



Direct experience while eating: Laboratory outcomes among individuals with eating disorders versus healthy controls



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ABSTRACT

Objective: To compare individuals with eating disorders (EDs) to healthy controls (HCs) to assess for differences in direct engagement in the eating process.

Method: Participants ($n = 58$) were asked to eat an orange slice. To assess the degree of direct engagement with the eating process, participants were asked to write down 10 thoughts about the experience of eating the orange slice. Next, the participants were instructed to classify the main focus of each thought as either experiential (“direct experience”) or analytical (“thinking about”). A direct experience index (DEI) was computed by dividing the number of times that participants classified an experience as a “direct experience” (the numerator) by the total number of all observations (i.e., direct experience + thinking about). Participants also completed the Five Facet Mindfulness Questionnaire (FFMQ) and the Experiences Questionnaire (EQ) to assess mindfulness facets and decentering, respectively.

Results: Compared to controls, participants in the EDs group presented significantly lower levels of direct experience during the eating task (EDs group: mean = 43.54, $SD = 29.64$; HCs group: mean = 66.17, $SD = 22.23$, $p = 0.03$). Participants in the EDs group also scored significantly lower on other mindfulness-related variables.

Discussion: These findings suggest that engagement with the direct experience of eating is lower in individuals with EDs. Future research should investigate the role of mindfulness-based interventions to address direct experience while eating in individuals with EDs.

1. Introduction

Current classifications of eating disorders (EDs) propose six different diagnostic categories (pica; rumination disorder; avoidant/restrictive food intake disorder; anorexia nervosa; bulimia nervosa; and binge eating disorder) and two unspecific categories (American Psychiatric Association, 2013). In general, however, EDs are characterized by behavioral alterations related to food intake such as bingeing, purging, and the pursuit of extreme thinness.

Research suggests that individuals with EDs tend to use rumination as a cognitive strategy to regulate emotions (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Nolen-Hoeksema, Stice, Wade, & Bohon, 2007). Rumination has been defined as a sustained focus on negative emotions and the causes and consequences of these, without engaging in problem-solving (Aldao & Nolen-Hoeksema, 2010). When individuals

ruminate, an “analytical mode” is activated, meaning that the individual thinks about the experience and compares his/her current emotional state to a desired or ideal state (Teasdale, Segal, & Williams, 1995). The opposite of the analytical mode is the “mindful or direct experience mode”, in which the individual focuses—in an accepting manner—on any thoughts, feelings, and/or physical sensations that arise (Watkins & Teasdale, 2004).

In a study involving individuals with EDs, Rawal, Williams, and Park (2011) manipulated the participants' experience processing mode prior to exposing them to a food-related stressor (participants were asked to imagine eating a large meal). In half of the sample, the analytical mode was activated by instructing the participants to “think about the causes, meaning, and consequences” of eating a large meal. In the other half of the sample, the mindful mode was activated by asking the participants to focus their attention on the eating experience.

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Afterwards, participants in the mindful mode group more accurately estimated their own weight compared to those in the analytical group (Rawal et al., 2011). Another study (Soler et al., 2013) explored the relationship between the analytical and mindful processing modes and EDs symptom severity. In that study, individuals with an ED diagnosis were instructed to peel and eat an orange slice and to write down ten thoughts about that experience. Participants were then given a brief written explanation regarding the differences between the two processing modes and instructed to classify each of their 10 thoughts as either analytical or mindful. Activation of the mindful mode was negatively associated with ED and anxiety symptomatology (Soler et al., 2013). However, because that study lacked a control group, it remains unclear whether activation of the analytical mode while eating is truly characteristic of individuals with EDs. In this context, the aim of the current study was to determine whether individuals with EDs differ significantly from healthy controls (HCs) in how they process an eating experience.

2. Method

2.1. Participants and procedures

A total of 58 women participated in the study. The clinical group consisted of 31 individuals diagnosed with one of the following EDs according to DSM-IV-TR criteria (American Psychiatric Association, 2000): anorexia nervosa ($n = 9$), bulimia nervosa ($n = 10$), or an EDs not otherwise specified (EDNOS; $n = 12$). Individuals with EDs were recruited from the Hospital de la Santa Creu i Sant Pau (Barcelona, Spain) while the HCs ($n = 27$) were recruited from advertisements placed around the hospital and at the university. The study was approved by the hospital clinical ethics committee and conducted according to the Declaration of Helsinki principles.

Inclusion criteria for both groups were: 1) age ≥ 18 years and 2) written consent to participate in the study. Exclusion criteria were: 1) diagnosis of psychosis, substance abuse disorder, affective disorder, or mental disability according to DSM-IV-TR criteria, and/or 2) previous experience in mindfulness, meditation, or yoga practices. Individuals in the EDs group who presented current affective symptoms were allowed to participate provided they did not fulfill diagnostic criteria for an affective disorder.

