Accepted Manuscript

Title: Turning eating psychopathology risk factors into action: The pervasive effect of body image-related cognitive fusion

Author: Cláudia Ferreira, Lara Palmeira, Inês A. Trindade

PII: S0195-6663(14)00227-X

DOI: http://dx.doi.org/doi:10.1016/j.appet.2014.05.019

Reference: APPET 2147

To appear in: Appetite

Received date: 29-5-2013 Revised date: 15-5-2014 Accepted date: 18-5-2014



Please cite this article as: Cláudia Ferreira, Lara Palmeira, Inês A. Trindade, Turning eating psychopathology risk factors into action: The pervasive effect of body image-related cognitive fusion, *Appetite* (2014), http://dx.doi.org/doi:10.1016/j.appet.2014.05.019.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

1	RUNNING HEAD: Cognitive fusion and eating psychopathology
2	
3	Turning eating psychopathology risk factors into action: The pervasive effect of
4	body image-related cognitive fusion
5	
6	Cláudia Ferreira, PhD.*
7	Lara Palmeira, MSc, PhD. Student*1
8	Inês A. Trindade, MSc*
9	
10	
11	Affiliation:
12	* Cognitive and Behavioural Research Centre, University of Coimbra
13	
14	¹ Correspondence concerning this manuscript should be addressed to:
15	Lara Palmeira
16	CINEICC, Faculdade de Psicologia e Ciências da Educação, Universidade de Coimbra
17	Rua do Colégio Novo, Apartado 6153
18	3001-802 Coimbra, Portugal
19	Telefone: (+351) 239 851450
20	Fax: (+351) 239851462
21	Email: larapalmeira@gmail.com
22	Highlights
23	• The mediational role of body image-related cognitive fusion (CF_BI) is
24	explored.

25	• Path analysis' results show the pervasive role of CF_BI on eating
26	psychopathology.
27	• This integrative model explained 66% eating psychopathology severity.
28	• CF_BI mediates the link of body and social rank issues with eating
29	psychopathology.
30	• CF_BI should be targeted in the prevention and treatment of eating
31	disorders.
32	; 0
33	
34	Word count: 3643 (excluding references, abstract, figure and table)
35	Abstract
36	Body image dissatisfaction and unfavourable social comparisons are significant
37	risk factors to eating psychopathology. Nevertheless, the impact of these negative
38	experiences depends on the cognitive and emotional processes involved. Previous
39	research has shown that cognitive fusion is a nuclear process linked to psychological
40	inflexibility, but its role on body image and eating difficulties remains unclear. This
41	study aims to explore a model of the mediational role of body image-related cognitive

Results from path analyses show that the impact of unfavourable social comparisons on eating psychopathology is fully mediated by CF_BI. Moreover, CF-BI also revealed a mediational effect on the relationship between body image dissatisfaction and the severity of eating symptoms, in spite of the fact that a direct effect of body dissatisfaction still exists.

fusion (CF-BI) on the relationship between body dissatisfaction, unfavourable social

comparisons, and eating psychopathology in a sample of 345 female students.

The tested model highlights the crucial role that cognitive fusion, in the specific
domain of body image, plays in the relationship between risk factors and the severity of
disordered eating attitudes and behaviours. Furthermore, these findings present
empirical support for the relevance of addressing acceptance and cognitive defusion
techniques to prevent and treat eating disorders.
Key-words : body image-related cognitive fusion; eating psychopathology; social rank;
BMI; body image dissatisfaction
*C
ACC S

Introduction

Research has been highlighting the existence of multiple risk pathways in the development of eating psychopathology (Stice, 2001). Furthermore, body image dissatisfaction has been considered one of the key components of eating disorders (e.g., Stice, Marti, & Durant, 2011). More specifically, body image dissatisfaction can be due to the perception of a significant discrepancy between one's real body image and one's desired one, which in turn can precede eating disordered attitudes and behaviours, such as dieting (Higgins, 1987; Stice et al., 2011). Moreover, body image dissatisfaction has been associated with unfavourable social comparisons (Myers & Crowther, 2009; Trampe, Stapel, & Siero, 2007). In fact, unfavourable social comparisons (the tendency to perceive the self as inferior, inadequate and undesirable) appear to be associated with nuclear features of eating psychopathology, even when other variables are controlled for (Troop, Allan, Treasure, & Katzman, 2003).

