fusion; body dissatisfaction; feelings of inferiority based on physical appearance; BMI.

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Introduction

Body dissatisfaction, defined as the perception of presenting a physical appearance significantly discrepant from the culturally ideal thin figure, has been considered extremely prevalent among women of the Western culture [1]. In fact, data from epidemiological studies have demonstrated that most of the women from industrial countries experience dissatisfaction with their bodies [2], and that this dissatisfaction is not limited to overweight women [3]. According to Mond and colleagues [1] 86.9% of young women reported some level of body dissatisfaction, reinforcing the pertinence of the term "normative discontent" introduced in the 1980s [4]. However, although "normative" among women, body dissatisfaction does not appear to be benign.

Body dissatisfaction has indeed been associated with great impairments in various aspects of quality of life and well-being [1, 5 and 6]. Findings showed that higher levels of body dissatisfaction are proportionally associated with poorer physical and psychological quality of life [1]. In particular, these associations are stronger for quality of life related to mental health and psycho-social functioning, and seem to be independent of the link between body dissatisfaction and disordered eating. That is, although body dissatisfaction is strongly associated with disordered eating behaviours [7 and 8], the link between body dissatisfaction and decreased quality of life is not due only to that association [1].

Recent studies have also suggested that body dissatisfaction is particularly problematic when associated with feelings of inferiority derived from unfavourable comparisons through physical appearance [9]. Indeed, the individual's experience of the physical self, which comprises perceptual, cognitive, and behavioural dimensions of one's own physical appearance, has been considered an important aspect of self-evaluation. It is well documented that body image is a central domain for women's self

and social evaluation, being consequently linked to one's perception of social rank and fit in the group [10]. As the thin female body type is perceived as representative of success, happiness and competence [11 and 12], women may experience physical appearance as a crucial aspect to assure an accepted position in the social group [13]. In line with these findings, authors [1] have recently highlighted the need to recognize body image-related problems as public health issues that deserve greater attention due to the impairment and suffering they may trigger.

Recent literature suggests that treating symptoms directly (e.g., the frequency or content of body image-related cognitions) is neither sufficient nor necessary to improve one's functioning and quality of life [14]. According to Acceptance and Commitment Therapy (ACT) [15], human suffering may not be only caused by undesirable internal events (such as body dissatisfaction and unfavourable comparisons), but mainly by the processes one uses to handle those experiences [14]. In that line, symptom reduction is more effective when treatment focuses on altering unhealthy emotional regulation processes. Accordingly, it has been pointed that body image-related symptoms are greatly associated with psychological inflexibility [16], the main process of ACT [15]. Psychological inflexibility refers to the inability of flexibility and openly contact with unwanted inner events (sensations, thoughts, and emotions), and has been linked to several forms of psychopathology and decreased overall well-being and quality of life [15 and 17].

Psychological inflexibility comprises cognitive fusion, which may be described as the entanglement with thought's verbal functions, considering them facts rather than interpretations of reality [17]. The relationship one has with inner events (e.g., thoughts) may range between cognitive defusion (the ability to experience those events as temporary and subjective contents which do not require a behavioural response) and

cognitive fusion (the tendency to become entangled with thoughts' content, which results in the overly regulation of behaviour by cognition, instead of previous experience) [18]. Indeed, as this inability to realize that thoughts do not necessary represent the reality grows, individuals with higher levels of cognitive fusion often engage in actions inconsistent with his or her goals and values [18 and 19], thus compromising quality of life.

Cognitive fusion specifically related to body image, i.e., the entanglement with unwanted thoughts regarding one's body, has been the focus of recent studies that revealed its association to greater body dissatisfaction, and its pervasive role on eating psychopathology [20 and 21]. In this line, disordered eating behaviours (e.g., purging, restrictive eating) may be conceptualized as strategies to avoid the verbal content of unwanted body-related thoughts in which one is entangled [16 and 21]. Nevertheless, the impact of body image-related cognitive fusion on quality of life (QoL) has never been explored. Although a few studies have documented the positive relationship between body dissatisfaction and QoL [1], the impact of unfavourable social comparisons based on physical appearance on subjective perceptions of one´s well-being has never been explored. Moreover, the role of cognitive fusion regarding unwanted body-related experiences on women's psycho-social functioning and well-being still remains unclear.

