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**WHEN THOUGHTS SEEM MORE
THAN JUST THOUGHTS:
BODY IMAGE-RELATED COGNITIVE FUSION
AND ITS ROLE IN EATING PSYCHOPATHOLOGY**

Master's Dissertation in Clinical Psychology
supervised by Professor Cláudia Ferreira

Faculty of Psychology and Educational Sciences
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Body image-related cognitive fusion and its role in
eating psychopathology**

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Dissertation supervised by Professor Cláudia Ferreira and submitted to the Faculty of Psychology and Educational Sciences of the University of Coimbra to obtain the Master's degree in Clinical Psychology, in the field of Cognitive-Behavioral Interventions.



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E CIÊNCIAS DA EDUCAÇÃO

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Abstract – When thoughts seem more than just thoughts: Body image-related cognitive fusion and its role in eating psychopathology

Recent studies have revealed that cognitive fusion underlies psychological inflexibility and, as result, a wide range of psychopathology as well. It is portrayed as the extent to which one gets caught up in the content of his or her thoughts while addressing them as if they were facts rather than an interpretation of reality. Concerning body image, cognitive fusion triggers the self-identification with perceptions, sensations and thoughts associated to physical appearance and has been accounted as a main feature in eating disorders. However, the impact of cognitive fusion particularly related to body image on eating psychopathology was yet little explored. Moreover, a measure that specifically assesses that construct was still to be created, contributing to the lack of studies in this area. The aim of the current work was, therefore, to develop and validate a measure of body image-related cognitive fusion (Cognitive Fusion Questionnaire – Body Image; CFQ-BI; Paper I) and to examine the role of such process in the relation between known related risk factors and eating psychopathological symptoms (Paper II).

The present work involves several samples from the student and general populations. Self-report questionnaires were administered in order to measure the studies' constructs. Results showed that the CFQ-BI is a short, robust and reliable measure, with satisfactory fit values, good convergent, divergent, temporal and discriminant reliabilities and an $\alpha = .97$. Thereby, since the CFQ-BI presented very good psychometric features, a second study was conducted to explore body image-related cognitive fusion's mediational role on the relationship of body dissatisfaction and social comparison through physical appearance towards eating psychopathology. Results showed that these relations were partially mediated by body image-related cognitive fusion. This thus suggests that the impact body dissatisfaction and

unfavorable social comparisons through physical appearance have on eating difficulties rely on the degree to which one is fused with cognitions about his or her body image.

Taken together, the results of the current work seem to present important insights for clinical practice and research in the field of eating psychopathology, contributing to a better assessment of body image-related cognitive fusion and to a greater understanding of its impact on body image and eating difficulties.

Key words: Clinical Psychology; Acceptance and Commitment Therapy; body image-related cognitive fusion; cognitive fusion; eating psychopathology; assessment; Confirmatory Factor Analysis; body dissatisfaction; social comparison; mediation analysis.

Resumo – Quando os pensamentos parecem mais do que apenas pensamentos: O papel da fusão cognitiva relacionada com a imagem corporal na psicopatologia alimentar

Estudos recentes demonstraram que a fusão cognitiva subjaz inflexibilidade psicológica e que, como resultado, também uma variedade de psicopatologia. Este processo é retratado pelo grau em que o indivíduo se enreda pelo conteúdo dos seus pensamentos enquanto os aborda como se estes fossem factos em vez de interpretações da realidade. Quando relacionada com a imagem corporal, a fusão cognitiva provoca uma autoidentificação com perceções, sensações e pensamentos associados à aparência física e tem sido considerada um aspeto nuclear nas perturbações alimentares. Contudo, o impacto da fusão cognitiva particularmente relacionada com a imagem corporal nesse domínio continuava pouco explorado. Além disso, uma medida que avalie especificamente esse construto também ainda não tinha sido criada, contribuindo para a carência de estudos nesta área. Deste modo, o objetivo do presente trabalho centrou-se

no desenvolvimento e validação de uma medida de fusão cognitiva relacionada com a imagem corporal (*Cognitive Fusion Questionnaire – Body Image*; CFQ-BI; Artigo I) e na exploração do papel de tal processo na relação entre conhecidos fatores de risco relacionados e sintomas de perturbação alimentar (Artigo II).

O presente trabalho envolve várias amostras das populações estudantil e geral, a que foram administrados questionários de autorresposta de forma a avaliar os construtos dos estudos. Os resultados mostraram que o CFQ-BI é uma medida pequena, robusta e fidedigna, com índices de ajuste satisfatórios, boa validade convergente, divergente, temporal e discriminante e um $\alpha = .97$. Desta forma, uma vez que o CFQ-BI apresentou características psicométricas muito boas, foi conduzido um segundo estudo para explorar o papel mediador da fusão cognitiva relacionada com a imagem corporal na relação da insatisfação corporal e da comparação social através da aparência física com a psicopatologia alimentar. Os resultados mostraram que estas relações são parcialmente mediadas pela fusão cognitiva relacionada com a imagem corporal, o que parece sugerir que o impacto que a insatisfação corporal e a comparação social desfavorável baseada na aparência física têm na psicopatologia alimentar depende do grau em que o indivíduo se funde com pensamentos acerca da sua imagem corporal.

De modo geral, os resultados do atual trabalho parecem apresentar dados importantes para a investigação e prática clínica na área da psicopatologia alimentar, contribuindo para uma melhor avaliação da fusão cognitiva relacionada com a imagem corporal e para uma maior compreensão do seu impacto nas perturbações alimentares.

Palavras-chave: Psicologia Clínica, Terapia de Aceitação e Compromisso; fusão cognitiva relacionada com a imagem corporal; fusão cognitiva; psicopatologia alimentar; avaliação; Análise Fatorial Confirmatória; insatisfação corporal; comparação social; análise mediacional.

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List of papers

The papers included in this thesis are the following:

- I. Ferreira, C., Trindade, I. A., Duarte, C., & Pinto-Gouveia, J. (2013). *Getting entangled with body image: Development and validation of a new measure*. Manuscript submitted for publication.

- II. Trindade, I. A., & Ferreira, C. (2013). *The impact of body image-related cognitive fusion on eating psychopathology*. Manuscript submitted for publication.

PAPER I

Ferreira, C., Trindade, I. A., Duarte, C., & Pinto-Gouveia, J. (2013). *Getting entangled with body image: Development and validation of a new measure.*

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Getting entangled with body image: Development and validation of a new measure

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Abstract

Several studies have highlighted the role of cognitive fusion on human suffering and on a wide range of psychopathological conditions. Namely, this process has been regarded as a nuclear aspect in eating disorders. Nevertheless, this set of studies has used broad measures of cognitive fusion, and a measure that specifically concerned body image was still to be created. The present study aimed, therefore, at developing and validating such a measure, the Cognitive Fusion Questionnaire – Body Image (CFQ-BI).

The current study was conducted using different samples of both genders, collected in the general and student populations. The dimensionality of the CFQ-BI was tested through Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The scale's internal reliability, construct validity, test-retest reliability and discriminant validity were also analyzed.

The CFQ-BI's final structure was shown to be one-dimensional and to comprise 15-items that assess body image-related cognitive fusion. This final structure explained a total of 70% of the variance. The adequacy of the questionnaire was corroborated through CFAs which revealed that CFQ-BI presents good global and local adjustment values and goodness-of-fit indices. Results also showed that the CFQ-BI holds a very good internal consistency ($\alpha = .97$) and convergent, divergent, temporal and discriminant reliabilities.

The CFQ-BI was thus established as a short, robust and reliable measure of body image-related cognitive fusion. Therefore, this new measure may correspond to a significant contribution to research and clinical practice in the field of body image and eating-related difficulties.

Highlights

- A new measure of body image-related cognitive fusion (CFQ-BI) was developed;
- The CFQ-BI was proved to be a short, robust and reliable measure;
- Body image-related cognitive fusion was strongly linked to eating psychopathology;
- CFQ-BI may be useful in eating psychopathology's research and clinical practice.

Keywords: Body image-related cognitive fusion; cognitive fusion; eating psychopathology; assessment; Confirmatory Factor Analysis.

Introduction

Cognitive fusion, a key concept of Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999), can be described as the human tendency to interact with internal events regarding only the cognitive products generated by them (Hayes, Strosahl, Bunting, Twohig, & Wilson, 2004). This process involves the entanglement with the private events' content and consequently responding to them as if they were literally true (Luoma & Hayes, 2003). According to Hayes and colleagues (2004), this phenomenon is linked to the importance of human language. In fact, because verbal processes are fairly beneficial in some domains, individuals tend to apply them into all areas, enabling the interaction with verbally constructed events as if they were concrete. Indeed, language promotes the association of verbal stimuli with reality from the moment it is learned and linked to real constructs (Flaxman, Blackledge, & Bond, 2011). Covered by this association are one's thoughts (which are verbal processes themselves) that, according to this perspective, may be considered factual instead of an interpretation of reality. Thus, cognitive fusion fosters the domain of verbal rules and self evaluations about one's internal experience, diminishing the contact with the present moment (Hayes, 1989).

When thoughts and emotions are perceived as trustworthy presentations of reality, ineffective attempts to control and avoid such events may occur (Barnes-Holmes, Hayes, & Dymond, 2001; Hayes, 2004). This process is denominated experiential avoidance, which is defined as the attempt to escape from the content of sensations, behavioral impulses, thoughts and emotions evaluated as negative by the individual (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). These avoidance and control processes, increase the frequency and impact of these events and are, therefore, potentially harmful, by diminishing quality of life and even instigating the development

and maintenance of psychopathology (e.g. Hayes, 2004; Hayes et al., 1999; Kashdan & Rottenberg, 2010; Merwin & Wilson, 2009).