The need to be accepted, valued and chosen by others is a universal and central aspect in humans, as well as other species (Gilbert, Price, & Allan, 1995). Related to this fundamental need is the process of social comparison, which can be conceptualized as an adaptive mechanism that allows the estimation of one's status within the group. When one realizes the main characteristics valued by the group, one can adapt behaviours or attributes and make efforts to improve those domains in order to raise his status and avoid being rejected. In fact, the display of features considered by the group as attractive and valued often defines one secure social rank (Barkow, 1980). Therefore, presenting qualities (e.g., forms of beauty; Gilbert, 2002) valued by the group will offer important social advantages (e.g., positive social attention, approval and favourable appreciation from others). On the other hand, the perception of lower attractiveness or low social rank may turn relationships with the self and with others insecure and

threatening, putting one at risk of being criticized or rejected (e.g., Gilbert, 1992). This often leads to negative consequences such as shame and defensive responses like anxiety and anger (Gilbert et al., 1995).

Furthermore, several studies argue that unfavourable social comparisons play a crucial role on the development of different psychopathological conditions, including eating disorders (e.g., Allan & Gilbert, 1995; Troop et al., 2003). Namely, it has been suggested that negative social comparisons based on physical appearance have an impact on body image dissatisfaction, and lead to an increased tendency to diet and seek thinness in both adolescents and adults (Myers & Crowther, 2009; Pinto-Gouveia et al., 2012).

In Western societies, having a valued physical appearance, has become a major domain of one's social rank (Buote, Wilson, Strahan, Gazzola, & Papps, 2011; Ferreira, Pinto-Gouveia, & Duarte, 2013b; Gilbert, 2002) and is used to gather positive social attention (Ferreira, Pinto-Gouveia, & Duarte, 2013a; Gilbert, 2002; Troop et al., 2003). In fact, a thin body image (similar to the ones portrayed by models or celebrities) has been linked not only to feminine attractiveness, but also to positive attributes such as health, success, intelligence and happiness (Kanazawa & Kovar, 2004; Sypeck et al., 2006; Webster & Driskell, 1983).

To sum up, and although literature has been highlighting the role of body image dissatisfaction and unfavourable social comparisons in the development and maintenance of eating psychopathology, the mediational processes involved in this relationship remain less than clear. In fact, even though the majority of women are dissatisfied with their body image and show perceptions of unfavourable ranking, especially when comparing themselves with ideal models of physical attractiveness,

only a minority develop an eating disorder. This seems to suggest that emotional regulation processes may play a crucial role in these psychopathological conditions. Growing evidence highlight that psychopathology is due not only to the presence of undesirable internal experiences, but mainly to the cognitive and emotional processes used to respond to them (Segal, Teasdale, & Williams, 2004).

In fact, Acceptance and Commitment Therapy (ACT) conceptualizes psychopathology as a condition of psychological inflexibility intrinsically linked to cognitive fusion, which arises when individuals become entangled with their private events (e.g., thoughts, emotions; Hayes & Gifford, 1997). In this line, cognitive fusion is defined as one's tendency to become caught up with the content of internal experiences (Luoma & Hayes, 2003). Thus, when fused with their thoughts, individuals tend to respond to them as if they were facts or represent the truth, triggering experiential avoidance strategies (attempts to avoid, escape, modify or control the experience) and turning these internal experiences more painful. For example, someone entangled with their body dissatisfaction experiences (e.g., "I'm too fat") may refuse social events like meeting with friends or going to the beach, even if these are pleasurable and valued activities. Thereafter, one's life choices may become focused on controlling these unwanted internal experiences, which may compromise other personal or social goals (Hayes, Luoma, Bond, Masuda, & Lillis, 2006).

In conclusion, as it substantially increases one's experiential avoidance, cognitive fusion has been portrayed as a key component of psychological inflexibility and as a source and maintenance factor of harmful behaviours and emotional distress (Hayes, 2004; Hayes, Strosahl, Bunting, Twohig, & Wilson, 2004).

Recent theoretical and research findings consider that eating disorders can be viewed as an illness of psychological inflexibility or failed attempts to regulate negative

132	sensations, thoughts and feelings (Baer, Fischer, & Huss, 2006; Merwin et al. 2011).
133	However, regarding body image and eating psychopathology issues, cognitive fusion is
134	a subject little explored. Even so, only a few studies have emphasized its relation to
135	such conditions (e.g. Merwin & Wilson, 2009; Ferreira, Trindade, Duarte, & Pinto-
136	Gouveia, 2013). Additionally, Hayes and Pankey (2002) found that patients with
137	anorexia nervosa entangle themselves frequently with thoughts about their body image.
138	Moreover, a recent study suggests that body image-related cognitive fusion plays an
139	important role on eating psychopathology (Trindade & Ferreira, 2014).

The current study aims to complement these recent findings through the examination of a novel and integrative model for eating psychopathology. This model intends to explore the impact of risk factors for eating disorders (e.g. body mass index (BMI), body dissatisfaction and social rank) through body image-related cognitive fusion. It is hypothesized that body image-related cognitive fusion plays a mediation role on the relationship between nuclear risk factors and the severity of eating psychopathology.

