

**Falling in the traps of your thoughts:
The impact of body image-related cognitive fusion on inflexible eating**

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Abstract

Literature has shown that young women present high rates of body dissatisfaction, independently of their weight. Therefore, dieting may emerge as a strategy to control one's body image. Nonetheless, it also seems to be a source of great suffering rather than a solution.

The aim of the present study was to explore what variables explain the inflexible engagement in eating rules. Our hypothesis is that an inflexible eating pattern results not exclusively from weight and body dissatisfaction, and shame, but mainly from emotional regulation processes (such as body image-related cognitive fusion).

The sample of the present study comprised 659 female college students, aged between 18 and 25 years old, who completed self-report measures.

Results revealed that the majority of the normal-weight participants desired to lose weight and to have a thinner body shape. Findings from the path analyses demonstrated that the effects of weight dissatisfaction and shame on inflexible adherence to eating rules were fully mediated through the mechanism of body image-related cognitive fusion. Furthermore, the effect of body dissatisfaction was partially operated by this process. This model was controlled by BMI and explained a total of 36% of inflexible adherence to eating rules.

In conclusion, these findings suggest that it is when a woman gets fused and entangled with her body image-related thoughts that these unwanted inner events most impact on her eating rules. This study thus offers important new data for research and clinical practise in the field of body image and eating difficulties.

Key-words: body image-related cognitive fusion; inflexible adhesion to eating rules; external shame; body dissatisfaction; weight dissatisfaction; BMI.

Abbreviations

CFQ-BI – measure of body image-related cognitive fusion

IEQ – measure of inflexible adhesion to eating rules

BMI – body mass index

WD – weight dissatisfaction

BD – body dissatisfaction

OAS – measure of external shame

1. Introduction

Literature has shown that young women present notable high rates of dissatisfaction with their body image, independently of their weight (e.g., Rozin, Bauer, & Catanese, 2003). A recent study has documented that almost 87% of women report some level of body shape dissatisfaction and weight concerns, and nearly 40% presented moderate to high body dissatisfaction (Mond et al., 2013). Although this unfavourable self-perception seems to be “normative” in modern Western societies (e.g., Rozin et al., 2003), it has a marked impairment on women’s quality of life (Mond et al., 2013). Body dissatisfaction is also associated with poor mental health (e.g., Mond, Rodgers, Hay, & Owen, 2011), specifically with eating psychopathology (e.g., Pinto-Gouveia, Ferreira, & Duarte, 2014; Stice, Marti, & Durant, 2011). Furthermore, feeling dissatisfied with one’s body is often associated with feelings of inferiority and inadequacy which are part of the shame phenomenon (Gilbert, 2002).

Shame is conceptualized as a self-conscious and socially focused emotion which encompasses evaluations that certain personal characteristics are perceived by others as unattractive, making one vulnerable to criticism or rejection (Gilbert, 2000). The relationship between body dissatisfaction and shame is supported by literature (e.g., Goss & Allan, 2009; Pinto-Gouveia et al., 2014). This may be due to the social valorisation of a thin body shape. In fact, thinness currently represents female attractiveness and, beyond that, positive features such as health, success, and happiness (e.g., Strahan, Wilson, Cressman, & Buote, 2006). In contrast, overweight and obese women are often negatively judged and stigmatized (e.g., Puhl, Moss-Racusin, Schwartz, & Brownell, 2008). In this line, dieting may emerge as a strategy to control one’s weight and body image in order to become physically closer to the socially ideal figure and to be valued by others (e.g., Burkle, Ryckman, Gold, Thornton, & Audesse, 1999). However, dieting often holds

paradoxical outcomes and seems to be a source of great suffering rather than a solution (Polivy, Herman, & McFarlane, 1994). Several accounts have shown that individuals who frequently diet are more vulnerable to overweight problems and eating psychopathology (Stice, Presnell, Shaw, & Rohde, 2005). A recent study showed that the inflexible adherence to eating rules, without considering external and internal contingencies, is a central factor to understand eating psychopathology (Ferreira, Trindade, & Duarte, 2014). Nonetheless, it is yet to be explored what variables explain the engagement in these eating behaviours.

According to ACT (Hayes, Strosahl, & Wilson, 1999), we may hypothesise that when a woman gets fused with her body image-related unwanted thoughts, she might engage in inflexibly eating rules aiming at control these experiences (Ferreira, Palmeira, & Trindade, 2014). This process is named body image-related cognitive fusion and is defined as the entanglement with thoughts' verbal content, considering them the truth rather than interpretations of reality. Our hypothesis is that an inflexible eating pattern results not exclusively from weight dissatisfaction, body dissatisfaction and external shame, but mainly from emotional regulation processes (such as body image-related cognitive fusion) that mediate the impact of these negative events.