Research has shown that cognitive fusion and experiential avoidance are related to the inability to change one's behaviors, even when that change is beneficial and compatible with one's values and goals (Hayes et al., 1999). These processes are key aspects of psychological inflexibility which also entails an inability to contact with the present moment and with one's values, and where one is subjugated by a conceptualized self. Several studies have demonstrated the maladaptive role of psychological inflexibility in well being and psychopathology (e.g. Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Kashdan & Rottenberg, 2010; Greco, Lambert, & Baer, 2008).

Specifically, psychological inflexibility has been highlighted as relevant in the development and maintenance of eating psychopathology. In fact, recent research has suggested that eating disorders may be conceptualized as an illness of psychological inflexibility (Merwin et al., 2011). In accordance, there is clinical evidence that in anorexia nervosa, patients tend to get fused with negative thoughts about their body image, which increases the impact of these cognitions and results in the attempt of controlling them through rigid behavioral and attitudinal patterns typical of these disorders (Hayes & Pankey, 2002). Moreover, other areas of the patient's life become frequently overpowered by cognitive fusion as well (e.g. perfectionism, hyper-responsibility, obsessive patterns; Hayes & Pankey, 2002). To sum up, cognitive fusion has been regarded as an important mechanism in eating disorders, reflected in these patients rigid beliefs about the importance of thinness to define their self-worth, and by the inflexible adherence to rules in relation to their eating, weight and body shape (e.g., body checking, exercising). However, the role of cognitive fusion in eating disorders remains not wholly clear.

Besides the lack of studies about cognitive fusion's influence on eating disorders, there is also a marked absence of specific measures of cognitive fusion related to weight, body shape and body image issues. In contrast, there are several instruments that assess broad cognitive fusion, namely, the Cognitive Fusion Questionnaire-28 (CFQ-28; Gillanders et al., 2010). This instrument is a well known measure that evaluates the general propensity to enroll and accept as true one's private events. When answering this measure, different individuals may complete the scale considering different areas of functioning. This may not be deliberately chosen by the respondent, but may depend on which areas cognitive fusion causes more impact in this individual. Thus, the use of this type of broad measures does not allow the assessment of specific areas of cognitive fusion, such as one's body image. Therefore, the development of measures that cover particular domains of cognitive fusion appears to be relevant. Specifically, the construction of an instrument that would assess body image-related cognitive fusion seems important to contribute for the knowledge of this process' effect on eating psychopathology.

For these reasons, a new scale, Cognitive Fusion Questionnaire - Body Image (CFQ-BI), was developed to assess body image-related cognitive fusion. Thereby, this study examines the factor structure of the CFQ-BI through an Exploratory Factor Analysis (EFA) and through a Confirmatory Factor Analysis (CFA). Additionally, the psychometric qualities of this new measure were analyzed.

Materials and Methods

Participants

Sample 1: The sample used to perform the CFQ-BI's EFA and to test the validities of the measure was composed by 361 students of both genders (147 males and 214 females), presenting ages between 16 and 30 years old ($M = 18.52$; $SD = 2.11$) and a mean of 12.07 ($SD = 1.64$) years of education. No statistically significant differences were found between demographic aspects.

In order to confirm the adequacy of the tested model in both genders, two samples recruited within the student and general populations were used to conduct the CFQ-BI's CFA (sample 2 and sample 3).

Sample 2: The male sample was comprised by 223 participants with a mean age of 27.99 ($SD = 9.94$) years old and 13.20 ($SD = 2.49$) years of education.

Sample 3: The female sample was composed by 294 participants. The mean age of the participants was 24.53 years old ($SD = .18$) and 13.98 ($SD = 2.06$) years of education.

Sample 4: The sample used for the temporal reliability analysis consisted of 51 college students (14 males, 37 females), that completed the CFQ-BI twice within a 3-week interval. No significant differences were found between genders regarding age ($t_{(49)} = 1.05$; $p = .301$), which presented a mean of 19.82 ($SD = 2.26$) years old.

Procedures

The collection of data respected deontological principles and the assessment protocol was approved by the ethical committees of the institutions enrolled in this study. Participants were properly informed about the voluntary character of their role in this study and about the finality and confidential character of the collected data, providing their informed consent.

Statistical analyzes

IBM SPSS Statistics 20 (IBM Corp, 2011) was the software used to perform a preliminary factorial structure of CFQ-BI and the descriptive and psychometric analyzes. The software AMOS (IBM Corp, 2011) was additionally used to assess the confirmatory factorial structure of CFQ-BI.

The specific statistical procedures will be detailed along the study.

Measures

Body Image: Cognitive Fusion Questionnaire (CFQ-BI). The CFQ-BI measures the extent to which individuals become ‘fused’ with their cognitions concerning one’s body image. It was developed through the adaptation of the CFQ-28 (Gillanders et al., 2010), after the respective approval from the original authors. In its original form the CFQ-BI holds 32 items which were developed based on CFQ-28’s items to specifically assess body image-related cognitive fusion (e.g., “I need to control the thoughts about my physical appearance that come into my head”). Besides, four more items were added to the scale due to the authors’ decision. The participants are asked to evaluate the veracity of several statements, on a 7-point Likert scale (1-Never True; 7-Always True).

Cognitive Fusion Questionnaire-28 (CFQ-28; Gillanders et al., 2010; Pinto-Gouveia, Dinis, Gregório, & Pinto, 2011). This is a 28-item self-report instrument that assesses cognitive fusion and cognitive defusion in a broad way. The respondent is asked to estimate how much he relates to the items using a 7-point Likert scale (1-Never True; 7-Always True). The scale showed a good internal consistency in the original study and in the Portuguese validation study ($\alpha = .94$ on the fusion component; $\alpha = .77$ on the defusion component; $\alpha = .92$ on the overall scale).

Acceptance and Action Questionnaire-II (AAQ-II; Bond, Hayes, Baer, Carpenter, Guenole, Orcutt, Waltz, & Zettle, 2011; Pinto-Gouveia, Gregorio, Dinis, & Xavier, 2012). The AAQ-II is a 10 item scale, with a 7-point Likert-type response format (1- Never true; 7-Always true), to assess one's psychological flexibility. This scale was proved to have good internal consistency in the original study (with a mean Cronbach's alpha coefficient of .84 across six samples) and in the Portuguese study ($\alpha = .90$).

Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995; Pais-Ribeiro, Honrado, & Leal, 2004). This questionnaire consists in 21 statements regarding the participant's last week negative emotional symptoms and aims to evaluate levels of depression (DEP), anxiety (ANX), and stress (STR). The Cronbach's alpha coefficients of the Portuguese study were similar to the original ones for all subscales: DEP = .88, ANX = .82 e STR = .90 in the original version, and of .85, .74 and .81 in the Portuguese study, respectively.

Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994; Machado, 2007). The EDE-Q is a self-report measure of the frequency and intensity of eating disorders' psychological and behavioral characteristics. It holds four subscales (restraint, eating concern, shape concern and weight concern). This scale was developed in order to diminish the limitations of the Eating Disorder Examination interview such as the unsuitability for group assessment, the long administration time and the need of very qualified interviewers (Fairburn & Beglin, 1994; Luce, Crowther, & Pole, 2008). The EDE-Q has been shown to hold good reliability and to be able to differentiate cases from non-cases of eating disorders (see also Fairburn, 2008).

Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003; Gregório & Pinto-Gouveia, in press). The MAAS is a measure of mindfulness dispositional characteristics with 15 statements concerning everyday experiences about the ability of

being in the present moment. The respondent is asked to rate the frequency of those experiences using a 6-point Likert scale (1-Almost always; 6-Almost never). This scale revealed good Cronbach's alpha values both in the original study (.84) and in the Portuguese study (.90).

Experiences Questionnaire (EQ; Fresco et al., 2007; Pinto-Gouveia, Gregório, Duarte, & Simões, 2012). The EQ evaluates the participant's capability for decentration and disidentification with negative thoughts. It consists of 20 items, distributed over two subscales, rumination and wider perspective, with 6 and 14 items respectively. These items describe common experiences, and are evaluated on a 5-point Likert scale (1- Never; 5-Always), according to how frequently they happen. The questionnaire was shown to have good internal consistency both for the original study as for the Portuguese validation study, having Cronbach's alpha values of .83 and .81 respectively.

Results

Preliminary Analysis

Analysis of *Skewness* and *Kurtosis' values* revealed that values did not present a significant bias to normal distribution ($SK < |3|$ and $Ku < |10|$), additionally, the visual inspection of the distributions confirmed the assumption of normality (Kline, 1998).

Factor structure of the CFQ-BI

In order to uncover CFQ-BI's factor structure, an Exploratory Factor Analysis (EFA) was performed, following the same procedure used in the validation study of the original CFQ-28, (Gillanders et al., 2010). Therefore, a Principal component Analysis with a Varimax rotation was conducted.

The Kaiser Meyer-Olkin test (.96) and the Bartlett's sphericity test ($\chi^2_{(496)} = 9228.28$; $p < .001$) confirmed the adequacy of the data for posterior analysis. Three factors with eigenvalues superior to 1 were revealed and explained a total of 63.77% of the variance. Cattell's scree test demonstrated as well a solution of three factors. Nonetheless, considering the two factor solution of the original CFQ-28 and since the third factor only explained 4.6% of the variance, we decided to compromise on two factors only. Thereby, the analysis was repeated with a Varimax rotation forcing a two factor solution, which explained 59.2% of the variance and showed communalities values superior to .40 on all items. This analysis also revealed that the first factor, relating to cognitive fusion (with 23 items), explained 43.97% of the variance. The second factor, cognitive defusion (with 9 items) explained 4.88% of the variance. The factor loadings of all items were proven to be higher than .59.