Therefore, the current study aims at clarifying the effect of body image-related cognitive fusion on the associations between body-related variables (BMI, body dissatisfaction, and social comparison through physical appearance) and psychological QoL in a sample of young women.

Methods

Participants

The sample of this study included 779 young females, aged between 18 and 28 (*M* = 20.58; *SD* = 2.07) years old, who completed the self-report measures of interest. The mean of their completed years of education 13.16 (*SD* = 1.63). The participant's BMI ranged from 16.03 to 35.20 (*M* = 21.86; *SD* = 3.15), and reflected the BMI distribution of the Portuguese female population.

It was also verified that 20 participants presented Eating Examination Inventory Questionnaire scores > 4, translating the presence of eating psychopathology [22]. However, these participants were maintained in the study in order to preserve the characteristics of this population.

Measures

Demographic Data. Participants reported their age, completed educational level, and current height and weight to calculate BMI (Wt/Ht^2).

Figure Rating Scale (FRS) [23 and 24]. The FRS is a well-known measure of body dissatisfaction that comprises nine figures, ranging from very thin (1) to very large (9). The participant selects the figures that best represent her current and desired silhouette. The discrepancy between these two selections offers an assessment of body dissatisfaction (BD). The FRS holds good psychometric characteristics [22].

Social Comparison through Physical Appearance Scale (SCPAS) [9]. The SCPAS was developed to assess the participant's subjective perception of social rank and group fit based on physical appearance. The participant evaluates her social rank on a 10-point Likert Scale with bipolar constructs (e.g., Unattractive / More Attractive), while comparing herself through physical appearance with friends and colleagues (Part A), and models and celebrities (Part B). Lower scores reveal more unfavourable social

comparisons based on physical appearance. The original study suggests that the SCPAS has adequate psychometric features, with a Cronbach's alpha of .94 on Part A. Given the aim of this study, only Part A was used in this study's analysis.

Cognitive Fusion Questionnaire: Body Image (CFQ-BI) [25]. This 10-item scale was developed by adapting the CFQ-28 (Gillanders et al., 2010) into items specifically concerning body image-related cognitive fusion (e.g., "I tend to get very entangled in my thoughts concerning my body or body image", "I get so caught up in my thoughts about my physical appearance that I am unable to do the things that I most want to"). Items are scored on a 7-point Likert scale (1: Never True; 7: Always True), with higher scores denoting higher levels of body image-related cognitive fusion. The CFQ-BI presented very good psychometric characteristics in its original study ($\alpha = .96$).

World Health Organization Brief Quality of Life Assessment Scale (WHOQOL-BREF) [26 and 27]. The WHOQOL-BREF is a 26-item measure of quality of life (QoL) in four domains (physical health, psychological health, social relationships, and environment). The participants are instructed to select the number on a 5-point Likert scale that best translates their subjective perception of QoL in the four domains and an additional item measuring general QoL. Higher scores reveal a perceived higher QoL. The WHOQOL-BREF presents adequate psychometric properties in its original (with Cronbach's alphas varying between .66 and .84 on the domains) and Portuguese validation studies.

SCPAS and CFQ-BI were administered in their original Portuguese versions and the remaining scales in their Portuguese versions, which were previously validated in samples with similar characteristics than the ones used in this study. The study variables' Cronbach's alphas are presented in Table 1.

Procedures

Participants were recruited in Portuguese universities and superior institutes in the end of scheduled classes. The investigation was approved by the Ethics Committees of the approached universities and institutes. Moreover, participants were properly informed about the purpose, and voluntary and confidential nature of the investigation. Before the completion of the research protocol, participants signed an informed consent. The self-reported measures were completed during approximately 20 minutes in the presence of one of the researchers.