2. Material and methods

2.1 Participants

This study's sample included 659 female college students, aged from 18 to 25 years old ($M = 20.30$; $SD = 1.73$).

The subjects' BMI ranged from 16.8 to 35.2 Kg/m^2 ($M = 21.80$; $SD = 2.94$). Seventy participants (10.62%) were underweight ($\text{BMI} < 18.5$), 498 (75.57%) had a

normal weight ($18.5 \leq \text{BMI} \leq 25.0$), and 91 (13.81%) were overweight ($\text{BMI} > 25$), which reflects the BMI distribution of the Portuguese general population (Poínhos et al, 2009).

2.2. Measures

Body Mass Index (BMI) was calculated from the Quetelet Index from self-reported participants height and weight (Kg/m^2).

Weight Dissatisfaction (WD) is a measure of the discrepancy between the reported current and desired weight.

Figure Rating Scale (FRS; Thompson & Altabe, 1991; Ferreira, 2003). Participants were presented with 9 silhouettes with different sizes and asked to select the ones that best represent their current and desired body shape; the discrepancy between these silhouettes reflects the degree of *body dissatisfaction*. The FRS presents good psychometric characteristics.

Other as Shamer - short (OAS-short; Matos, Pinto-Gouveia, Gilbert, & Duarte, 2014). This is a shorter measure of external shame, i.e., the overall negative perception of how others see the self (e.g., “I think other people look down on me). This scale has shown good psychometric properties ($\alpha = .85$).

Cognitive Fusion Questionnaire: Body Image (CFQ-BI; Ferreira, Trindade, Duarte, & Pinto-Gouveia., 2013). The CFQ-BI is a 10-item self-report measure of body image-related cognitive fusion (e.g., I tend to get very entangled in my thoughts concerning my body or body image.). This questionnaire presented very good psychometric properties ($\alpha = .97$).

Inflexible Eating Questionnaire (IEQ; Ferreira, Pinto-Gouveia, Duarte, & Martinho). This 11-item scale assesses the inflexible adhesion to eating rules (e.g., “I

rather follow my eating rules than eating in function of the context or my hunger or will”). The IEQ exhibited good psychometric characteristics ($\alpha = .95$) in its original study.

Table 1 presents the Cronbach’s alphas of these measures for this study.

2.3. Procedure

The study protocol was approved by the ethics committees of the institutions enrolled in the research. Participants were informed about the confidentiality and voluntary nature of their participation, as well as the purpose of the study, and signed an informed consent.

2.3.1. Analytic Strategy

Descriptive analysis and *product-moment Pearson correlation analyses* were conducted (Cohen, Cohen, West, & Aiken, 2003).

To estimate the presumed associations between study variables in the theoretical model, a series of *path analyses* were performed using AMOS (v.21, IBM Corp). It was tested whether the associations between BMI, WD, BD, and OAS (exogenous variables), and inflexible adherence to eating rules (endogenous variable) would be mediated by body image-related cognitive fusion (endogenous mediator variable). To examine the significance of the regression coefficients and to calculate fit statistics, the Maximum Likelihood estimation method was used. To analyze the plausibility of the model, a set of goodness-of-fit indices were used. Moreover, the Bootstrap resampling method, with 2000 samples and 95% bias-corrected confidence intervals (CI) around the standardized estimates of the effects, was used to analyze the significance of the paths.

3. Results

3.1. Preliminary data analyses

Preliminary data analyses indicated that the data followed the assumptions of normality, linearity homoscedasticity, and independence of errors, and indicated the absence of multicollinearity and extreme outliers (Kline, 2005).

3.2. Descriptive analyses

Results revealed that 60.24% of the total participants were dissatisfied with their body image and 70.56% desired to lose weight.

Specifically regarding the underweight participants, results showed that 11.5% reported desiring to lose weight, 32.8% to maintain the current weight, and 55.7% to gain weight. Concerning body dissatisfaction, 37.1% of the underweight females reported wanting to maintain their current body shape, while 11.5% and 51.4% desired to present a thinner or larger figure, respectively.

Interestingly, 74.3% of the normal-weight participants reported desiring to lose weight, 14.8% to maintain, and 10.9% to gain weight. Body dissatisfaction was also very incident among normal-weight women, as 60.6% of them reported desiring to have a thinner figure, and 8.7% to have a larger body shape. Of the women in this BMI interval, 30.7% were satisfied with their current figure.

All of the overweight participants reported weight and body dissatisfaction, desiring to lose weight and to have a thinner figure.