With the purpose of achieving a shorter, less exhaustive but still reliable measure, we selected the 15 items with the highest factorial loadings (superior to .77). All of these items corresponded to the cognitive fusion dimension. The final analysis tested a one-factor structure and results indicated that this solution explained a total of 70% of the variance. Thus, EFA results' indicated that CFQ-BI converted into a one factor measure of cognitive fusion towards body image.

Confirmatory Factor Analysis

Two CFAs were conducted to corroborate the previous estimated CFQ-BI one-factor structure, for each gender (using sample 2 and sample 3), with Maximum Likelihood as the estimation method. Additionally, different goodness-of-fit indices were used to confirm the scale factor structure. In both samples, the chi-square goodness-of-fit was shown to be significant, which would indicate that the data is not

consistent with the model. Nonetheless, the chi-square is especially vulnerable to sample size, commonly contributing in biases in the results' interpretation (DeCoster, 1998). In order to overcome this constraint, we used the Normed Chi-Square (in which values varying between 2 and 5 show a good global adjustment of the model; Tabachnick & Fidell, 2007). Also, the Comparative Fit index (CFI), the Tucker and Lewis Index (TLI) and the Incremental Index of Fit (IFI) that indicate a good fit when values are superior or equal to 0.9 (Brown, 2006) were used. The Normed Fit Index (NFI), in which an acceptable adjustment is translated by values superior or equal to 0.8 was considered. Additionally, the Parsimony Normed Comparative Fit Index (PCFI) and the Parsimony Goodness-of-Fit (PGFI), in which values between 0.6 and 0.8 indicate a good fit (Byrne, 2010), were analyzed.

The Normed Chi-Square's value was $\chi^2/df = 4.278$ on the male sample and $\chi^2/df = 5.555$ on the female sample. The other goodness-of-fitness indices all confirmed that the tested structure was satisfactory (see Table 1). Even though the TLI values on both samples and the PGFI value on the male sample were not very good, they were on the edge of a good fit.

The quality of the model was also evaluated by examining the local adjustment indices. The standardized regression weights ranged between .61 (item 25) and .89 (item 14) on the male sample, and between .68 (item 31) and .92 (item 13) on the female sample, all above the cut-off point of .40 suggested by Tabachnick and Fidell (2007). Moreover, all path values were statistically significant ($p \leq .001$). The results from the Squared Multiple Correlations (SMC) corroborated the instrument's reliability for each gender, with values ranging from .37 (item 25) to .79 (item 14) on the male sample and from .45 (item 31) to .85 (item 13) on the female sample.

Table 1*CFQ-BI's goodness-of-fitness indices*

	X^2/df	CFI	TLI	IFI	NFI	PCFI	PGFI
Male sample (<i>n</i> = 223)	4.278	.90	.88	.90	.87	.77	.59
Female sample (<i>n</i> = 294)	5.555	.91	.89	.91	.89	.78	.61

Note. X^2/df = Normed Chi-Square; CFI = Comparative Fit index; TLI = Tucker and Lewis Index; IFI= Incremental Index of Fit; NFI = Normed Fit Index; PCFI = Parsimony Normed Comparative Fit Index; PGFI = Parsimony Goodness-of-Fit.

Reliability Analysis

CFQ-BI showed a very good internal reliability, with a Cronbach's alpha value of .97. As exposed on Table 2, the item-total correlations of the 15 items of this factor, diverged from .73 to .89. Moreover, results indicated that the deletion of any of these items would not increase the factor's internal consistency.

Table 2*CFQ-BI final factor items' means, standard deviations and reliability (n = 361)*

Items	<i>M</i>	<i>SD</i>	Factor Loadings	Item total correlation	Cronbach's α if item deleted
1	2.46	1.69	.84	.81	.97
10	2.36	1.75	.87	.84	.97
12	2.61	1.80	.81	.77	.97
13	2.15	1.62	.90	.89	.97
14	2.11	1.59	.88	.87	.97
16	1.77	1.34	.83	.81	.97
15	1.92	1.42	.84	.83	.97
17	2.08	1.45	.79	.76	.97

22	1.94	1.51	.84	.84	.97
25	2.03	1.43	.81	.80	.97
26	2.22	1.65	.79	.75	.97
28	1.67	1.16	.79	.78	.97
29	2.04	1.63	.87	.87	.97
30	1.88	1.46	.82	.82	.97
31	2.19	1.54	.77	.73	.97

Temporal Reliability

To test the temporal reliability of CFQ-BI, 51 students (14 males and 37 females), completed the questionnaire twice within a 3-week interval. The Pearson correlation coefficients between test and retest moments revealed a very good temporal reliability, ($r = .76$). Additionally, no significant differences were found between test and retest ($t = .37$; $p = .710$).

Discriminant Reliability

To study the ability of CFQ-BI to discriminate cases with and without eating psychopathology we compared two convenience females, with similar demographic characteristics and age ($t_{(77)} = 0.65$; $p = .950$). The sample of the general population ($n = 48$) presented a mean age of 18 years old ($SD = 4.46$) and the sample with severe eating difficulties ($n = 31$) had a mean age of 17.94 years old ($SD = 4.11$). This lastly referred sample was obtained using the cut-off score > 4 of the EDE-Q, suggested by previous research as a good guide for screening for eating disorders (Carter, Stewart, & Fairburn, 2001; Mond, Hay, Rodgers, & Owen, 2006).

Regarding the CFQ-BI's final score, the eating problems' sample obtained a mean of 74.13 ($SD = 18.67$), while the control group presenting a mean of 47.78 ($SD =$

19.04). Additionally, it was found that CFQ-BI discriminates ($t_{(77)} = 6.05; p < .001$) cases with and without eating psychopathology.

CFQ-BI's relationship with other measures

Pearson correlation coefficients (Cohen, Cohen, West, & Aiken, 2003) were performed in order to explore CFQ-BI's relationship with other measures (Table 3). The convergent validity was assessed through the calculation of product-moment correlation coefficients between the CFQ-BI and CFQ-28's fusion dimension. On the other hand, the divergent validity of the scale was verified using MAAS and EQ. Additionally, the relationship between CFQ-BI and AAQ-II, DASS-21 and EDE-Q was tested.

The results show that CFQ-BI's final factor correlated positively and significantly with the fusion factor of CFQ-28. On the other hand, CFQ-BI showed negative and significant correlations with characteristics of dispositional mindfulness (MAAS) and descentering (EQ). Furthermore, results indicated that CFQ-BI was positive and moderately linked to psychological inflexibility (AAQ-II) and also to self-reported symptoms of depression, anxiety and stress (DASS-21). Finally, an also positive and strong correlation was found between CFQ-BI and a global index of eating psychopathology (EDE-Q).

Table 3

CFQ-BI's final factor correlations with other measures and their respective Cronbach's Alphas (n = 361)

	CFQ-BI	CFQ_F	AAQ-II	DEP	ANX	STR	EDE-Q	MAAS	EQ
α	.97	.96	.74	.86	.81	.89	.95	.89	.83
CFQ-BI	-	.66***	.54***	.46***	.42***	.35***	.73***	-.22***	-.53***

Note. CFQ_BI = Cognitive Fusion Questionnaire – Body Image; CFQ_F = Cognitive Fusion Questionnaire (Fusion Dimension); AAQ-II = Acceptance and Action Questionnaire; DEP, ANX, STR = Depression, Anxiety and Stress scales of DASS-21; EDE-Q = Eating Disorder Examination – Questionnaire; MAAS = Mindful Attention and Awareness Scale; EQ = Experiences Questionnaire).

*** $p < .001$

Discussion

The purpose of this study was to present the development and validation of a new measure, the Cognitive Fusion Questionnaire – Body Image (CFQ-BI), an instrument created in order to assess body image-related cognitive fusion.

The present research was conducted using several samples and analyzes. Firstly, an EFA was performed using a sample of 361 students of both genders with ages ranging between 16 and 30 years. In order to validate the CFQ-BI, the same procedures used in the development of the original instrument of broad cognitive fusion (CFQ-28; Gillanders et al., 2010) were followed. Similarly to the CFQ-28, the CFQ-BI initially presented a two factor solution, with fusion and defusion dimensions. However, with the intent to obtain a shorter and a more psychometrically sound measure, only the best 15 items were selected for the final structure. Therefore, the CFQ-BI became a one-dimensional measure that assesses body image-related cognitive fusion. This final structure explained a total of 70% of the variance.

Furthermore, this one-dimensional structure was additionally corroborated through two CFAs (one for each gender) that involved 223 males and 294 females. Results proved the adequacy of the global and local adjustments of this measure. Moreover, according to the suggested standards (Brown, 2006; Tabachnick & Fidell, 2007), the goodness-of-fitness indices regarded in these analyzes confirmed the

suitability of the tested structure. Additionally, the regression weights were all above the suggested cut-off value (Tabachnick & Fidell, 2007).

The present study's analyses also demonstrated that the CFQ-BI reveals a high internal consistency and robustness. The CFQ-BI also revealed high values of item-total correlations, confirming the preserved items' adequacy to the constructs this measure intends to assess.

In addition, the temporal reliability analysis proved that the CFQ-BI is stable over time. As for the discriminant reliability analysis, a collection of 31 females with EDE-Q's cut-off scores was compared to a control sample of 48 female students. Results revealed that the CFQ-BI is able to discriminate cases from non cases of eating psychopathology.