147

148

150

151

152

153

155

140

141

142

143

144

145

146

Methods

149 **Participants**

> The research was conducted in a sample that aimed to represent the risk population for eating psychopathology in relation to age and sex characteristics. The study included 345 female students aged between 13 and 36 (M = 17.87; SD = 2.89) years-old, and with a mean of 11.43 (SD = 2.47) years of education. On average, participants had a BMI of 21.15 (SD = 2.79).

154

Measures

156	Demographic Data. In the research protocol participants were asked about their
157	age, completed educational level, current height and weight (and with such information,
158	BMI (Wt/Ht ²) was calculated).
159	Figure Rating Scale (FRS; Thompson & Altabe, 1991; Ferreira, 2003). The FRS
160	was developed to assess body image dissatisfaction, and is comprised of a series of nine
161	schematic figures of different sizes arranged in an increasing manner, according to its
162	number (1-9). Participants are requested to select the silhouettes that best represent their
163	present and ideal body images; the divergence between the two silhouettes offers a
164	measure of body dissatisfaction (BD). The scale has shown good temporal, convergent
L65	and divergent validities (Thompson & Altabe, 1991).
166	Social Comparison Rating Scale (SCRS; Allan & Gilbert, 1995; Gato, 2003). The
L67	SCRS is a 11-item scale that measures the relative perception of one's social standing.
168	Items regard rank and attractiveness characteristics and are followed by a 10-point
169	Likert scale with bipolar constructs (e.g. Inferior/Superior). For each item, the
170	participants are asked to select a number which best portrays their social position in
171	relation to others. Lower scores indicate higher levels of unfavourable social
L72	comparisons. The Cronbach's alphas of the scale were shown to range from .88 to .96 in
L73	clinical populations, and between .90 and .91 in student populations (Allan & Gilbert,
174	1995). The Portuguese version presented similar reliability values.
175	Social Comparison through Physical Appearance Scale (SCPAS; Ferreira et al.,
176	2013b). The SCPAS is a self-report measure of one's subjective perception of social
L77	position and group fit, based on physical appearance. Similarly to the SCRS,
L78	participants are asked to assess their perceived rank on a Likert scale ranging from 1 to
L79	10 with bipolar constructs (e.g. Inferior/Superior). The scale is comprised of two parts,
L80	in which participants are asked to compare themselves physically to peers (part A) and

models (part B). In this study only part B was used since we intended to assess participants' physical comparisons related to distal targets, namely models, actresses and celebrities. Lower scores characterize gradually higher levels of unfavourable social comparisons based on physical appearance. The SCPAS' part B presented good internal reliability in the original study (.96).

Cognitive Fusion Questionnaire: Body Image (CFQ-BI; Ferreira et al., 2013). The CFQ-BI is a 15-item self-report scale that measures body image-related cognitive fusion. It was created by adapting CFQ-28's items (Gillanders et al., 2010) into statements concerning only body image issues (e.g., the item "My thoughts cause me distress or emotional pain" on CFQ-28 was adapted as "My thoughts relating to my body image cause me distress or emotional pain." in CFQ-BI). CFQ-BI presents a unidimensional factor structure as the CFQ reduced version which comprises 7 items (Gillanders et al., 2014). The participants are instructed to choose a number on a 7-point Likert scale which best translates the truthfulness of each statement according to themselves. Higher scores indicate higher levels of body image-related cognitive fusion. In the original study, the CFQ-BI presented a Cronbach's alpha of .96 and good temporal, discriminant, convergent and divergent validities (Ferreira et al., 2013).

Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994; Machado, 2007). A variation of the Eating Disorder Examination interview, the EDE-Q is a self-report measure which evaluates the participant's attitudes and behavioural characteristics of eating psychopathology. It comprises four subscales: restraint, eating concern, shape concern and weight concern. The global score of EDE-Q represents the severity of eating psychopathology. The EDE-Q can be used to discriminate eating disorder cases and additionally has been shown to have good reliability (Fairburn, 2008).

A	All of t	the Portu	guese versions	of the	usec	l meas	sures v	vere	prev	viously	valida	ited ir
samples	with	similar	characteristics	than	the	ones	used	in	this	study.	The	study
variable	s' Cro	nbach's a	alphas are prese	nted i	n Tal	ble 1.						

Procedures

The research protocol and the sample's collection process were approved by the ethical committees of the educational institutions enrolled in the present study. Participants were students recruited from several middle and high schools, and also from the University of Coimbra. They were appropriately informed about the voluntary and confidential nature of their collaboration, as well as of its finality. A written consent signed by the participant and his or her guardian (in underage cases) was required in order to collaborate in the investigation. Participants completed the self-reported measures during class (approximately 30 minutes), in the presence of their teacher and one of the researchers, who provided further explanations when required, to assure correct completion of the questionnaires. Those who did not participate in the study were given a task by their teacher or professor.