In its totality, 858 questionnaires were filled by female participants. The data was cleaned with strict criteria before analysed. Thus, seventy nine participants who did not report current height or weight, were under 18 years old, or presented more than 15% of missing responses in a scale were excluded from the study.

Data analysis

IBM SPSS Statistics 20 (IBM Corp, 2011) was used for the data analysis, and software AMOS was used for the path analysis.

Pearson correlation coefficients were conducted to analyse the relationships between BMI, body dissatisfaction, social comparisons based on physical appearance, body image-related cognitive fusion, quality of life's domains and general QoL [27].

A path analysis [29], a structural equation modelling (SEM), was performed to analyse the presumed associations between study variables in the proposed theoretical model. In the theoretical model examined in this study was tested whether the association between BMI, BD and SCPAS (exogenous variables) and psychological QoL (endogenous variable) would be mediated by CFQ-BI (endogenous mediator variable). The Maximum Likelihood method was used to analyse model paths

coefficients and to calculate fit statistics. Moreover, in order to analyse the plausibility of the model, the following goodness-of-fit measures were used: Chi-Square ($\chi 2$), Normed Chi-Square ($\chi 2$/d.f.), Tucker Lewis Index (TLI), Comparative Fit Index (CFI), and the Root-Mean Square Error of Approximation (RMSEA) with 95% confidence interval.

To test whether CFQ-BI mediated the associations between the predictors (BMI, BD, and SCPAS) and psychological QoL, the bootstrap procedure was conducted with 2000 samples to create 95% bias-corrected confidence intervals (CI) around the standardized estimates of total, direct, and indirect effects. The bootstrap procedure has been considered very reliable to analyse the significance of the direct, indirect and total effects. Each effect is considered statistically significant ($p < .05$) if the interval between its lower and upper bound of the 95% bias-corrected confidence interval does not contain zero [30].

Results

Preliminary Data Analyses

Analysis of *Skewness* and *Kurtosis' values*, and visual inspection of the distributions confirmed the assumption of normality. Preliminary data analyses indicated that this data was suitable for statistical analyses following the assumptions of normality, linearity, homoscedasticity, independence of errors and multicolinearity.

Descriptives

Means and standard deviations of the study variables are reported in Table 1.

---------- Insert Table 1 around here ----------

Correlations

Results revealed that BMI and body dissatisfaction held positive correlations with each other and body image-related cognitive fusion (CFQ-BI). Moreover, BMI and BD were linked to unfavourable social comparisons based on physical appearance (SCPAS), psychological, physical, environmental and general QoL. In addition, BD also presented negative associations with social QoL. All of the QoL domains presented negative correlations with unfavourable social based on physical appearance and higher levels of body image-related cognitive fusion.

A partial correlation analysis was conducted controlling for age. Results showed that the strength and direction of the study variables' correlations remained the same. Therefore, age was not included in the subsequent analyses.

Path analysis

In order to analyse multivariate outliers, the Mahalanobis distance statistic was used and revealed the absence of extreme values. As data are more representative of the population if outliers are maintained, they were not removed for the subsequent analyses. Furthermore, since all variables revealed VIF values inferior to 5, data did not present multicollinearity; additionally, it also did not present a serious bias to normal distribution (SK < |3| and Ku < |8-10|) [30].

The initial tested model explored whether increased BMI, body dissatisfaction (BD), and negative social comparisons based on physical appearance (SCPAS_peers) would impact on psychological QoL, through the effect of increased body image-related cognitive fusion (CFQ-BI). This model was first examined through a fully saturated model (i.e., zero degrees of freedom), consisting of 22 parameters.

The saturated model explained 39% of psychological QoL and 20% of CFQ-BI. Nonetheless, several path coefficients were not statistically significant, namely the direct effects of: BMI → CFQ-BI (b_{BMI} = .04; *S.E.* = .15; *Z* = .29; *p* = .775); BD → psychological QoL (b_{BD} = -.28; *S.E.* = .48; *Z* = -.58; *p* = .562); BMI → psychological QoL (b_{BMI} = .18; *S.E.* = .15; *Z* = 1.25; *p* = .213). These nonsignificant relations were progressively removed, and the respecified model was then tested.