Diagnostic interviews were conducted by an experienced psychiatrist and half of these interviews were re-rated by another professional (100% inter-rater agreement). The study consisted of a single session in which participants first completed the two self-report mindfulness measures (the Five Facet Mindfulness Questionnaire [FFMQ] and the Experiences Questionnaire [EQ]) and then were instructed to peel and eat an orange slice. Afterwards, participants were asked to write down ten thoughts about the experience and to code these thoughts as either a “direct experience” (i.e., mindful mode) or “thinking about” (i.e., analytical mode). The detailed procedure is described elsewhere (Soler et al., 2013). Two external researchers (both masked to the participants' group [i.e., HCs vs. EDs]) also coded the participants' ten thoughts.

2.2. Measures

2.2.1. Screening and diagnosis

Psychiatric diagnosis were made using the Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998). To confirm the diagnosis, the eating disorders section of the Structured Clinical Interview for DSM-IV (SCID-I; First, Spitzer, Gibbon, & Williams, 1999) was also administered.

The Spanish version of the Eating Attitudes Inventory (EAT-26; Gandarillas, Zorrilla, Muñoz, Sepulveda, & Galan, 2003; Garner, Olmsted, Bohr, & Garfinkel, 1982) was used to screen for EDs. Internal consistency in our sample was high (Cronbach's alpha = 0.95).

2.2.2. Mindfulness

Mindfulness was evaluated by the Five Facets Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Cebolla et al., 2012), a 39-item scale that assesses 5 different mindfulness facets: observing (i.e., noticing external and internal experiences, such as body sensations, thoughts, or emotions); describing (i.e., labeling the internal experience); non-judging (i.e., taking a non-evaluative stance towards the present experience); acting with awareness (i.e., focusing on the present activity instead of behaving mechanically); and non-reactivity (i.e., allowing thoughts and feelings to come, without getting caught up in or carried away by these thoughts). In the Spanish version, these five facets have been shown to provide adequate-to-good internal consistency, with alpha coefficients ranging from 0.75 to 0.91 (Cebolla et al., 2012). In our sample, the internal consistency was 0.85.

The Experience Questionnaire (EQ) is an 11-item instrument that assesses decentering, understood as the ability to observe one's thoughts and emotions as temporary events of the mind (Fresco et al., 2007). The EQ items are scored on a 5-point scale, ranging from “never” to “all the time”. The Spanish version of the EQ (Soler et al., 2014) has demonstrated good psychometric properties. Internal consistency in our sample was 0.83.

2.3. Data analyses

The demographic and clinical characteristics of the sample were analyzed using the chi-square test for categorical variables and the *t*-test for continuous variables. A direct experience index (DEI)—expressed as a percentage—was obtained by dividing the number of times that a participant classified an experience as a “direct experience” (the numerator) by the total number of all observations (“direct experience” + “thinking about”). The inter-rater reliability (kappa values) between the participants' classifications and that of the two independent researchers was calculated. Analyses of variance (ANOVA) were performed to explore between-group differences in the DEI and in other mindfulness-related factors (FFMQ and EQ). Pearson correlation analyses were performed to determine the association between the DEI and other mindfulness facets. An alpha level of 0.05 was used for all statistical tests.

3. Results

The demographic and clinical characteristics of the participants are shown in Table 1.

The inter-rater reliability between the participants' classifications and that of the two independent raters was strong (kappa values ranging from 0.80 to 0.91). Therefore, all analyses were conducted using the participant-reported DEI as the main outcome measure. Participants in the EDs group showed a significantly lower DEI ($M = 43.54$, standard deviation [SD] = 29.64) than those in the HCs group [$M = 66.17$, $SD = 22.23$, $F = 5.25$, $p = 0.026$, Cohen's d (95% confidence interval [CI]) = -0.85 , (-1.38 , -0.30)]. Significant between-group differences were also found for most FFMQ facets (with the exception of “observing”) and for EQ scores (see Table 2).

DEI scores were positively and significantly correlated with two FFMQ facets: Describing ($r = 0.33$, $p = 0.01$) and Non-Reacting ($r = 0.37$, $p = 0.006$) and with EQ scores ($r = 0.35$, $p = 0.008$).

4. Discussion

The findings from this study indicate that, compared to health controls, individuals with EDs process the eating experience differently. During the eating experience, the analytical processing mode was more prevalent among individuals in the EDs group than among the HCs. Our results are consistent with the findings reported by Mantzios and Wilson (2015) who induced mindful eating by asking participants to

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