Data analysis

Data analyses were performed using IBM SPSS Statistics 20 (IBM Corp, 2011) and Path analyses were examined using the software AMOS.

Pearson correlation coefficients were performed to explore the association between: BMI, general social comparison, social comparison through physical appearance models, body dissatisfaction and the severity of eating disorders symptomatology (Cohen, Cohen, West, & Aiken, 2003).

230	Preliminary	data	analyses	were	executed	to	examine	the
231	adequacy of the data.							

Path analyses (MacKinnon, 2008), a structural equation modeling (SEM), was conducted to estimate the presumed relations among variables in the proposed theoretical model (Figure 1). Path analysis is a well-known and appropriate statistical methodology that allows for the simultaneous examination of structural relationships and permits the examination of direct and indirect paths at the same time (e.g., Schumacker & Lomax, 2004). The Maximum Likelihood method was used to estimate all model path coefficients and to compute fit statistics. Several goodness-of-fit measures were used to assess the plausibility of the overall model, such as Chi-Square (χ 2), Normed Chi-Square (χ 2/d.f.), Tucker Lewis Index (TLI), Comparative Fit Index (CFI), and the Root-Mean Square Error of Approximation (RMSEA) with 95% confidence interval.

To test mediation effects, the bootstrap procedure was used (with 2000 resamples) to create 95% bias-corrected confidence intervals around the standardized estimates of total, direct and indirect effects. This method is considered one of the most reliable and powerful to test the significance of the direct, indirect and total effects (Maroco, 2010). The effect is considered statistically significant (p < .05) if zero is not included on the interval between the lower and the upper bound of the 95% bias-corrected confidence interval (Kline, 2005).

Results

Descriptives

Means and standard deviations for the study variables are presented in Table 1.

|--|

Correlations

Pearson's correlation coefficients (two-tailed) are presented in Table 1. Results showed that BMI was significantly correlated with all variables in study, with exception to the SCRS. Additionally, unfavourable social comparisons (assessed by the SCRS and SCPAS_models) were associated with higher levels of BD and with eating psychopathology (EDE-Q). Moreover, BD was strongly associated with the global indicator of eating psychopathology. Finally, the CFQ_BI revealed moderate positive associations with BMI, BD, high positive correlations with EDE-Q's global scores and negative correlations with the social comparison measures (SCRS and SCPAS_models).

Path analysis

Firstly, data was analysed for multivariate outliers using Mahalanobis distance statistic. In fact, some cases presented values that indicate the presence of outliers, although extreme values were not detected. It was decided to maintain the outliers, because we believed they represent the normal variability in the population. Indeed, it has been suggested that, in these cases, data are more likely to be representative of the population if outliers are not removed. Furthermore, Skewness and kurtosis values did not show a serious bias to normal distribution (SK < |3| and Ku < |8-10|; Kline, 2005) and multicollinearity was not identified as all variables presented VIF values < 5.

The aim of path analysis was to test whether body image-related cognitive fusion mediated the effects of BMI, body dissatisfaction and the perception of an unfavourable social rank on eating psychopathology severity.

Initially, the hypothesized model was tested through a fully saturated model (i.e., 277 zero degrees of freedom), consisting of 27 parameters. Given that fully saturated models 278 always produce a perfect fit to the data, model fit indices were neither examined nor 279 280 reported. The initial model explained 67% of eating psychopathology. In this model, four 281 path coefficients were not statistically significant: the direct effect of BMI \rightarrow CFO BI 282 (t statistics = .110; p = .912), SCRS \rightarrow EDE-Q (t statistics = .651; p = .515), 283 SCPAS_models \rightarrow EDE-Q (t statistics = -1.589; p = .112), BMI \rightarrow SCRS (t statistics = 284 -1.624; p = .104). 285 In the next step, the initial model was respecified with those four nonsignificant 286 individual paths being progressively removed. Then, the reduced model was tested 287 (Figure 1). The evaluation of the final adjusted model revealed an excellent model fit, 288 with a non-significant chi-square of $\chi^2(4, N = 345) = 5.294$, p = .258. Besides, the 289 analysis of well-known and recommended goodness of fit indices (Kline, 2005) 290 indicated a very good model fit ($\chi^2/d.f. = 1.323$; CFI = .999; TLI = .995; RMSEA = 291 292 .031, CI = .000; .092). ---- Insert Figure 1 around here -----293 Mediation Analysis 294