Moreover, the CFQ-BI ensures good convergent and divergent reliabilities. Indeed, it is positively correlated with the CFQ-28's fusion subscale (Gillanders et al., 2010). However, results indicated that these two measures are associated but assess distinct constructs. To explore the relationship between body image-related cognitive fusion and other variables, the present study examined as well the relation between the CFQ-BI and additional measures. The results confirmed, as expected, that CFQ-BI is positively linked to AAQ-II. Indeed, cognitive fusion is an important component of psychological inflexibility (e.g. Hayes et al., 1999). On the other hand, body image-related cognitive fusion was demonstrated to be negatively associated with mindfulness characteristics (MAAS), an association already expected since the entanglement with thoughts involves a lack of contact with the present moment. As likewise theoretically expected, body image-related cognitive fusion correlated negatively with decentering capabilities (as measured by the EQ). In this way, body image-related cognitive fusion

seems to be incompatible with the ability to take a nonjudgmental stance regarding thoughts and feelings and to accept them (Fresco, Segal, Buis, & Kennedy, 2007).

Body image-related cognitive fusion was also positively associated to symptoms of depression, anxiety and stress (DASS-21), which may suggest that these symptoms may arise not only from fusion with thoughts in general (Hayes, 2004), but may also be triggered by entanglement with one's body image-related thoughts. To note was also the positive and strong correlation between the CFQ-BI and eating psychopathology (EDE-Q). This association may suggest that people who get fused with thoughts about their body image tend to present more disordered eating behaviors and attitudes. Thus, this measure may be useful for future research that could investigate the role that cognitive fusion plays in eating psychopathology, namely through its impact on diminishing psychological flexibility.

These results ought to be interpreted on the light of a few limitations. Despite the fact that the present study sustains the validity of the CFQ-BI, other investigations should be performed in order to assure the adequacy of the measure's factorial structure in different samples. Furthermore, the presence of a diagnosed clinical sample could also have been pertinent, due to the potential significance of this new instrument in eating psychopathology research and clinical practice.

Conclusions

The CFQ-BI was confirmed to be a short, robust, and reliable measure of body image-related cognitive fusion. This measure seems to be an important contribution to research and clinical practice in the field of eating psychopathology. In fact, the CFQ-BI may be useful in the assessment of therapeutic changes over time, namely in

interventions targeting defusion techniques to develop patients' psychological flexibility towards a valued life.

References

- Barnes-Holmes, D., Hayes, S. C., & Dymond, S. (2001). Self and self-directed rules. In S. C. Hayes, D. Barnes-Holmes, & B. Roche (Eds.), *Relational frame theory. A post Skinnerian account of human language and cognition* (pp. 119-139). New York, NY: Plenum Press.
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., Waltz, T., & Zettle, R. (2011). Preliminary Psychometric Properties of the Acceptance and Action Questionnaire–II: A Revised Measure of Psychological Inflexibility and Experiential Avoidance. *Behavior Therapy, 42*, 676-688. doi: 10.1016/j.beth.2011.03.007
- Brown, T. (2006). *Confirmatory Factor Analysis for Applied Research*. New York: The Guilford Press.
- Brown, K. W., & Ryan, R. M. (2003). The Benefits of Being Present: Mindfulness and Its Role in Psychological Well-Being. *Journal of Personality and Social Psychology, 84*, 822-848.
- Byrne, B. M. (2010). Structural equation modeling with AMOS, 2nd edition. Multivariate application series. *Society of multivariate experimental psychology*. Routledge: Taylor and Francis Group, LLC.
- Carter, J. C., Stewart, D. A., & Fairburn, C. G. (2001). Eating Disorder Examination Questionnaire: Norms for young adolescent girls. *Behaviour Research and Therapy, 39*, 625–632.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*. Hillsdale: Erlbaum.
- DeCoster, J. (1998). *Overview of factor analysis*. Retrieved June, 28, 2012.

- Fairburn, C.G. (2008). *Cognitive behavior therapy and eating disorders*. New York: Guilford Press.
- Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: Interview or self-report questionnaire? *International Journal of Eating Disorders*, *16*, 363-370.
- Flaxman, P. E., Blackledge, J. T., & Bond, F. W. (2011). *Acceptance and commitment therapy: The CBT distinctive features series*. Hove: Routledge.
- Fresco, D. M., Segal, Z. V., Buis, T., & Kennedy, S. (2007). Relationship of post treatment decentering and cognitive reactivity following an emotion evocation challenge to relapse of major depressive disorder. *Journal of Consulting and Clinical Psychology*, *75*, 447-455.
- Fresco, D., Moore, M. van Dulmen, M., Segal, Z., Ma, H., Teasdale, J., & Williams, M. (2007). Initial psychometric properties of the Wider Experiences Questionnaire. *Behavior Therapy*, *38*, 234-46.
- Gillanders, D., Bolderston, H., Dempster, M., Bond, F., Campbell, L., Kerr, S., Tansey, L., Clarke, S., Remington, B., Flaxman, P., Deans, G., Bastien, J., Moore, D., & Hermann, B. (2010, June). *The Cognitive Fusion Questionnaire: Further developments in measuring cognitive fusion*. Conference presented at the Association for Contextual Behavioral Science, World Congress VIII, Reno, NV.
- Greco, L. A., Lambert, W., & Baer, R. A. (2008). Psychological inflexibility in childhood and adolescence: Development and evaluation of the Avoidance and Fusion Questionnaire for Youth. *Psychological Assessment*, *20*(2), 93-102.

- Gregório, S., & Pinto-Gouveia, J. (in press). Mindful attention and awareness: relationships with psychopathology and emotion regulation. *Spanish Journal of Psychology*, 16.
- Hayes, S. C. (2004). Acceptance and commitment therapy, relational frame theory, and the third wave of behavior therapy. *Behavior Therapy*, 35, 639-665.
- Hayes, S. C. (Ed.). (1989). *Rule-governed behavior: Cognition, contingencies, and instructional control*. New York: Plenum.
- Hayes, S. C., & Pankey, J. (2002). Experiential Avoidance, Cognitive Fusion and an ACT Approach to Anorexia Nervosa. *Cognitive and Behavioral Science*, 9, 243-247.
- Hayes, S. C., Luoma, J. B., Bond, F., Masuda, A., & Lillis, J. (2006). Acceptance and Commitment Therapy: Model, processes and outcomes. *Behaviour Research and Therapy*, 44, 1-25.
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy: An experiential approach to behavior change*. New York: Guilford Press.
- Hayes, S. C., Strosahl, K., Bunting, K., Twohig, M., & Wilson, K. G. (2004). What is Acceptance and Commitment Therapy? In S. C. Hayes, & K. D. Strosahl (Eds.), *A practical guide to Acceptance and Commitment Therapy* (pp. 3-29). New York: Springer Science.
- Hayes, S. C., Wilson, K. W., Gifford, E. V., Follette, V. M., & Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology*, 64(6), 1152-1168.

- Kashdan, T., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review, 30*(7), 865-878. DOI: 10.1016/j.cpr.2010.03.001.
- Kline, R. (1998). *Principles and Practice of Structural Equation Modelling*. New York: The Guilford Press.
- Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Sydney: Psychology Foundation.
- Luce, K. H., Crowther, J. H., & Pole, M. (2008). Eating Disorder Examination Questionnaire (EDE-Q): norms for undergraduate women. *International Journal of Eating Disorders, 41*(3) 273-176. doi: 10.1002/eat.20504.
- Luoma, J. B., & Hayes, S. C. (2003). Cognitive Defusion. In W. O'Donahue, J. E. Fisher, & S. C. Hayes (Eds.), *Empirically supported techniques of cognitive behavioral therapy: A step-by-step guide for clinicians*. New York: Wiley.
- Machado, P. P. P. (2007). Versão Portuguesa do EDE-Q, 5^a edição [Portuguese Version of the EDE-Q, 5th edition]. Unpublished manuscript. University of Minho.
- Merwin, R. M., & Wilson, K. G. (2009). Understanding and treating eating disorders: An ACT perspective. In J. T. Blackledge, J. Ciarrochi, & F. P. Deane (Eds.), *Acceptance and Commitment Therapy: Contemporary Theory, Research, and Practice* (pp. 87–117). Australia: Australian Academic Press.
- Merwin, R. M., Timko, C. A., Moskovich, A. A., Ingle, K. K., Bulik, C. M., & Zucker, N. L. (2011). Psychological Inflexibility and Symptom Expression in Anorexia Nervosa. *Eating Disorders, 19*, 62-82.
- Mond, J. M., Hay, P. J., Rodgers, B., & Owen, C. (2006). Eating disorder examination questionnaire (EDE-Q): Norms for young adult women. *Behaviour Research and Therapy, 44*, 53–62.

- Pais-Ribeiro, J., Honrado, A., & Leal, I. (2004). Contribuição para o estudo da adaptação portuguesa das escalas de Depressão Ansiedade Stress de Lovibond e Lovibond. *Psychologica*, 36, 235-246.
- Pinto-Gouveia, Gregório, S., Duarte, C., & Simões, L. (2012). Decentering: Psychometric properties of the Portuguese version of the experiences questionnaire (EQ). In R., Quevedo-Blasco & V., Quevedo-Blasco (Eds.), *Avances en psicología clínica* (pp. 445-449). Santander: Asociación Española de Psicología Conductual (AEPC).
URL: <http://www.ispcs.es/xcongreso/portugues/livroresumos.html>
- Pinto-Gouveia, J., Dinis, A., Gregório S. & Pinto, A. (2011). The Preliminary Psychometric Properties of the Portuguese Version of the Cognitive Fusion Questionnaire. Manuscript under preparation.
- Pinto-Gouveia, J., Gregório, S., Dinis, A., & Xavier, A. (2012). Experiential avoidance in clinical and nonclinical samples. *International Journal of Psychology and Psychological Therapy*, 12(2), 139–156.
- Tabachnick, B., & Fidell, L. (2007). *Using multivariate statistics* (5th Ed.). Boston: Pearson.

