Short communication

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

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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.

The current study explores the impact of cognitive fusion concerning body image in the relation between acknowledged related risk factors and eating psychopathology in a sample of 342 female students.

The impact of body dissatisfaction and social comparison through physical appearance on eating psychopathology was partially mediated by body image-related cognitive fusion. The results highlight the importance of cognitive defusion in the treatment of eating disorders.

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1. Introduction

Acceptance and Commitment Therapy (ACT) 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). One key process that threatens psychological flexibility is cognitive fusion (Hayes, 2004; Hayes, Strosahl, & Wilson, 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., 1999). This process results in self-identification with one's thoughts and inability to consider them as part of inner experience (rather than statements of facts) and consequently taking objective attitudes towards them (Eifert et al., 2009). Therefore, ACT's overall therapeutic goal is to promote cognitive defusion and acceptance of inner events. These strategies are intended to construct a healthy skepticism about one's thoughts, enabling a better contact with the present moment (Hayes, 1989) and the individual's values (Fletcher & Hayes, 2005).

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).

Although scarce, literature has been highlighting cognitive fusion in eating psychopathology (e.g. Ferreira, Trindade, Duarte, & Pinto-Gouveia, 2013; Hayes & Pankey, 2002). Also, research has suggested that ACT is effective and may even achieve better results than regular behavioral interventions in these disorders (e.g., Butryn et al., 2013; Juarascio, Forman, & Herbert, 2010, Sandoz, Wilson, & DuFrene, 2011).

Body dissatisfaction (e.g., Stice, Marti, & Durant, 2011) and unfavorable social comparisons (e.g., Troop, Allan, Treasure, & Katzman, 2003) represent nuclear risk factors for eating psychopathology. Nevertheless, although almost all women compare themselves physically with other women, which at some point triggers feelings of body dissatisfaction and ranking disadvantage, not all develop eating psychopathology. This seems to imply that other processes may also be involved in these conditions. We hypothesized that women who get fused and tangled with thoughts relating to body image have greater tendencies of developing disordered mechanisms in order to "correct" their body dissatisfaction and social disadvantage. Therefore, this study tests whether body image-related cognitive fusion mediates the relationship between main risk factors and eating psychopathology.

2. Materials and methods

2.1. Participants

Participants included 342 female college students (13 to 25 years old) with a mean age of 17.76 years ($SD = 2.63$) and 11.40 ($SD = 2.46$) of years of education. Their BMI mean was 21.14 ($SD = 2.80$), corresponding to normal weight values (WHO, 1995).

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2.2. Procedures

The research protocol was approved by the Ethics Committees 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 and informed about the aims of the study.

2.3. Data analysis

Descriptive statistics were used to explore the sample characteristics in study's variables and Pearson product–moment correlation analyses were performed (Cohen, Cohen, West, & Aiken, 2003). Two mediation analyses were conducted according to Baron and Kenny (1986), in which body image-related cognitive fusion was tested as mediator on the association of body image dissatisfaction (Model 1) and social comparison based on physical appearance with peers (Model 2; predictor variables) towards eating psychopathology (dependent variable).

2.4. Measures

Figure Rating Scale (*FRS*; Thompson & Altabe, 1991; Ferreira, 2003). The FRS evaluates body dissatisfaction through a series of nine silhouettes of different dimensions. Body dissatisfaction (BD) was calculated through the discrepancy between the silhouettes chosen by the participant as her actual and desired ones. 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 an 11-item scale which evaluates one's self-perception of social rank in a semantic differential methodology. The SCRS presents good psychometric properties and negative correlations with psychopathology.

Social Comparison through Physical Appearance Scale (*SCPAS*; Ferreira, Pinto-Gouveia, & Duarte, 2013). The SCPAS assesses the subjective perception based on physical appearance of women's social standing and group fit. The participants are asked to compare themselves with peers (Part A) and with models or other celebrities (Part B). The scale revealed high internal consistency in the original study, on both Part A ($\alpha = .94$) and Part B ($\alpha = .96$).

Cognitive Fusion Questionaire-28 (*CFQ-28*; Gillanders et al., 2010; Pinto-Gouveia, Dinis, Gregório, & Pinto, 2011). It consists of 28 items, each of them taking the form of a statement alluding to literality and entanglement with thoughts in order to measure broad cognitive fusion and defusion. The CFQ-28's internal consistency values were good both in the original study and Portuguese validation.

Cognitive Fusion Questionnaire-Body Image (*CFQ-BI*; Ferreira, Trindade, Duarte, & Pinto-Gouveia, 2013). The CFQ-BI is a 15-item self-report scale based on the CFQ-28's items so as to evaluate body image-related cognitive fusion. 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). It is a 15-item instrument which evaluates mindfulness dispositional characteristics. The MAAS was shown to hold strong psychometric qualities ($\alpha = .84$ in the original study and .90 in the Portuguese validation).

Eating Disorder Examination Questionnaire (*EDE-Q*; Fairburn & Beglin, 1994; Machado, 2007). The EDE-Q is a self-report measure that assesses attitudes and behavioral traits of eating disorders. 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.

3. Results

3.1. Preliminary analyses

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

3.2. Descriptive analyses

Descriptive statistics regarding the studied variables for the total sample are presented in Table 1.

3.3. Correlations

Results demonstrated that the measures of cognitive fusion, CFQ-BI and CFQ_F held positive and strong correlations between each other and with higher levels of EDE-Q. Moreover, those measures held positive correlations with BD (weak in case of the CFQ_F and moderated in case of the CFQ-BI). Also, these scales showed negative correlations with MAAS, SCRS and SCPAS. In particular, CFQ-BI correlated positively with BMI (see Table 1).

3.4. Mediation analyses

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

A regression analysis having BD as the independent variable and EDE-Q as the dependent variable showed significance [$F_{(1,328)} = 173.65$,

Table 1
Cronbach's alphas, means (*M*), standard deviations (*SD*), and intercorrelation scores on self-report measures (N = 342).

Measures	α	M	SD	1	2	3	4	5	6	7	8
1. BMI	–	21.54	8.68	1							
2. BD	–	.56	.94	.57***	1						
3. SCRS	.89	65.23	13.72	−.09	−.23***	1					
4. SCPAS (peers)	.95	61.08	16.34	−.20***	−.32***	.82***	1				
5. SCPAS (models)	.96	55.25	18.06	−.17**	−.37***	.67***	.78***	1			
6. CFQ_F	.96	60.36	23.73	.07	.23***	−.37***	−.35***	−.36***	1		
7. CFQ-BI	.97	36.35	21.37	.22***	.42***	−.45***	−.53***	−.53***	.69***	1	
8. MAAS	.90	60.78	13.55	.05	−.12*	.22***	.21***	.24***	−.36***	−.33***	1
9. EDE-Q	.96	1.45	1.33	.39***	.59***	−.36***	−.48***	−.48***	.47***	.76***	−.23***

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).

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