From the examination of the unstandardized solution, it was verified that all individual path coefficients of the final model were statistically significant and in the expected directions. Concerning the analysis of total, direct and indirect effects, a positive and statistically significant direct effect (albeit weak) was found between BMI and the global score of the EDE-Q (β = .086) based on the bootstrap 95% CI (.007; .158, p = .028). Additionally, in relation to the mediation analysis, an indirect effect of general social comparison (SCRS) on the EDE-Q was found. More specifically, this

295

296

297

298

299

300

indirect effect through the CFQ BI was negative ($\beta = -.113$) based on 95% CI (-.186; -302 .039, p = .003). Moreover, another indirect effect was found between social 303 comparisons based on physical appearance and the EDE-Q. This effect through the 304 CFO BI was also negative ($\beta = -.197$) based on 95% CI (-.284; -.119, p = .001). 305 Concerning BD, both direct and indirect effects on the EDE-Q were found. The 306 indirect effect through the CFQ BI was positive ($\beta = .159$) based on 95% CI (.106; 307 .217, p = .001). Also, the direct effect between BD and the EDE-Q was positive ($\beta =$ 308 309 .268) based on 95% CI (.187; .343, p = .001). The total effect, that represents the sum of the standardized direct effect with the standardized indirect effect was .427 based on 310 95% CI (.337; .510, p = .001). 311 Overall, the model accounted for 33% of body image-related cognition fusion 312 and for 66% of eating psychopathology severity. 313 314 **Discussion** 315 This study presents a novel model that aims to explain eating psychopathology in 316 317

318

319

320

321

322

323

324

325

326

a sample of female students. Comprising the well-known risk factors for eating disorders, this model starts to clarify the pervasive effect of cognitive fusion as a key process to explain the link between perceived body image flaws, low social rank and the severity of eating psychopathological symptoms.

The tested model explained 66% of the variance of eating psychopathology, and allowed us to confirm that body image-related cognitive fusion is a crucial emotional regulation process to understand the development of maladaptive attitudes and behaviours regarding one's body and eating patterns.

Consistent with previous research, in the present study, body dissatisfaction, BMI and rank variables were associated with disordered eating attitudes and behaviours. In fact, these results support the existing literature that suggests that body image dissatisfaction and perceptions of low rank among women are intrinsically related to body and eating difficulties (Pinto-Gouveia et al., 2012; Stice et al., 2011). Additionally, our findings revealed that a higher BMI is directly linked to unfavourable social comparisons based on physical appearance and to body dissatisfaction. Furthermore, BMI also showed a positive (albeit weak) impact on the EDE-Q's global score. These results may be explained by the common association between weight, body shape, attractiveness and self-worth (Kanazawa & Kovar, 2004; Webster & Driskell, 1983). Thus, women with higher BMI that perceive their body image as significantly discrepant from the valued one may present higher tendencies to engage in inflexible weight control strategies in order to attenuate their perceptions of inadequacy.

Overall, these findings can be explained by the existent pressure in Western societies to accomplish an extremely thin body shape, which has become a central domain to achieve a secure social status within the group (e.g., Ferreira et al., 2013b). Indeed, the attempts to control one's body image in order to obtain an attractive one (e.g., similar to the models) seem to emerge as a strategy to improve women's social rank and as a way to assure being valued and accepted by others (e.g., Pinto-Gouveia et al., 2012).

Nevertheless, although the majority of women engage in comparisons with ideal models of physical attractiveness and present normative body image dissatisfaction and perceptions of unfavourable social rank, these features do not necessarily lead to eating psychopathology. In fact, our results highlight the crucial role of body image-related cognitive fusion as a mediational process involved in these relationships. More specifically, in our model, the association between unfavourable social comparisons (global and based on the physical appearance domain) and higher scores on the global

index of eating psychopathology is fully mediated by higher levels of body imagerelated cognitive fusion. It seems that it is only when women become caught up with their body image perceptions and thoughts that unfavourable social comparisons impact on disordered eating attitudes and behaviours.

Furthermore, in line with previous research (e.g., Stice et al., 2011) body dissatisfaction predicted higher severity of eating psychopathology symptoms. Additionally, our model adds to the existent literature by revealing a mediational effect through body image-related cognitive fusion. Taken together, these results offer new insights by suggesting that eating disorder' symptoms may emerge when one tends to respond to one's body dissatisfaction and unfavourable social comparisons' contents as if they were facts or represent the truth. This suggests that being entangled with one's body image thoughts and emotions may result in behaviours excessively and improperly regulated by verbal processes, instead of making them correspond to contextual cues or personal goals. Consequently, experiential avoidance strategies may be activated turning unwanted internal events more painful.