The final adjusted model (Figure 1) explained 39% of psychological QoL and its examination revealed an excellent model fit, with a nonsignificant chi-square of $\chi^2(3)$ = 1.642, *p* = .650. Furthermore, the goodness-of-fit indices indicated an excellent fit to the empirical data (χ^2/d.f. = .547; CFI = 1.00; TLI = 1.00; NFI = .998; RMSEA = .000, *p* = .958) [30].

---------- Insert Figure 1 around here ----------

Moreover, all individual path coefficients were statistically significant and represented the expected directions. Namely, BD predicted CFQ-BI with an effect of .23 (b_{BD} = 2.89; *S.E.* = .42; *Z* = 6.97; *p* < .001). Furthermore, more favourable social comparisons based on physical appearance predicted lower CFQ-BI with an effect of -.34 (b_{SCPAS} = -.33; *S.E.* = .03; *Z* = -10.27; *p* < .001). In turn, CFQ-BI negatively predicted psychological QoL with an effect of -.43 ($b_{CFQ\text{-}BI}$ = -.47; S.E. = .03; *Z* = -14.26; *p* < .001).

Moreover, favourable social comparisons based on physical appearance (SCPAS) presented a total effect of .49 on psychological QoL, with a direct effect of .31 (b_{SCPAS} = .33; *S.E.* = .03; *Z* = 10.13; *p* < .001), and an indirect effect partially explained by CFQ-BI of .15 (95% C.I. = .11 to .19; *p* = .001).

The analysis also showed that BD did not directly predict psychological QoL. BD presented an indirect effect on psychological QoL of -.10 (95% C.I. = -.14 to -.07; *p* = .001), that is fully mediated by increased CFQ-BI.

Discussion

Currently, it is accepted that physical appearance domain is a relevant indicator of women's quality of life. Several studies have recently documented that body dissatisfaction can greatly impair one's quality of life in various domains, namely in the psycho-social functioning and mental health [1]. In particular, the impact of body image may become more problematic when it becomes source of feelings of inferiority and inadequacy in comparison to others [8 and 9].

Consistent with previous research, in the present study BMI, body dissatisfaction, and perceptions of inferiority based on body image were associated with each other [8 and 20]. In line with the literature [1 and 6], results confirmed the link between these body image-related variables and subjective perceptions of overall quality of life and psychological health. Furthermore, results from the present study also corroborated the positive associations between body image-related cognitive fusion and BMI, body dissatisfaction and feelings of inferiority based on physical appearance [20 and 21]. Also, this study adds to the literature as it is the first to examine the link between cognitive fusion related to body image and quality of life in young women. Indeed, our findings showed that this emotional regulation process was negatively associated with perceptions of global quality of life and all quality of life domains. It is also important to note the high magnitude of the relationship between psychological health and body image-related cognitive fusion.

Additionally, the major purpose of the present study was to test whether the impact of BMI, perceived body image flaws, and perceptions of inferiority based on physical appearance on women´s psychological health is operated through higher levels of body image-related cognitive fusion. The tested model explained 39% of psychological health, and allowed us to confirm body image-related cognitive fusion as a crucial emotional regulation process that mediates the impact of body image-related experiences.

Interestingly, BMI did not directly impact on psychological health. However, given its significant correlations with body dissatisfaction and feelings of inferiority based on body image, it seems that BMI's effect is included in the paths of these body image-related variables. Furthermore, body dissatisfaction did not present a significant direct impact on psychological health. Its effect was indeed fully operated through higher tendencies to get entangled with unwanted body-related thoughts' verbal content. These findings suggest that although body image is a central domain for mental health in women, the extent to which negative evaluations related to body image impact on quality of life depends upon other processes. In fact, it seems that more important for quality of life than the discrepancy between one's current and desired body, is how certain women get fused with the negative content of their body image-related thoughts. This thus means that body dissatisfaction only impacts negatively on quality of life, when women present lower abilities to defuse themselves from thoughts' content and to realize that inner experiences do not necessarily represent reality, and as a result act inconsistently with their values.

