



# Gender differences in eating behavior and eating pathology: The mediating role of rumination



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## ABSTRACT

**Objective:** Rumination is a maladaptive emotion regulation strategy which contributes to psychopathology and is more frequently used by women than men. It has been found to mediate the relationship between gender and the occurrence of anxiety disorders or depression. Since gender differences also appear in dysfunctional eating, the aim of the study is to test, whether rumination mediates the association between gender and several facets of eating pathology.

**Method:** A total of 295 participants (205 women) completed an online-questionnaire including the assessment of different facets of dysfunctional eating and rumination. Mediation analyses were conducted with PROCESS.

**Results:** Women reported significantly higher levels in both, rumination and eating pathology. Moreover, rumination mediated the relationship between gender and all assessed aspects of dysfunctional eating. **Discussion:** The present study extends findings on the mediating role of rumination accounting for gender differences in psychopathology to eating pathology in a community sample. Results suggest that cognitive factors play a substantial role in explaining gender differences in eating pathology which tend to be reduced to biological factors and beauty ideals.

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## 1. Introduction

Gender differences are consistently observed in eating pathology, like food craving, binge eating, and restrained eating. The findings suggest that women are more prone to show patterns of dysfunctional eating than men, in clinical (Fairburn & Harrison, 2003) and even non-clinical populations (Pettit, Jacobs, Page, & Porras, 2010). While some causes of these gender differences are well-established, for example beauty ideals conveyed in different societies (Gordon, Castro, Sitnikov, & Holm-Denoma, 2010), or hormonal differences (Potoczna et al., 2004), the role of maladaptive emotion regulation strategies has received much less attention. Rumination has long been acknowledged as a cognitive, yet emotion centered, maladaptive emotion regulation strategy, comprising compulsively focused attention to the reflection of negative experiences, distress or worries and their imagined outcomes (Smith & Alloy, 2009). It is embedded as an antecedent of

binge eating and eating pathology in common models of disordered eating behaviors, like the *escape theory* (Heatherton & Baumeister, 1991) and the *emotional cascades model* (Selby, Anestis, & Joiner, 2008).

Rumination plays a dominant role in explaining different outcomes in general psychopathology and also in eating disorders (Aldao, Nolen-Hoeksema, & Schweizer, 2010). With regard to gender differences, rumination has further been consistently reported to be more prevalent in women compared to men (Johnson & Whisman, 2013). Given concurrent gender differences in prevalence rates of mental disorders, it can be assumed that rumination plays a mediating role in explaining gender differences. For depression and anxiety disorders, this relationship has already been confirmed (Nolen-Hoeksema, 2012). For eating pathology, to our best knowledge, no such analysis has been realized yet. However, with the consistently observed gender differences in eating pathology and rumination, a similar pattern can be expected.

To test this assumption, we conducted a study in a community sample, to avoid confounded influences of manifest psychopathology (e.g. due to comorbid depression). We investigated rumination tendencies and their mediating effects on gender differences in four eating-related dependent variables: Food craving, as a

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common antecedent of binge eating, subjective and objective binge eating episodes as manifest behaviors, and general eating pathology as a more global psychological impairment in relation to eating.

## 2. Method

### 2.1. Participants

A community sample without clinically manifest eating pathology was selected as a target group. A total of 477 adult individuals responded to recruitment attempts for an online survey. Altogether, 126 participants were excluded due to incomplete data sets or exaggerated response time latencies. Given scope of this study, one participant had to be excluded because of reporting another sex than female or male. As the target group should comprise non-clinical characteristics, we excluded participants reporting symptoms that give reason for a severe psychopathological degree in the variables of interest. Therefore, another 55 cases had to be eliminated because of (1) the report of one or more times of showing any kind of purging behavior in terms of self-induced vomiting or the use of laxatives, (2) Body Mass Index (BMI) indicating underweight ( $BMI < 18.5 \text{ kg/m}^2$ ), and (3) a depression score suggesting at least a moderate level of depressive symptomatology. Data analyses were based on the remaining sample of 295 participants (205 women). Sample characteristics and tests for gender differences are displayed in [Table 1](#).

### 2.2. Material and methods

The online-study was conducted using the *unipark*-survey software. Participants were recruited either through an online research participant pool from the FernUniversität in Hagen, with course credit incentives, or on social media websites. All participants provided informed consent.

Instruments for the online-assessment were selected based on the fit to answer the research questions and psychometric qualities. Cronbach's alpha was used to evaluate and recheck the internal consistency of the employed tools; interpretation of adequacy followed the suggestions of [Ponterotto and Ruckdeschel \(2007\)](#), where thresholds are dependent on number of items and sample size.