Nevertheless, these novel findings underlie some limitations. Firstly, the use of a cross-sectional design precludes conclusions regarding causality. In this sense, longitudinal studies are needed to determine the directionality of the associations and to corroborate the mediational role of body image-related cognitive fusion in the relationships between social rank, body dissatisfaction and increased vulnerability to eating disorders. Secondly, the convenience nature of the research sample, female students, can compromise the generalization of the data. However, the age and sex characteristics of our sample match the risk population's features. Thirdly, this model can be considered limited due to the fact that eating disorders are multidetermined and that other emotional regulation process may be involved. However, we intentionally

restrained this model in order to specifically explore the role of body image-related cognitive fusion.

377

378

379

380

381

382

383

384

385

386

These results are of particular interest and offer an important contribution to clinical work, by suggesting that increased levels of eating psychopathology may arise when one gets entangled with one's perceived body image flaws and unfavourable comparisons with others. In conclusion, this study contributes to fill the dearth of literature regarding the role of cognitive fusion in eating psychopathology, proposing ans of preve that this emotional process is a key component for the comprehension of disordered eating, and should be clearly targeted in programs of prevention and treatment of eating disorders.

387	References
388	
389	Allan, S., & Gilbert, P. (1995). A Social Comparison Scale: Psychometric properties
390	and relationship to psychopathology. Personality and Individual Differences,
391	19, 3, 293–299. doi:10.1016/0191-8869(95)00086-L
392	Baer, R. A., Fischer, S., & Huss, D. B. (2006). Mindfulness and acceptance in the
393	treatment of disordered eating. Journal of Rational-Emotive & Cognitive-
394	Behavior Therapy, 23, 4, 281-3011. doi: 10.1007/s10942-005-0015-9
395	Barkow, J. (1980). Prestige and self-esteem: A biosocial interpretation. In D. R. Omark,
396	F. F. Strayer, & D. G. Freedman (Eds.), Dominance relations: An ethological
397	view of human conflict and social interaction (pp. 319-332). New York: Garland
398	STPM Press.
399	Buote, V. M., Wilson, A. E., Strahan, E. J., Gazzola, S. B., & Papps, F. A. (2011).
400	Setting The Bar: Sociocultural Norms for Women's and Men's Ideal Appearance
401	in Real-world Contexts. Body Image, 8(4) 322-334.
402	Cohen, J., Cohen, P. West, S. & Aiken, L. (2003). Applied multiple
403	regression/correlation analysis for the behavioural sciences (3th ed.). New
404	Jersey: Lawrence Erlbaum Associates.
405	$Fairburn, C.\ G.\ (2008).\ \textit{Cognitive behavior the rapy and eating disorders}.\ New\ York:$
406	The Guilford Press.
407	Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: Interview or
408	self-report questionnaire? International Journal of Eating Disorders, 16, 363-
409	370. doi: 10.1002/1098-108X(199412)16:4<363::AID-EAT2260160405>3.0.
410	CO;2-#

111	Ferreira, C. (2003). Anorexia Nervosa: A expressão visível do invisível. Contributos
112	para a avaliação de atitudes e comportamentos em relação ao peso e à imagem
113	corporal [Anorexia Nervosa: The visible expression of the invisible.
114	Contributions for the assessment of attitudes and behaviors in relation to weight
115	and body image]. (Unpublished master's thesis). University of Coimbra,
116	Coimbra.
117	Ferreira, C., Pinto-Gouveia, J., & Duarte, C. (2013a). Drive for thinness as a women's
118	strategy to avoid inferiority. International Journal of Psychology &
119	Psychological Therapy, 13(1), 15-29.
120	Ferreira, C., Pinto-Gouveia, J., & Duarte, C. (2013b). Physical appearance as a measure
121	of social ranking: The role of a new scale to understand the relationship between
122	weight and dieting. Clinical Psychology & Psychotherapy, 20, 55-66.
123	doi:10.1002/cpp.769.
124	Ferreira, C., Trindade, I. A., Duarte, C., & Pinto-Gouveia, J. (2013). Getting entangled
125	with body image: Development and validation of a new measure. Submitted
126	manuscript.
127	Gato, J. (2003). Evolução e ansiedade social [Evolution and social anxiety].
128	(Unpublished master's thesis). University of Coimbra, Coimbra.
129	Gilbert, P. (1992). Depression: The evolution of powerlessness. Hove:
130	Guilford/Lawrence Erlbaum Associates.
131	Gilbert, P. (2002). Body shame: A biopsychosocial conceptualisation and overview with
132	treatment implications. In P. Gilbert & J. Miles (Eds.), Body shame:
133	Conceptualisation, research and treatment (pp. 3-54). New York: Brunner
134	Routledge.