PAPER II

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The impact of body image-related cognitive fusion on eating psychopathology

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The impact of body image-related cognitive fusion on eating psychopathology

Abstract

Recent research has shown that cognitive fusion underlies psychological inflexibility and in consequence various forms of psychopathology. However, the role of cognitive fusion specifically related to body image on eating psychopathology remained to be examined. Therefore, the current study explores the impact of cognitive fusion concerning body image in the relation between acknowledged related risk factors and eating psychopathology.

Participants were 342 female students, aged 13 to 25 years old, who completed self-report instruments of cognitive fusion, body dissatisfaction, social comparison, mindfulness and psychopathology.

Results indicated that body image-related cognitive fusion was associated with higher body dissatisfaction, unfavorable social rank perceptions and also with increased eating psychopathology. Furthermore, the impact of body dissatisfaction and social comparison through physical appearance on eating psychopathology was shown to be partially mediated by body image-related cognitive fusion.

The results of the current study appear to offer significant insights for clinical work, highlighting the importance of cognitive defusion in the treatment of eating disorder.

Highlights

- Body image-related cognitive fusion (CF-BI) impacts on eating psychopathology.
- CF-BI partially mediates the effect of body dissatisfaction and disordered eating.

- CF-BI plays a key role in the link between social comparison and disordered eating.
- Results stress the importance of cognitive defusion in eating disorders' treatment.

Keywords: Body image-related cognitive fusion; eating psychopathology; body dissatisfaction; social comparison; mediation analysis.

1. Introduction

Acceptance and Commitment Therapy (ACT) is a third wave cognitive behavioral therapy that aims to enhance psychological flexibility, which refers to “the process of contacting the present moment fully as a conscious human being and persisting or changing behavior in the service of chosen values” (Hayes, Luoma, Bond, Masuda, & Lillis, 2006, p.9). Indeed, psychological flexibility is threatened when one engages in experiential avoidance, i.e., attempts to avoid unpleasant inner events (Hayes, Strosahl, & Wilson, 1999; Hayes et al. 2006).

Experiential avoidance is commonly present in humans, due to the fact that our mind evolved to keep us from harm, a characteristic still frequently reinforced by the Western culture through the “feel good” messages (Hayes, Strosahl, Bunting, Twohig, & Wilson, 2004). However, the reluctance to contact with negative private events, such as painful thoughts and emotions, has been pointed as critical in the development and maintenance of psychopathology (Hayes et al., 1999). This is due to the restriction experiential avoidance inflicts on the responses one has to such negative events. In fact, it tends to amplify pain, entangling the individual further in the negative events and transforming them into something traumatic (Hayes & Smith, 2005). Interrelated with this entanglement is another key process in ACT which underlies experiential avoidance, cognitive fusion (Hayes, 2004; Hayes & Smith, 2005; Hayes et al. 1999).

Cognitive fusion can be described as the degree to which an individual interacts with events considering only their verbal functions rather than their direct ones (Hayes et al., 2004). Thus, it regards a disproportionate or inappropriate behavioral regulation by verbal processes, such as rules and derived relational networks (Hayes et al., 1999). This process results in a self-identification with one’s thoughts and an inability in considering them a part of the inner experience (rather than statements of facts), and

consequently taking objective attitudes towards them (Eifert et al., 2009). Moreover, as verbal constructions of the self, the past and the future achieve more control over behaviors through inflexible verbal networks at the expense of environmental contingences, values and goals become less important and one can actually behave against them (Hayes et al. 1999; Hayes et al., 2006). Therefore, ACT's overall therapeutic goal is to promote cognitive defusion, the process that facilitates the acceptance of inner events and the capability of no longer treating them as factual occurrences. These strategies are intended to construct a healthy skepticism about one's thoughts, enabling a sense of self as context and a better contact with the present moment (Hayes, 1989) and the individual's values (Fletcher & Hayes, 2005). That is, instead of aiming to change the content of one's thoughts, ACT attempts to modify how one interacts with them (Hayes et al., 2006).

Eating disorders have been considered an illness of psychological inflexibility, i.e. the incapacity of behaving flexibly while dealing with negative sensations, thoughts and feelings (e.g., Merwin et al. 2011). In this way, research has suggested that ACT is effective in these disorders, by promoting an augmentation of emotional awareness and acceptance and may even achieve better results than regular behavioral interventions (e.g. Baer, Fisher, & Huss, 2005; Butryn et al., 2013; Juarascio, Forman, & Herbert, 2010; Kristeller, Baer, & Quillian-Wolever, 2006; Sandoz, Wilson, & DuFrene, 2011).

Regarding cognitive fusion, even though the studies about this specific matter are scarce, its role has been highlighted in the comprehension of the development and maintenance of body image and eating psychopathology (e.g. Hayes & Pankey, 2002; Merwin & Wilson, 2009; Ferreira, Trindade, Duarte, & Pinto-Gouveia, 2013). Indeed, Hayes and Pankey (2002) pointed that anorectic patients frequently become entangled

with thoughts related to their body image, resulting in an increment in suffering which in turn is regulated through the eating disorder.

There are several studies that have demonstrated that body dissatisfaction represents a nuclear risk factor to the development and maintenance of eating psychopathology (e.g. Stice, Marti, & Durant, 2011). Moreover, unfavorable social comparisons have also been associated with the over-evaluation of thinness and disordered eating behaviors (e.g., Troop, Allen, Treasure, & Katzman, 2003). Specifically, it has been suggested that eating psychopathology symptoms (i.e. the control over eating, weight and body image) might be conceptualized as a strategy to cope with a sense of inferiority and inadequacy derived from one's physical appearance (Ferreira, Pinto-Gouveia, & Duarte, 2013; Pinto-Gouveia, Ferreira, & Duarte, 2012). This sense of inferiority, as well as normative body dissatisfaction, seem to be related to the importance given to physical appearance by western cultures as a highly valued dimension for the promotion of women's social status and acceptance by their peers (Ferreira, Pinto-Gouveia et al., 2013).

Although almost all women feel the need to compare themselves physically with other women, which at some point triggers feelings of body dissatisfaction and ranking disadvantage, the ones that develop eating psychopathology are a minority. This seems to imply that even though body dissatisfaction and social comparisons play an important role on eating psychopathology, other processes may be involved. In this study has been hypothesized that eating psychopathology is linked to fusion with thoughts relating to body dissatisfaction and social disadvantage. That is, women that get fused and tangled with these kind of thoughts, treating them as factual, have greater tendencies of developing disordered mechanisms (e.g. food restriction) in order to "correct" their physical appearance. Therefore, the nuclear aim of the present study is to test whether

cognitive fusion related to body image emerges as a mediator on the relationship of body dissatisfaction and social comparison through physical appearance towards eating psychopathology.

2. Materials and methods

2.1 Measures

Demographic Data. Age, educational level, current weight and current height of the participants were asked before the completion of the scales.

Body Mass Index (BMI). The participant's BMI was assessed by dividing weight (in kg) by height in meters squared (i.e., Wt/Ht^2).

Figure Rating Scale (FRS; Thompson & Altabe, 1991; Ferreira, 2003). The FRS evaluates body image dissatisfaction and consists of a series of nine silhouettes of different dimensions, in a gradually increasing fashion in accordance to its number (1: thinner; 9: larger). The participants are requested to select the image that best reflects their present and ideal body image. Body dissatisfaction (BD) was calculated through the discrepancy between the two silhouettes. The questionnaire has good temporal reliability, as well as good convergent and divergent validities (Thompson & Altabe, 1991).

Social Comparison Rating Scale (SCRS; Allan & Gilbert, 1995; Gato, 2003). It is a measure composed of 11 items which evaluates one's self-perception of social rank. It uses a semantic differential methodology, presenting an incomplete sentence followed by bipolar constructs associated with attractiveness, social status and competence (e.g., Inferior/Superior, Rejected/Accepted). Participants are asked to compare themselves in relation to others according to each construct, on a 10-point Likert scale. The SCRS

presents negative correlations with psychopathology scales, as well as a good internal consistency, with Cronbach's alpha values between .88 and .96 on clinical populations and between .91 and .90 on a sample of students (Allan & Gilbert, 1995).

Social Comparison through Physical Appearance Scale (SCPAS; Ferreira, Pinto-Gouveia et al., 2013). The SCPAS assesses the subjective perception based on physical appearance of women's social standing and group fit. The participants are instructed to select a number, using a Likert scale ranging from 1 to 10, which best translates the way they feel in relation to other people. In the first part, the participants are asked to compare themselves with friends, colleagues and other same-sex acquaintances, and in the second asked to compare themselves with models, actresses or other celebrities. The scale was shown to have a high internal consistency in the original study on both the first ($\alpha=.94$) and the second ($\alpha=.96$) parts of the scale.

Cognitive Fusion Questionnaire-28 (CFQ-28; Gillanders et al., 2010; Pinto-Gouveia, Dinis, Gregório, & Pinto, 2011). It is a measure of cognitive fusion and defusion, which evaluates these processes in a broad way. It consists of 28 items, each of them taking the form of a statement alluding to literality, engagement and entanglement with thoughts. The participant is asked to evaluate each of those statements according to a 7-point Likert scale. The CFQ-28's Cronbach's alpha values were good both in the original study, as well as in the Portuguese validation study (.94 on the fusion component; .77 on the defusion component; .92 on the overall scale).

Cognitive Fusion Questionnaire: Body Image (CFQ-BI; Ferreira, Trindade, et al., 2013). The CFQ-BI is a 15-item self-report scale that was developed based on the CFQ-28's items so as to evaluate body image-related cognitive fusion. The participant is to evaluate the truthfulness of several statements, using a 7-point Likert scale. The

CFQ-BI showed good internal consistency ($\alpha = .97$), and good temporal, discriminant, convergent and divergent validities in the original study.

Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003; Gregório & Pinto-Gouveia, in press). The MAAS is a 15-item instrument which evaluates mindfulness dispositional characteristics (i.e. the capability to focus on events that are currently occurring). This scale consists of statements relating to everyday experiences, which the participant must grade according to their frequency using a 6-point Likert scale (1-Almost always; 6-Almost never). The MAAS was shown to hold strong psychometric qualities, having a Cronbach's alpha value of .84 in the original study and .90 in the Portuguese validation study.

Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994; Machado, 2007). The EDE-Q is a self-report measure developed through the Eating Disorder Examination interview that assesses attitudes and behavioral traits of eating disorders, holding four subscales (restraint, eating concern, shape concern and weight concern). It has demonstrated good reliability and the capacity to differentiate cases from non-cases of eating disorders (see also Fairburn, 2008).

The Cronbach's alphas for all of the study variables are reported in Table 1.

2.2 Participants

The sample of this study is part of a wider research that is being conducted to investigate the contribution of emotional regulation processes for the development and maintenance of eating disorders. Participants included 342 female college students with ages ranging from 13 to 25 years old. The participants presented a mean age of 17.76 years ($SD = 2.63$) and 11.40 ($SD = 2.46$) of years of education. The participants' BMI mean was 21.14 ($SD = 2.80$), corresponding to normal weight values (WHO, 1995).

2.3 Procedures

This research protocol was reviewed and approved by the Ethics Committee of the educational institutions enrolled in the study. Participants and their parents (if the subjects were minor) gave their written informed consent after being assured of the confidentiality and voluntary character of their collaboration, as well as fully informed about the aims and procedures of the collected data.

2.3.1 Data analysis

Data analyses were performed using IBM SPSS Statistics 20 (IBM Corp, 2011).

Descriptive statistics were used to explore the sample characteristics in study's variables.

Product-moment Pearson correlation analyses were performed to explore the relationship between study variables (Cohen, Cohen, West, & Aiken, 2003).

In order to analyze the impact of the mediator on the relationship between the predictor and the dependent variable it was performed two mediation analyses using linear regression models in accordance to the four-step analysis suggested by Baron and Kenny (1986). In the mediation analyses, body image-related cognitive fusion was specified to be the mediator on the association between body image dissatisfaction (Model 1) and social comparison based on physical appearance (Model 2) with peers (predictor variables) and eating psychopathology (dependent variable). In addition, a Sobel Test was conducted to determine the significance of the indirect effect of the predictor variable on the outcome, through its effects on the mediator.

3. Results

3.1 Preliminary analyses

Analysis of *Skewness* and *Kurtosis*' values, and visual inspection of the distributions confirmed the assumption of normality (Kline, 1998; Tabachnick & Fidell, 2007). Preliminary data analyses indicated that this data was suitable for regression analyses following the assumptions of normality, linearity, homoscedasticity, independence of errors and multicollinearity (Field, 2004).

3.2 Descriptive analyses

Descriptive statistics regarding the studied variables for the total sample ($N = 342$) are presented in Table 1.

3.3 Correlations

Results, presented in Table 1, demonstrated that the measures of cognitive fusion, CFQ-BI and CFQ_F, held positive (moderated to strong) correlations between each other and with higher levels of eating psychopathology (EDE-Q), as well as with body dissatisfaction (BD; particularly the CFQ-BI). On the other hand, the CFQ-BI and the CFQ_F had negative correlations with the mindfulness measure (MAAS) and with general perceptions of social rank (SCRS) and those based on one's physical appearance (SCPAS). CFQ-BI in particular correlated positively with Body Mass Index (BMI).

Regarding BD, significant and negative associations were found with SCRS, SCPAS and MAAS, although the magnitude of the last correlation was very low. Also, results revealed that BD was positively and moderately associated with EDE-Q and BMI.

Moreover, SCRS and SCPAS showed to have positive correlations with each other and with MAAS, and in addition all of these variables were negatively associated

with the EDE-Q's global score. Furthermore, SCPAS was also inversely linked to BMI, which in turn held a positive correlation with EDE-Q.

Table 1

Cronbach's alphas, Means (M), Standard Deviations (SD), and Intercorrelation scores on self-report measures (N = 342)

Measures	α	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. BMI	-	21.54	8.68	1							
2. BD	-	0.56	0.94	.57***	1						
3. SCRS	.89	65.23	13.72	-.09	-	1					
					.23***						
4. SCPAS (peers)	.95	61.08	16.34	-	-	.82***	1				
				.20***	.32***						
5. SCPAS (models)	.96	55.25	18.06	-.17**	-	.67***	.78***	1			
					.37***						
6. CFQ_F	.96	60.36	23.73	.07	.23***	-	-	-	1		
						.37***	.35***	.36***			
7. CFQ-BI	.97	36.35	21.37	.22***	.42***	-	-	-	.69***	1	
						.45***	.53***	.53***			
8. MAAS	.90	60.78	13.55	.05	-.12*	.22***	.21***	.24***	-	-	1
									.36***	.33***	
9. EDE-Q	.96	1.45	1.33	.39***	.59***	-	-	-	.47***	.76***	-.23***
						.36***	.48***	.48***			

Note. BMI = Body Mass Index; BD = Body Dissatisfaction (by the FRS); SCRS = Social Comparison Rating Scale; SCPAS = Social Comparison through Physical Appearance (with peers and models); CFQ_F = Cognitive Fusion Questionnaire (Fusion Dimension); CFQ_BI = Cognitive Fusion Questionnaire – Body Image; MAAS = Mindful Attention and Awareness Scale; EDE-Q = Eating Disorder Examination – Questionnaire (global score).

* $p < .050$. ** $p < .010$. *** $p < .001$.

3.4 Mediation analyses

To further comprehend the contribution of the body image-related cognitive fusion in the eating disorders' conceptualization, two mediation analyses were performed. It was explored the mediation role of body image-related cognitive fusion

(CFQ-BI) in the relationship between body dissatisfaction (BD) and eating psychopathology (EDE-Q), and in the relationship of social comparison through physical appearance (SCPAS) and eating psychopathology (EDE-Q).

3.4.1 Body image-related cognitive fusion as a mediator between body dissatisfaction and eating psychopathology

A regression analysis was performed having BD as the independent variable and EDE-Q as the dependent variable. The model showed significance [$F_{(1,328)} = 173.65, p < .001$], explaining 34.6% of eating psychopathology ($\beta = .59, p < .001$). Additionally, we examined whether BD predicted CFQ-BI. This model was also significant [$F_{(1,329)} = 68.99, p < .001$], accounting for 17.3% of the variance in body image-related cognitive fusion, with a $\beta = .42 (p < .001)$. Lastly, a regression analysis was performed to determine whether the proposed mediator significantly predicted eating psychopathology. In order to do so, BD and CFB-BI were treated as the independent variables and EDE-Q as the dependent variable. The final model showed significance [$F_{(2,327)} = 326.40, p < .001$], explaining 67% of the variance in eating psychopathology. Results also show that, when the mediator is added in the model, BD's β is reduced to .33 ($p < .001$). Additionally, the *Sobel test* was significant ($z = 13.13, p < .001$), confirming that cognitive fusion related to body image partially mediates the effect of body image dissatisfaction on eating psychopathology severity (see Figure 1).

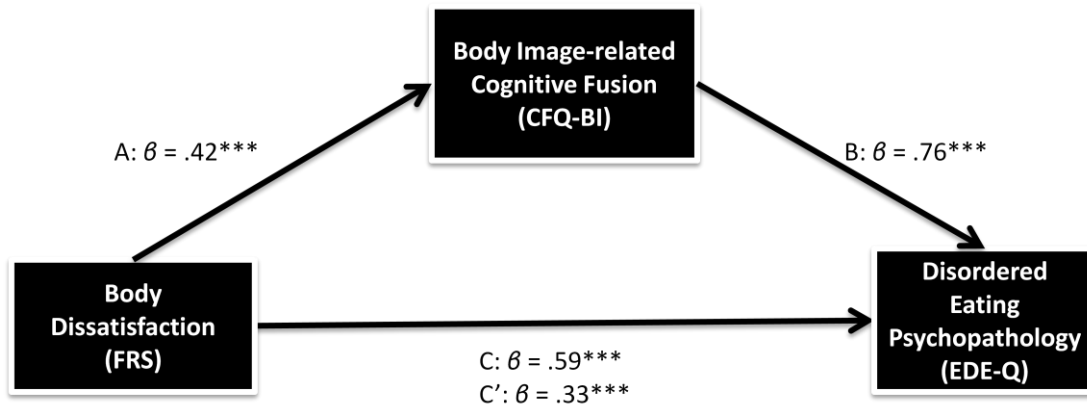


Figure 1. The relationship between Body Dissatisfaction (FRS) and Disordered Eating Psychopathology (EDE-Q) mediated by Body Image-related Cognitive Fusion (CFQ-BI). A = relation between the independent variable and mediator, B = the relation between mediator and dependent variable, C = the direct effect of the independent variable on the dependent variable, C' = the indirect effect of the independent variable on the dependent variable controlling for the mediator;

*** $p < .001$

3.4.2 Body image-related cognitive fusion as a mediator between social comparison based on physical appearance and eating psychopathology

To explore the meditational function of body image's cognitive fusion (CFQ-BI) on the relationship between social rank based on physical appearance (SCPAS) and eating psychopathology (EDE-Q), the same procedure was conducted.