The present study also reveals interesting data concerning the impact that unfavourable social comparisons based on physical appearance have on young women's psychological quality of life. Indeed, our findings suggest that psychological quality of

life is highly dependent on how a woman perceives her social position within the peer group (inferior/superior; accepted/less accepted) when physically comparing herself with other women. In fact, less favourable social comparisons based on physical appearance seem to explain lower psychological health in women. This relationship may be explained by the centrality that physical appearance assumes as a domain for self and social evaluation, derived from the association between thinness, social attractiveness and self-worth highly present in Western cultures [11, 12, 13 and 31]. Nevertheless, the effect of feelings of inferiority derived from social comparisons through physical appearance was also partially mediated by body image-related cognitive fusion. This finding suggests that the presence of feelings of inferiority based on physical appearance does not necessarily lead to impairment in women's quality of life, which is rather partially dependent upon one's ability to defuse from these unwanted experiences.

This study should be interpreted considering some limitations. Its cross-sectional design does not permit to infer conclusions regarding causality. Longitudinal investigations should be conducted to confirm the directionality of the correlations and the mediational role of body image-related cognitive fusion on quality of life. Also, although the heterogeneity in BMI of the study's sample is a required feature for the results' generalization, it may have influenced the obtained findings. Future studies should therefore examine the impact of different BMI intervals on the studied relationships. Moreover, given that the sample of this study only comprises female college students, the generalization of results should be avoided. In this line, it would be important to develop studies in groups with different ages, education, gender, and cultures, to better clarify the findings of this paper.

Furthermore, although this work was intentionally limited to examine the impact of one single emotional regulation process, other processes may be involved in the determination of women's quality of life and should be explored in future research. Future studies should explore the role other emotional regulation processes (experiential avoidance, decentering) on quality of life.

Conclusions

This study seems to give empirical support for intervention programs aiming at increasing quality of life by targeting emotional regulation processes. Taken together, our findings seem to suggest that since body dissatisfaction and unfavourable social comparisons are normative among women, it is important to promote adaptive strategies to deal with these negatively perceived experiences. Indeed, instead of controlling and getting entangled in body-related inner events, women may gain from learning to accept and defuse from those events. In this way, one becomes more capable to pursue and connect with goals and values, and therefore may present higher levels of quality of life.

List of abbreviations

QoL – Quality of Life

BMI – Body Mass Index

FRS – Figure Rating Scale

BD – Body Dissatisfaction

SCPAS – Social Comparison through Physical Appearance Scale

CFQ-BI – Cognitive Fusion Questionnaire-Body Image

WHOQOL-BREF - World Health Organization Brief Quality of Life Assessment Scale

Disclosure

The authors report no conflicts of interest.

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Table 1

Means (M), Standard Deviations (SD), Cronbach's alphas and Intercorrelation scores on self-report measures (N = 779)

Measures	*M*	*SD*	α	1	2	3	4	5	6	7	8	9
1. BMI	21.86	3.17	-	-								
2. BD	.64	.99	-	.57***	-							
3. SCPAS_peers	63.68	12.60	.91	-.15***	-.23***	-						
4. CFQ-BI	23.00	12.46	.97	.19***	.31***	-.39***	-					
5. Psychological health	68.88	13.46	.78	-.10**	-.20***	.48***	-.55***	-				
6.Social relationships	73.36	16.58	.69	-.06	-.14***	.30***	-.30***	.52***	-			
7. Physical health	75.74	12.10	.67	-.03	-.06	.28***	-.31***	.57***	.33***	-		
8. Environmental	68.32	11.65	.75	-.13***	-.13***	.22***	-.24***	.48***	.32***	.50***	-	
9. General QoL	74.07	13.08	-	-.19***	-.18***	.25***	-.27***	.46***	.27***	.46***	.50***	-

Note. * p <.050. ** p <.010. *** p <.001. BMI = Body Mass Index; BD = Body Dissatisfaction; SCPAS_peers = Social Comparison through Physical Appearance Scale_Peers; CFQ-BI = Cognitive Fusion Questionnaire-Body Image; Psychological health, Social relationships, Physical health, and Environmental QoL = subscales of the WHOQOL-BREF.