435	Gilbert, P., Price, J., & Allan, S. (1995). Social comparison, social attractiveness and
436	evolution: How might they be related? New Ideas in Psychology, 13, 149-165
437	doi:10.1016/0732-118X(95)00002-X.
438	Gillanders, D. T., Bolderston, H., Bond, F. W., Dempster, M., Flaxman, P. E.
439	Campbell, L., Remington, B. (2014). The development and initial validation
440	of The Cognitive Fusion Questionnaire. Behavior Therapy, 45, 83-101
441	Retrieved from http://www.sciencedirect.com/science/article/pii/
442	S0005789413000713
443	Gillanders, D., Bolderston, H., Dempster, M., Bond, F., Campbell, L., Kerr, S., Tansey,
444	L., & Hermann, B. (2010, June). The Cognitive Fusion Questionnaire.
445	Further developments in measuring cognitive fusion. Conference presented at
446	the Association for Contextual Behavioral Science, World Congress VIII, Reno
447	NV.
448	Hayes, S. C. (2004). Acceptance and commitment therapy, relational frame theory, and
449	the third wave of behavior therapy. Behavior Therapy, 35, 639-665.
450	Hayes, S. C., & Gifford, E. V. (1997). The trouble with language: experiential
451	avoidance, rules, and the nature of verbal events. American Psychological
452	Society, 8, 170-173.
453	Hayes, S. C., & Pankey, J. (2002). Experiencial Avoidance, Cognive Fusion and an
454	ACT Approach to Anorexia Nervosa. Cognitive and Behavioral Science, 9, 243-
455	247.
456	Hayes, S. C., Luoma, J. B., Bond, F., Masuda, A., & Lillis, J. (2006). Acceptance and
457	Commitment Therapy: Model, Processes and Outcomes. Behavior Research and
458	Therapy, 4, 1-25.

459	Hayes, S. C., Strosahl, K., Bunting, K., Twohig, M., & Wilson, K. G. (2004). What is
460	Acceptance and Commitment Therapy? In S. C. Hayes, & K. D. Strosahl (Eds.)
461	A practical guide to Acceptance and Commitment Therapy (pp. 3-29). New
462	York: Springer Science.
463	Higgins, E. T. (1987). Self-discrepancy; A theory relating self and affect, Psychological
464	Review, 94, 319-340.
465	Kanazawa, S., & Kovar, J. L. (2004). Why beautiful people are more intelligent
466	Intelligence, 32, 227-243.
467	Kline, R.B. (2005). Principles and Practice of Structural Equation Modeling (2nd
468	edition). New York: The Guilford Press.
469	Luoma, J. B., & Hayes, S. C. (2003). Cognitive Defusion. In W. O'Donahue, J. E
470	Fisher, & S. C. Hayes (Eds.), Empirically supported techniques of cognitive
471	behavioral therapy: A step-by-step guide for clinicians. New York: Wiley.
472	Machado, P. P., (2007). Versão Portuguesa do EDE-Q, 5ª edição [Portuguese Version og
473	EDE-Q, 5 th edition]. Unpublished manuscript. University of Minho.
474	MacKinnon, D. P. (2008). Introduction to Statistical Mediation Analysis. Mahwah, NJ
475	Erlbaum.
476	Maroco, J. (2010). Análise de equações estruturais: Fundamentos teóricos, software &
477	aplicações [Structural Equation Analyses: Theoretical basis, software ana
478	applications]. Lisboa: Report Number.
479	Merwin, R. M., & Wilson, K. G. (2009). Understanding and treating eating disorders:
480	An ACT perspective. In J. T. Blackledge, J. Ciarrochi, & F. P. Deane (Eds.)
481	Acceptance and Commitment Therapy: Contemporary Theory, Research, and
482	Practice (pp. 87–117). Australia: Australian Academic Press.