In first step, having SCPAS as the independent variable and EDE-Q as the dependent variable, a significant model was obtained [$F_{(1,328)} = 95.91, p < .001$], accounting for 23% of EDE-Q ($\beta = -.48, p < .001$). In a second regression analysis, using SCPAS as the independent variable and CFQ-BI as the dependent variable, the model was also significant [$R^2 = .28, F_{(1,329)} = 127.33, p < .001$] with $\beta = -.53 (p < .001)$. Finally, in order to determine whether the proposed mediator significantly predicted eating psychopathology we entered SCPAS and CFQ-BI as the independent variables,

and EDE-Q as the dependent variable. This analysis showed that the final model was statistically significant [$F_{(2,327)} = 230.40, p < .001$], explaining 59% of the variance in eating psychopathology. These results indicated that when the mediator is added in the model, the predictor β is reduced to $-.10$ ($p = .017$). The *Sobel test* was significant as well ($z = -8.12, p < .001$), which indicates that cognitive fusion related to body image partially mediates the effect of social comparison through physical appearance on eating psychopathology (Figure 2).

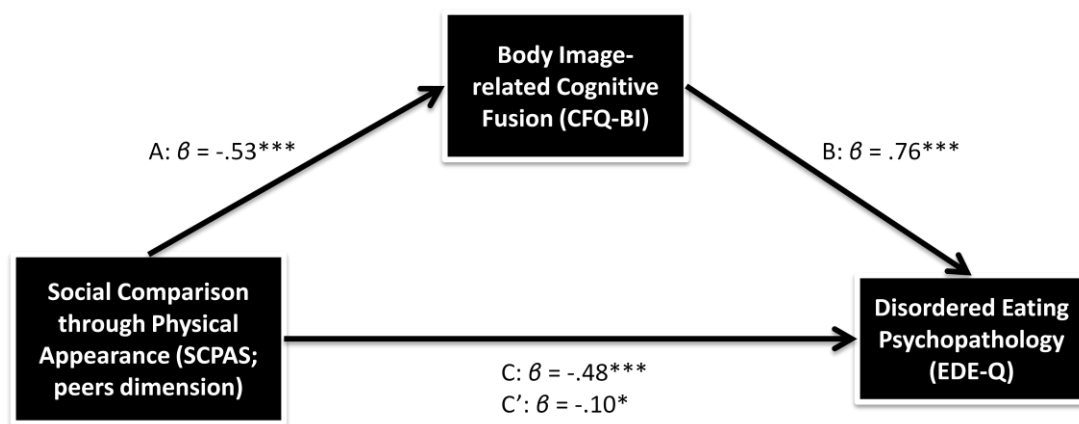


Figure 2. The relationship between Social Comparison through Physical Appearance (SCPAS) and Disordered Eating Psychopathology (EDE-Q) mediated by Body Image-related Cognitive Fusion (CFQ-BI). A = relation between the independent variable and mediator, B = the relation between mediator and dependent variable, C = the direct effect of the independent variable on the dependent variable, C' = the indirect effect of the independent variable on the dependent variable controlling for the mediator;

* $p < 0.05$, ** $p < .01$, *** $p < .001$.

4. Discussion

Cognitive fusion refers to the propensity of interacting with events while only taking into account the verbal component of the cognitive products they generate (Hayes et al., 2004). The phenomenon of cognitive fusion occurs when one becomes

entangled or fused with the literal context of their thoughts, considering them the true interpretations of events, to the extent that, to himself, he becomes indistinguishable from his own internal experience (Hayes et al. 1999; Hayes et al., 2004). Research has consistently shown that this process involves psychological inflexibility and consequently various forms of psychopathology (e.g., Merwin et al., 2011). Nevertheless, the role of cognitive fusion in a specific domain of body image and its impact on eating psychopathology remained to be investigated. Thus, the current study intended to explore the potential relationship between body image-related cognitive fusion and nuclear aspects previously proved to be related to eating psychopathology, such as body dissatisfaction and social comparison through physical appearance (e.g. Pinto-Gouveia et al., 2012; Stice et al., 2011). The mediator effect of body image-related cognitive fusion on the relationship between these two dimensions and eating psychopathology was also examined.

Results showed that body image-related cognitive fusion was significantly associated with all of the study variables. On the other hand, regarding the relationship between the two measures of cognitive fusion the results showed a positive association between the CFQ-28 and the CFQ-BI as expected (Ferreira, Trindade, et al., 2013). Furthermore, these dimensions emerged as negatively correlated to the mindfulness measure (MAAS). This finding is consistent with previous studies and allows us to confirm that cognitive fusion is inversely linked to the capability of being conscious of the present moment, as individuals fused with their cognitions fail to observe the content of their thoughts, acting automatically to certain events (Hayes, 1989). Indeed, the essence of this process leads one to lose contact with the present not just in social and physical terms but also psychologically (Hayes et al., 1999).

Moreover, cognitive fusion concerning body image was shown to be positively associated with the BMI, which is an interesting finding suggesting that women that have higher BMI values tend to get more tangled with cognitions involving their body image. Future research should further explore the role of experiential avoidance in this relation and analyze it with more detail. Additionally, cognitive fusion concerning body image was shown to be linked to unfavorable social rank perceptions not only when the social ranking and group fitting are based in physical appearance, but also in a general dimension (SCPAS and SCRS). Specifically in relation to body image and eating-related symptoms, this study revealed that cognitive fusion regarding body image is positively and moderately associated with body image dissatisfaction and with the global measure of eating psychopathology. These results confirm our hypothesis and add to the existing research showing that the women who are more fused and tangled with thoughts about their body image, treating them as factual, tend to present more unfavorable social comparisons, experience higher body dissatisfaction and demonstrate a higher tendency to engage in disordered eating.

Finally, results from the mediation analyses indicated that body image-related cognitive fusion partially mediates the relationship of body dissatisfaction and social comparison through physical appearance towards the severity of eating psychopathology. These results suggest that the degree to which these factors have an impact on eating psychopathology partially depends upon on how one is fused with the thoughts about his body image. These results expand preceding research, highlighting how cognitive fusion measured in general terms is associated with disordered eating (Hayes & Pankey, 2002; Merwin & Wilson, 2009), as well as corroborating and complementing the research concerning the role of body image dissatisfaction and social comparison through physical appearance in the vulnerability to these forms of

psychopathology (e.g. Pinto-Gouveia et al., 2012; Stice et al., 2011). In fact, these results show that neither body dissatisfaction nor unfavourable social comparison based on physical appearance necessarily underlie engagement in disordered eating, and that cognitive fusion plays an important role in this association. These are interesting findings, as they offer new insights on how the aforementioned nuclear risk factors operate in eating psychopathology and highlight the important role of cognitive fusion in those interactions.

The results of the current study appear to offer significant and novel data for clinical work on eating disorders, presenting new empirical support to the interventions focused in the development of cognitive defusion, as a process that facilitates the ability of noticing the thinking process as it happens rather than only noticing its products and the acceptance of inner events (Hayes & Smith, 2005).

These new findings cannot be considered without taking into account some limitations. Firstly, the amount of variables included in the study was intentionally limited in order to obtain a preliminary comprehension of body image-related cognitive fusion's impact on eating psychopathology. Nonetheless, the complex nature of eating disorders presupposes that there are other factors which account for the development and maintenance of eating psychopathology. Additionally, the absence of a clinical sample may have contributed to the finding of no more than partial mediations in this study. Therefore, this investigation should be seen as preliminary and these results ought to be interpreted with prudence. Finally, the main limitation of the present study was the reliance on a cross-sectional design which did not allow for casual inferences to be derived. In the future, longitudinal research should be performed with eating disorders treatment samples in order confirm the directionality and predictability of the study variables.

5. Conclusions

This is the first investigation which examines the impact of body image-related cognitive fusion on eating psychopathology and that suggests this new construct as being useful to the conceptualization of body image and eating problems. Furthermore, we believe this study offers significant new data that may be a particularly pertinent venue for future research regarding the efficacy of cognitive defusion in the alleviation of body dissatisfaction and unfavourable rank perceptions based on physical appearance's effects on eating psychopathology.

6. References

- Allan, S., & Gilbert, P. (1995). A social comparison scale: Psychometric properties and relationship to psychopathology. *Personality and Individual Differences, 19* (3), 293-299. doi:10.1016/0191-8869(95)00086-L.
- Baer, R. A., Fischer, S., & Huss, D. B. (2005). Mindfulness and acceptance in the treatment of disordered eating. *Journal of Rational-Emotive & Cognitive-Behavior Therapy, 23*(4), 281-299.
- Baron, M., & Kenny, D. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173–1182. doi:10.1037/0022-3514.51.6.1173.
- Brown. K. W., & Ryan, R. M. (2003). The Benefits of Being Present: Mindfulness and Its Role in Psychological Well-Being. *Journal of Personality and Social Psychology, 84*, 822-848.
- Butryn, M. L., Juarascio, A., Shaw, J., Kerrigan, S. G., Clark, V., O'Planick, A., Forman E. M. (2013). Mindfulness and its relationship with eating disorders symptomatology in women receiving residential treatment Mindfulness and its relationship with eating disorders symptomatology in women receiving residential treatment. *Eating Behaviors, 14*, 13-6.
- Cohen, J., Cohen, P. West, S. & Aiken, L. (2003). *Applied multiple regression/correlation analysis for the behavioural sciences* (3th ed.). New Jersey: Lawrence Erlbaum Associates.
- Eifert, G. H., Forsyth, J. P., Arch, J., Espejo, E., Keller, M., & Langer, D. (2009). Acceptance and commitment therapy for anxiety disorders: Three case studies

- exemplifying a unified treatment protocol. *Cognitive Behavioral Practice*, 16, 368-385.
- Fairburn, C.G. (2008). *Cognitive behavior therapy and eating disorders*. New York: Guilford Press.
- Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: Interview or self-report questionnaire? *International Journal of Eating Disorders*, 16, 363-370.
- Ferreira, C. (2003). *Anorexia Nervosa: A expressão visível do invisível. Contributos para a avaliação de atitudes e comportamentos em relação ao peso e à imagem corporal [Anorexia Nervosa: The visible expression of the invisible. Contributions for the assessment of attitudes and behaviors in relation to weight and body image]*. (Unpublished master's thesis). University of Coimbra, Coimbra.
- Ferreira, C., Pinto-Gouveia, J., & Duarte, C. (2013). Physical appearance as a measure of social ranking: The role of a new scale to understand the relationship between weight and dieting. *Clinical Psychology & Psychotherapy*, 20, 55–66. doi:10.1002/cpp.769.
- Ferreira, C., Trindade, I. A., Duarte, C., & Pinto-Gouveia, J. (2013). *Getting entangled with body image: Development and validation of a new measure*. Manuscript submitted for publication.
- Field, A. (2004). *Discovering statistics using SPSS* (3th ed.). London: Sage Publications.
- Fletcher, L., & Hayes, S. C. (2005). Relational Frame Theory, Acceptance and Commitment Therapy, and a functional analytic definition of mindfulness. *Journal of Rational-Emotive and Cognitive-Behavioral Therapy*, 23(4), 315-336.