#### 2.2.1. Rumination

The Rumination-Subscale of the Rumination-Suppression-8 Scale (RS-8; [Pjanic, Bachmann, Znoj, & Messerli-Bürge, 2013](#)) was employed because it measures general and unspecific tendencies of rumination, with a focus on *brooding*. Items are rated on 6-point Likert scales (1 = *strongly disagree*; 6 = *strongly agree*), indicating agreement to strategy related statements. Good convergent and divergent validity in clinical and non-clinical samples have been reported ([Pjanic et al., 2013](#)). Internal consistency in this study was excellent ( $\alpha = 0.89$ ).

#### 2.2.2. Food craving

The Food Craving Questionnaire Trait-reduced ([Meule, Hermann, & Kübler, 2014](#); FCQ-T-r) consists of 15 items to assess general food cravings by asking for feelings, temptations, and desires about food on 6-point Likert scales (1 = *never* to 6 = *always*). The FCQ-T-r score is positively associated with BMI and predictive for cue-elicited food craving ([Meule et al., 2014](#)). Internal consistency in the present sample was excellent ( $\alpha = 0.95$ ).

#### 2.2.3. Eating pathology

The Eating Disorder Examination Questionnaire ([Hilbert & Tuschen-Caffier, 2006](#); EDE-Q) is a 28-item self-report measure. It is composed of six diagnostic items to assess overeating, subjective and objective binge eating, as well as purging behaviors. The remaining items allow for the calculation of overall eating pathology. Participants indicate the frequency of eating- and shape-related behaviors and thoughts within the last 28 days on 7-point rating scales (0 = *no days*; 6 = *every day*). Evidence for the validity of the EDE-Q is strong ([Berg, Peterson, Frazier, & Crow, 2012](#)). In this study, the variables subjective and objective binge eating, and the overall score were used. Internal consistency for the global score was excellent ( $\alpha = 0.94$ ).

#### 2.2.4. Depression

To screen for the non-clinical characteristics of the targeted sample, depressive symptoms were measured with the depression subscale of the Depression Anxiety Stress Scale (DASS-21; [Lovibond & Lovibond, 1995](#)). The subscale is composed of seven items. Participants are asked to rate statements regarding the previous week on a 4-point rating scale (0 = *never*; 3 = *almost always*). Scoring instructions suggest five diagnostic categories for depression severity (*normal to extremely severe*) for sum score values. In line

**Table 1**  
Means, standard deviations and test statistics for gender differences in relevant variables.

Variable	Women	Men	Levene's Test	Test statistics
<i>n</i>	205	90		
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )		
Age (yrs)	30.23 (8.94)	30.76 (9.14)	$F = 0.13$ $p = 0.716$	$t(293) = 0.458, p = 0.647, g = 0.06$
BMI ( $\text{kg/m}^2$ )	23.83 (4.88)	25.20 (4.66)	$F = 0.57$ $p = 0.449$	<b><math>t(293) = 2.25, p = 0.025, g = 0.29</math></b>
Depression (DASS_D)	3.67 (3.40)	3.64 (3.39)	$F = 0.03$ $p = 0.861$	$t(293) = -0.08, p = 0.937, g = 0.01$
Rumination (RS-8 subscale)	3.61 (1.31)	3.07 (1.22)	$F = 0.84$ $p = 0.360$	<b><math>t(293) = -3.34, p &lt; 0.001, g = -0.42</math></b>
Food Craving (FCQ-T-r)	37.97 (16.83)	32.83 (13.32)	$F = 9.14$ $p = 0.003$	<b><math>t(211.96) = -2.80, p = 0.006, g = -0.32</math></b>
Objective Binge Eating Episodes (EDE-Q)	2.13 (4.62)	1.01 (2.71)	$F = 12.61$ $p < 0.001$	<b><math>t(271.57) = -2.57, p = 0.010, g = -0.27</math></b>
Subjective Binge Eating Episodes (EDE-Q)	1.98 (4.67)	0.94 (2.35)	$F = 11.07$ $p < 0.001$	<b><math>t(278.05) = -2.57, p = 0.009, g = -0.25</math></b>
Eating pathology (EDE-Q total)	2.58 (1.22)	1.98 (0.86)	$F = 18.24$ $p < 0.001$	<b><math>t(235.88) = -4.76, p &lt; 0.001, g = -0.53</math></b>

Note. Boldface entries indicate significant differences in group means, two-sided  $p < 0.05$ . In case of unequal variances in Levene's Test, degrees of freedom were adjusted.

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