3.3 Correlations

Results indicated that inflexible adherence to eating rules (IEQ) presented positive correlations with all study variables. Specifically, it showed low correlation magnitudes with BMI, moderate associations with weight dissatisfaction (WD), body dissatisfaction

(BD), and external shame (OAS), and high correlations with body image-related cognitive fusion (CFQ-BI). Also, CFQ-BI showed weak positive associations with BMI and WD, and moderate with BD and OAS (Table 1).

Age was controlled for in partial correlations. The results maintained the same magnitude and direction and therefore this variable was not further considered in the analysis.

3.4 Path analyses

The initial model included 27 parameters. Results indicated the removal of the following nonsignificant paths: the direct effect of BMI \rightarrow IEQ ($-.088$; $p = .622$), OAS \rightarrow IEQ ($-.034$; $p = .619$), BMI \rightarrow CFQ-BI ($-.170$; $p = .467$), and WD \rightarrow IEQ ($.089$; $p = .431$).

After the model was re-specified (Figure 1), results revealed that the model explained 30% of body image-related cognitive fusion, and 36% of inflexible adherence to eating rules (IEQ). All path coefficients were statistically significant ($p < .05$), and the model fit indices indicated a perfect fit to the data: CMIN = 1.684, $p = .891$; CFI = 1.00; TLI = 1.00; NFI = .999; RMSEA = .000 (.00 to .03; $p = .996$).

WD had a direct effect on CFQ-BI of .11 ($b_{WD} = .27$; $SEb = .11$; $Z = 2.54$; $p = .011$). Also, BD and OAS had direct effects on CFQ-BI of .20 ($b_{BD} = 2.47$; $SEb = .57$; $Z = 4.34$; $p < .001$) and .43 ($b_{OAS} = 1.04$; $SEb = .08$; $Z = 13.96$; $p < .001$), respectively. Finally, CFQ-BI presented a direct effect of .43 on IEQ ($b_{CFQ-BI} = .36$; $SEb = .03$; $Z = 13.66$; $p < .001$).

Results also revealed that BD had a total effect of .36 on IEQ, with a direct effect of .27 ($b_{BD} = 2.77$; $SEb = .33$; $Z = 8.28$; $p < .001$), and an indirect effect of .09 through body image-related cognitive fusion (CFQ-BI). Moreover, WD presented a total effect on

IEQ of .05, which was fully operated through the mechanism of CFQ-BI. The effect of OAS on IEQ (.19) was likewise totally mediated by CFQ-BI. The estimate of the indirect effects of BD (CI = .05 to .13), WD (CI = .01 to .09) and OAS (CI = .16 to .23) on IEQ were significantly different from zero, revealing statistical significance ($p < .050$).

4. Discussion and Conclusion

Weight and body dissatisfaction are highly prevalent among young women, independently of their weight (e.g., Rozin et al., 2003). Accordingly, the present study demonstrated that the majority of the normal-weight participants reported desiring to lose weight and to present a thinner body shape.

Dieting may therefore emerge as a strategy to regulate these body-related unfavourable perceptions, by aiming at controlling one's body weight and shape (Burkle et al., 1999). Results indeed revealed that BMI, weight and body dissatisfaction, and shame were positively correlated to the inflexible adherence to eating rules. Notably, inflexible eating presented a strong association with body image-related cognitive fusion.

The main goal of the present study was to explore what may explain the inflexible adherence in eating rules. We hypothesised that an emotional regulation process, body image-related cognitive fusion, would play an important role on this rigid engagement in eating rules. Results revealed that the effects of weight dissatisfaction and external shame on inflexible eating were fully mediated through the mechanism of body image-related cognitive fusion. Furthermore, the effect of body dissatisfaction was partially operated by this emotional regulation process. This model was controlled by BMI and explained a total of 36% of inflexible adherence to eating rules.

These findings suggest that it is when a woman gets fused and entangled with her body image-related thoughts that these unwanted inner events most impact on her eating

rules. In addition, the inflexible adhesion to eating rules may therefore be a strategy to control or avoid the negative content of the body-related thoughts one is entangled with. However, as rigid dieting holds paradoxical consequences (e.g., weight gain; Stice et al., 2005), this strategy may lead to greater suffering and psychological distress.

This study ought to be interpreted taking into consideration some limitations. Firstly, the cross-sectional nature of the investigation does not permit to infer causal associations; accordingly, longitudinal studies should be conducted to confirm the results of this study. Moreover, although the tested model was intentionally constricted in order to specifically explore the role of a single process, we acknowledge that other variables may be involved.

In conclusion, the findings of this study seem to offer important new data for research and clinical practise in the field of body image and eating difficulties, highlighting the pertinence of interventions targeting body image-related cognitive fusion.