- Gato, J. (2003). *Evolução e ansiedade social [Evolution and social anxiety]*. (Unpublished master's thesis). University of Coimbra, Coimbra.
- Gillanders, D., Bolderston, H., Dempster, M., Bond, F., Campbell, L., Kerr, S., Tansey, L., Clarke, S., Remington, B., Flaxman, P., Deans, G., Bastien, J., Moore, D., & Hermann, B. (2010, June). *The Cognitive Fusion Questionnaire: Further developments in measuring cognitive fusion*. Conference presented at the Association for Contextual Behavioral Science, World Congress VIII, Reno, NV.
- Gregório, S., & Pinto-Gouveia, J. (in press). Mindful attention and awareness: relationships with psychopathology and emotion regulation. *Spanish Journal of Psychology*, 16.
- Hayes, S. C. (Ed.). (1989). *Rule-governed behavior: Cognition, contingencies, and instructional control*. New York: Plenum.
- Hayes, S. C. (2004). Acceptance and commitment therapy, relational frame theory, and the third wave of behavior therapy. *Behavior Therapy*, 35, 639-665.
- Hayes, S. C., & Pankey, J. (2002). Experiential Avoidance, Cognitive Fusion and an ACT Approach to Anorexia Nervosa. *Cognitive and Behavioral Science*, 9, 243-247.
- Hayes, S. C., Luoma, J. B., Bond, F., Masuda, A., & Lillis, J. (2006). Acceptance and Commitment Therapy: Model, processes and outcomes. *Behaviour Research and Therapy*, 44, 1-25.
- Hayes, S. C., & Smith, S. (2005). *Get Out of Your Mind and Into Your Life: The New Acceptance and Commitment Therapy*. New Harbinger Publications. ISBN 1-57224-425-9.

- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy: An experiential approach to behavior change*. New York: Guilford Press.
- Hayes, S. C., Strosahl, K., Bunting, K., Twohig, M., & Wilson, K. G. (2004). What is Acceptance and Commitment Therapy? In S. C. Hayes, & K. D. Strosahl (Eds.), *A practical guide to Acceptance and Commitment Therapy* (pp. 3-29). New York: Springer Science.
- Juarascio, A. S., Forman, E. M., & Herbert, J. D. (2010). Acceptance and commitment therapy versus cognitive therapy for the treatment of comorbid eating pathology. *Behavior Modification, 34*(2), 175-190.
- Kline, R. (1998). *Principles and Practice of Structural Equation Modelling*. New York: The Guilford Press.
- Kristeller, J. L., Baer, R. A., & Quillian-Wolever, R. (2006). Mindfulness-based approaches to eating disorder. In: Baer RA, editor. *Mindfulness and acceptance-based interventions: Conceptualization, application and empirical support*. San Diego: Elsevier.
- Machado, P. P. P. (2007). Versão Portuguesa do EDE-Q, 5ª edição [Portuguese Version of the EDE-Q, 5th edition]. Unpublished manuscript. University of Minho.
- Merwin, R. M., & Wilson, K. G. (2009). Understanding and treating eating disorders: An ACT perspective. In J. T. Blackledge, J. Ciarrochi, & F. P. Deane (Eds.), *Acceptance and Commitment Therapy: Contemporary Theory, Research, and Practice* (pp. 87–117). Australia: Australian Academic Press.
- Merwin, R. M., Timko, C. A., Moskovich, A. A., Ingle, K. K., Bulik, C. M., & Zucker, N. L. (2011). Psychological Inflexibility and Symptom Expression in Anorexia Nervosa. *Eating Disorders, 19*, 62-82.

- Pinto-Gouveia, J., Dinis, A., Gregório S. & Pinto, A. (2011). *The Preliminary Psychometric Properties of the Portuguese Version of the Cognitive Fusion Questionnaire*. Manuscript in preparation.
- Pinto-Gouveia, J., Ferreira, C., & Duarte, C. (2012). Thinness in the pursuit for social safeness: An integrative model of social rank mentality to explain eating psychopathology. *Clinical Psychology and Psychotherapy*. doi: 10.1002/cpp.1820
- Sandoz, E., Wilson, K. G., & DuFrene, T. (2011). *Acceptance and Commitment Therapy for Eating Disorders: A Process-Focused Guide to Treating Anorexia and Bulimia*. New Harbinger Publications.
- Stice, E., Marti, C. N., & Durant, S. (2011) Risk factors for onset of eating disorders: Evidence of multiple risk pathways from an 8-year prospective study. *Behavior Research and Therapy*, 10, 622–627. doi: 10.1016/j.brat.2011.06.009.
- Tabachnick, G. G., & Fidell, L. S. (2007). *Experimental Designs Using ANOVA*. Belmont, CA: Duxbury.
- Thompson, J. K., & Altabe, M. N. (1991). Psychometric qualities of the figure rating scale. *International Journal of Eating Disorders*, 10, 615-619. doi: 10.1002/1098-108X(199109) 10:5.
- Troop, N. A., Allan, S., Treasure, J. L. & Katzman, M. (2003). Social comparison and submissive behaviour in eating disorders. *Psychology and Psychotherapy: Theory, Research and Practice*, 76, 237-249.
- WHO (1995). Physical status: the use and interpretation of anthropometry. Reports of a WHO Expert Committee. *WHO Technical Report series 854*. Geneva: World Health Organization.

APPENDICES

APPENDIX A

Submission information of Paper I

- ❖ Draft of submission on *Behavior Therapy*
- ❖ Guide for authors of *Behavior Therapy*

Elsevier Editorial System(tm) for Behavior Therapy

Manuscript Draft

Manuscript Number:

Title: Getting entangled with body image: Development and validation of a new measure

Article Type: Research paper

Keywords: Body image-related cognitive fusion; cognitive fusion; eating psychopathology; assessment; Confirmatory Factor Analysis.

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Abstract: Several studies have highlighted the role of cognitive fusion on human suffering and on a wide range of psychopathological conditions. Namely, this process has been regarded as a nuclear aspect in eating disorders. Nevertheless, this set of studies has used broad measures of cognitive fusion, and a measure that specifically concerned body image was still to be created. The present study aimed, therefore, at developing and validating such a measure, the Cognitive Fusion Questionnaire -Body Image (CFQ-BI). The current study was conducted using different samples of both genders, collected in the general and student populations. The dimensionality of the CFQ-BI was tested through Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The scale's internal reliability, construct validity, test-retest reliability and discriminant validity were also analyzed. The CFQ-BI's final structure was shown to be one-dimensional and to comprise 15-items that assess body image-related cognitive fusion. This final structure explained a total of 70% of the variance. The adequacy of the questionnaire was corroborated through CFAs which revealed that CFQ-BI presents good global and local adjustment values and goodness-of-fit indices. Results also showed that the CFQBI holds a very good internal consistency ($\alpha = .97$) and convergent, divergent, temporal and discriminant reliabilities. The CFQ-BI was thus established as a short, robust and reliable measure of body image-related cognitive fusion. Therefore, this new measure may correspond to a significant contribution to research and clinical practice in the field of body image and eating-related difficulties.

BEHAVIOR THERAPY

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APPENDIX B

Submission information of Paper II

- ❖ Draft of submission on *Eating Behaviors*
- ❖ Guide for authors of *Eating Behaviors*

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Manuscript Draft

Manuscript Number:

Title: The impact of body image-related cognitive fusion on eating psychopathology

Article Type: Full Length Article

Keywords: Body image-related cognitive fusion; eating psychopathology; body dissatisfaction; social comparison; mediation analysis.

Corresponding Author: Ms. Inês A. Trindade, B.S.

Corresponding Author's Institution: Faculty of Psychology and Educational Sciences,
University of Coimbra

First Author: Inês A. Trindade, B.S.

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EATING BEHAVIORS

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AUTHOR INFORMATION PACK

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- **Description**
- **Audience**
- **Impact Factor**
- **Abstracting and Indexing**
- **Editorial Board**
- **Guide for Authors**

ISSN: 1471-0153

DESCRIPTION

Eating Behaviors is an international peer-reviewed scientific journal publishing human research on the etiology, prevention, and treatment of obesity, binge eating, and eating disorders in adults and children. Studies related to the promotion of healthy eating patterns to treat or prevent medical conditions (e.g., hypertension, diabetes mellitus, cancer) are also acceptable. Two types of manuscripts are encouraged: (1) Descriptive studies establishing functional relationships between eating behaviors and social, cognitive, environmental, attitudinal, emotional or biochemical factors; (2) Clinical outcome research evaluating the efficacy of prevention or treatment protocols. While theoretical orientations are diverse, the emphasis of the journal is primarily empirical. That is, sound experimental design combined with valid, reliable assessment and evaluation procedures are a requisite for acceptance. Uncontrolled clinical demonstrations and case studies are not accepted for publication. A limited number of reviews are published.

AUDIENCE

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