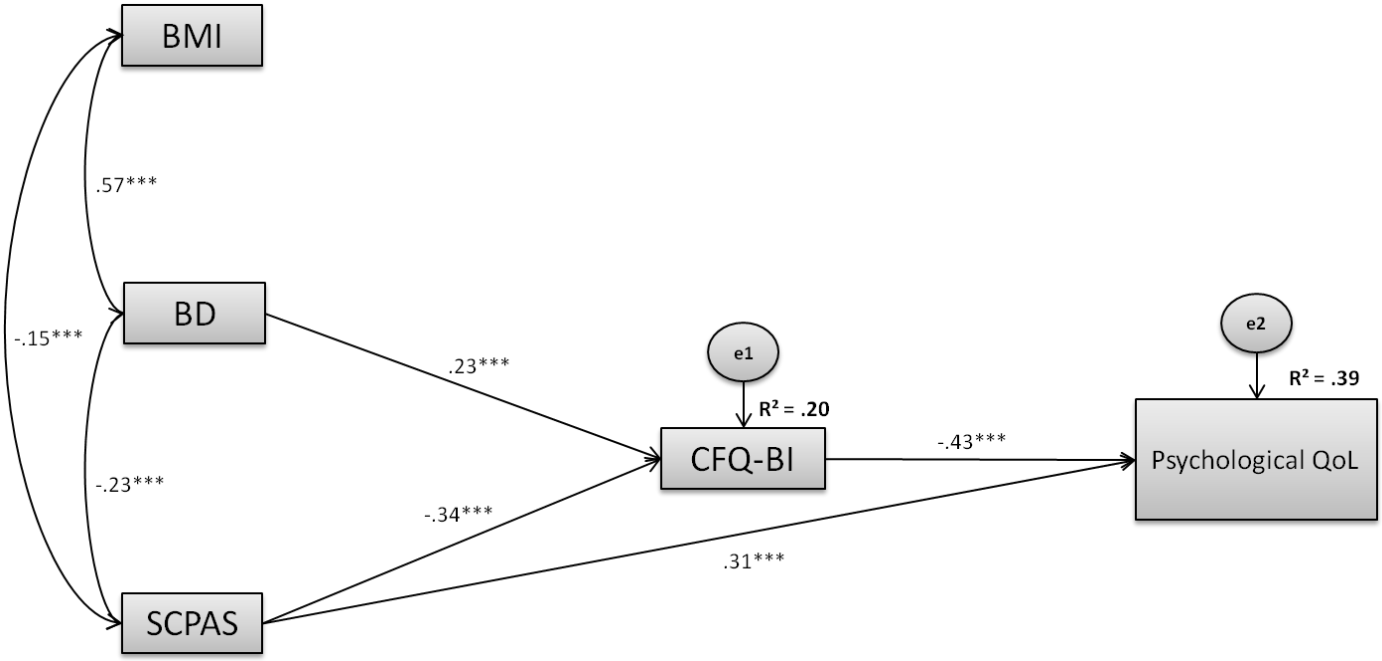

Figure 1. Final Path Model

Note. Standardized coefficients of the significant paths among variables are presented ($p < .05$).

***$p < .001$; BMI = Body Mass Index; BD = Body Dissatisfaction; SCPAS_peers = Social Comparison through Physical Appearance Scale; CFQ-BI = Cognitive Fusion Questionnaire-Body Image; Psychological QoL = subscale of the WHOQOL-BREF.