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Table 1

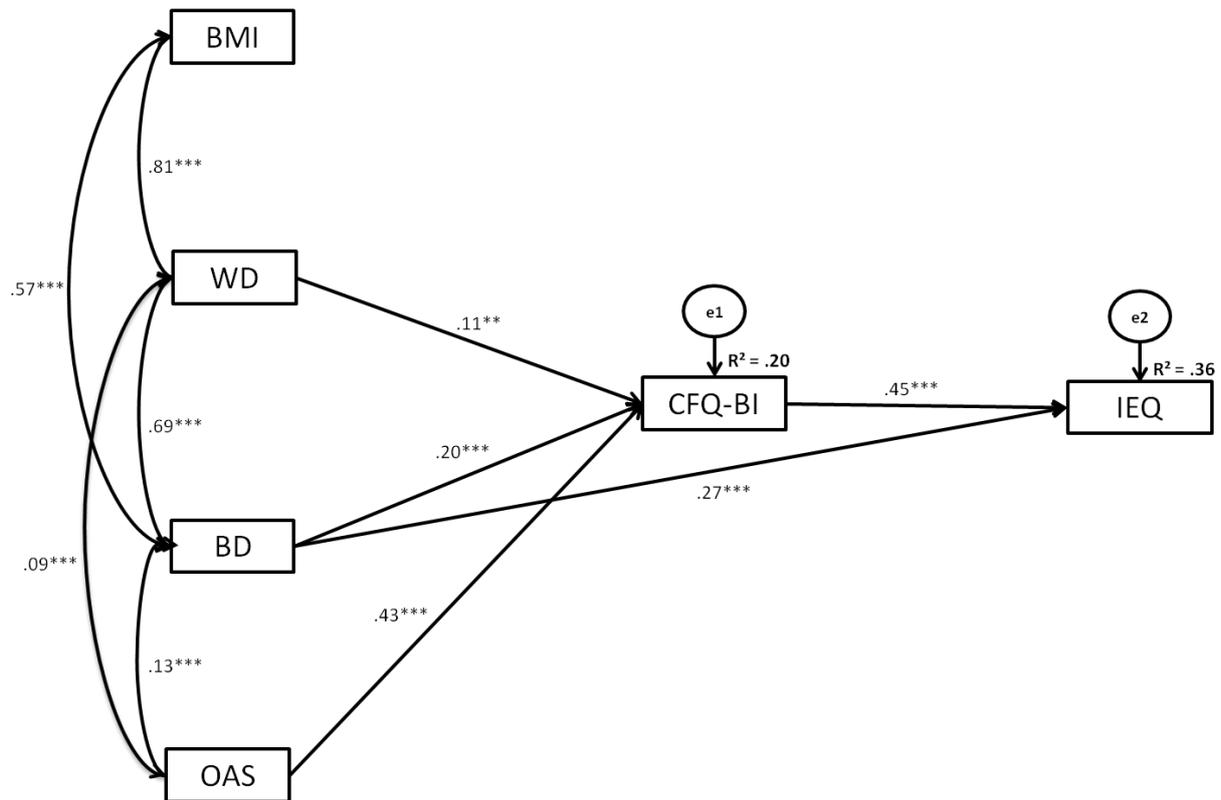
Means (M), Standard Deviations (SD), Cronbach's alphas and Intercorrelation scores on self-report measures (N = 659)

	α	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1_BMI	–	21.80	2.94	1					
2_WD	–	3.50	5.17	.81***	1				
3_BD	–	.66	.97	.58***	.69***	1			
4_OAS_s	.92	5.73	5.06	.02	.11**	.14***	1		
5_CFQ_BI	.97	23.17	12.21	.20***	.29***	.33***	.47***	1	
6_IEQ	.95	27.03	9.78	.25***	.34***	.42***	.24***	.54***	1

Note: * $p < .05$; ** $p < .01$; *** $p < .001$. BMI = Body Mass Index; WD = Weight Dissatisfaction;

BD = Body Dissatisfaction; OAS_s = Other As Shamer (short version); CFQ-BI = Cognitive

Fusion Questionnaire-Body Image; IEQ = Inflexible Eating Questionnaire.



Figure_1. Final Path Model

Note. Standardized path coefficients among variables are presented. All path coefficients are significant at the .05 level.

* $p < .05$; ** $p < .01$; *** $p < .001$; BMI = Body Mass Index; WD = Weight dissatisfaction; BD = Body Dissatisfaction; OAS_s = Other As Shamer (short version); CFQ-BI = Cognitive Fusion Questionnaire-Body Image; IEQ = Inflexible Eating Questionnaire.