Merwin, R. M., Timko, C. A., Moskovich, A. A., Ingle, K. K., Bulik, C. M., & Zucker, 483 N. L. (2011). Psychological Inflexibility and Symptom Expression in Anorexia 484 Nervosa. Eating Disorders, 19, 62-82. 485 486 Myers, T. A., & Crowther, J. H. (2009). Social comparison as a predictor of body dissatisfaction: A meta-analytic review. Journal of Abnormal Psychology, 118, 487 683–698. 488 Pinto-Gouveia, J., Ferreira, C., & Duarte, C. (2012). Thinness in the pursuit for social 489 490 safeness: An integrative model of social rank mentality to explain eating psychopathology. Clinical Psychology Psychotherapy. 491 and doi: 10.1002/cpp.1820 492 Schumacker, R. E., & Lomax, R. G. (2004). A beginner's guide to structural equation 493 modeling (2nd edition). Mahwah, NJ: Lawrence Erlbaum Associates. 494 495 Segal, Z.V, Teasdale, J.D., & Williams, J.M.G. (2004) Mindfulness-Based Cognitive Therapy: Theoretical Rationale and Empirical Status. In Hayes, S., Follette, V., 496 497 & Linehan, M.M. (Eds.) Mindfulness and Acceptance (pp. 45-65) New York: 498 **Guilford Press** Stice, E. (2001). A prospective test of the dual path-way model of bulimic pathology: 499 Mediating effects of dieting and negative affect. Journal of Abnormal 500 501 Psychology, 110, 124-135. 502 Stice, E., Marti., N., & Durant, S. (2011). Risk factors for onset of eating disorders: Evidence of multiple risk pathways from an 8-year prospective study. 503 504 Behaviour Research Therapy, 49(10), 622–627. and doi:10.1016/j.brat.2011.06.009 505 506 Sypeck, M. F., Gray, J. J., Etu, S. F., Ahrens, A. H., Mosimann, J. E., & Wiseman, C.V. (2006). Cultural representations of thinness in women, redux: Playboy 507

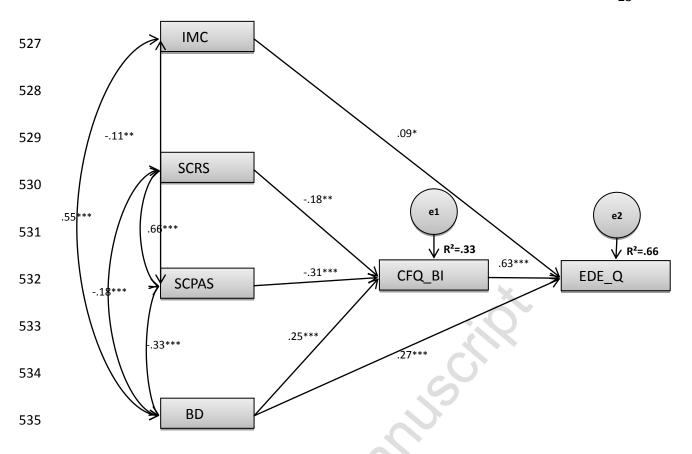
508	magazine's depictions of beauty from 1979 to 1999. Body Image: An
509	International Journal of Research, 3, 229-235.
510	Thompson, J. K., & Altabe, M. N. (1991). Psychometric qualities of the figure rating
511	scale. International Journal of Eating Disorders, 10, 615-619. doi:
512	10.1002/1098-108X(199109) 10:5.
513	Trindade, I. A., & Ferreira, C. (2014). The impact of body image-related cognitive
514	fusion on eating psychopathology. Eating Behaviors, 15(1), 72-75. doi:
515	10.1016/j.eatbeh.2013.10.014
516	Trampe, D, Stapel, D. A., & Siero, F. W. (2007). On models and vases: body
517	dissatisfaction and proneness to social comparison effects. Journal of
518	Personality and Social Psychology, 92, 106–18.
519	Troop, N. A., Allan, S., Treasure, J. L., & Katzman, M. (2003). Social comparison and
520	submissive behavior in eating disorders. Psychology and Psychotherapy:
521	Theory, Research and Practice, 76, 237–249.
522	doi:10.1348/147608303322362479.
523	Webster, M., & Driskell, J. E. (1983). Beauty as status. The American Journal of
524	Sociology, 89, 140-165.
525	

Table 1

Means (M), Standard Deviations (SD), Cronbach's alphas and Intercorrelation scores on selfreport measures (N = 345)

Measures	M	SD	α	BMI	SCRS	SCPAS _models	BD	CFQ_BI
BMI	21.15	2.79	-	-				
SCRS	65.31	13.69	.89	09	-	, ,		
SCPAS_models	55.36	18.02	.96	17**	.67***			
BD	.56	.93	-	.57***	23***	36***	-	
CFQ_BI	36.29	20.94	.97	.21***	44***	52***	.40***	-
EDE-Q	1.44	1.30	.96	.37***	36***	48***	.57***	.76***

Note. * p < .050. *** p < .010. *** p < .001. BMI = Body Mass Index; SCRS = Social Comparison Rating Scale; SCPAS_models = Social Comparison trough Physical Appearance Scale_Models; BD = Body Dissatisfaction; CFQ_BI = Cognitive Fusion Questionnaire_Body Image; EDE-Q = Eating Disorder Examination Questionnaire.



536 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; SCRS = Social Comparison Rating
- Scale; SCPAS_models = Social Comparison through Physical Appearance Scale_Models; BD =
- Body Dissatisfaction; CFQ_BI = Cognitive Fusion Questionnaire_ Body Image; EDE-Q =
- 542 Eating Disorder Examination Questionnaire.