Caught in the struggle with food craving:
Development and validation of a new cognitive fusion measure

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Abstract

Cognitive fusion has been related to the development and maintenance of a series of mental health difficulties. Specifically, growing research on eating psychopathology has been demonstrating the important role of cognitive fusion related to body image in these disorders. Nonetheless, cognitive fusion specifically focused on eating remained to be investigated. The current study aimed at developing and validating the Cognitive Fusion Questionnaire – Food Craving, a measure assessing the extent to which an individual is fused with food-craving undesirable and disturbing thoughts and urges.

This study was conducted with distinct samples comprising men and women from the student and general population. An exploratory factor analysis was conducted to assess the scale’s structure, which was further examined in a confirmatory factor analysis. The scale’s reliability and validities were also analysed.

Results indicated that the CFQ-FC presented a one-dimensional structure with 7 items, accounting for 66.14% of the variance. A CFA confirmed the plausibility of the measurement model, which was found to be invariant in both sexes. The CFQ-FC also revealed a very good internal consistency, construct reliability, temporal stability, and convergent and divergent validity, being positively associated with similar constructs and with indicators of eating and general psychopathology. CFQ-FC also discriminated individuals with clinically significant symptoms of binge eating from participants with no symptoms. Finally, the CFQ-FC presents incremental validity.
over a global measure of cognitive fusion in predicting eating psychopathology, namely binge eating.

The CFQ-FC is a psychometrically sound measure that allows for a brief and reliable assessment of eating-related cognitive fusion. This is a novel measure that may significantly contribute for the assessment of this specific dimension of cognitive fusion and for the understanding of its role in eating psychopathology.

Key-words
Cognitive fusion; food craving; eating psychopathology; binge eating; psychometric properties; confirmatory factor analysis

Highlights
• The CFQ-FC was developed to assess the entanglement with food urges and cravings
• CFQ-FC shows very good model fit among women and men from the community
• CFQ-FC has high internal consistency, retest, construct and incremental validity
• CFQ-FC presents incremental validity over a global measure of cognitive fusion
• CFQ-FC is linked to similar constructs, and general and eating psychopathology
Introduction

The role that food craving plays on individuals’ ability to regulate eating behaviour within the current food rich environment has been a growing area of research. Food craving can be defined as involving the experience of intrusive thoughts, urges or desires, often felt as distressing, for particular foods (Hill, 2007; Lowe & Levine, 2005; Weingarten & Elston, 1990). Difficulties in managing food cravings have been associated with perceptions of lack of control and compulsive eating behaviours (e.g., binge eating; Greeno, Wing, & Shiffman, 2000; Joyner, Gearhardt, & White, 2015; Waters, Hill, & Waller, 2001), overweight and obese status (Flegal, Carroll, Ogden, & Curtin, 2010; White, Whisenhunt, Williamson, Greenway, & Netemeyer, 2002), and indicators of impaired psychological adjustment (e.g., depressive symptoms; Hill, 2007; Lafay et al., 2001; Rogers & Smit, 2000). Therefore, the identification of the processes involved in food craving regulation is considered critical and requires particular attention. Existent approaches to eating and weight-related difficulties usually addressed food craving by promoting self-regulation and cognitive control strategies (e.g., distraction, cognitive restructuring), which have revealed limited efficacy or were even found to be problematic (e.g., Marcks & Woods, 2005). For instance, a strategy commonly adopted to manage food cravings is thought suppression, which has been identified as having the paradoxical effect of increasing difficulties in regulating eating behaviour (Erskine, 2008; Hooper, Sandoz, Ashton, Clarke, & McHugh, 2012). Thus, there has been a recent effort in developing alternative and more effective approaches for the understanding and management of food cravings.

In particular, Acceptance and Commitment Therapy (Hayes, 2004; Hayes, Strosahl, & Wilson, 1999) interventions have been showing promising results in a
range of eating and weight-related difficulties in which food cravings play an
important role (e.g., Forman, Hoffman, Juarascio, Butryn, & Herbert, 2013; Jenkins &
Tapper, 2014; Juarascio, Forman, & Herbert, 2010; Lillis, Hayes, Bunting, & Masuda,
2009). ACT encourages an accepting, nonjudgemental stance towards thoughts and
feelings and behaviour change committed with one’s wellbeing to foster
psychological flexibility. According to this perspective, human suffering is
conceptualized as resulting from psychological inflexibility (Greco, Lambert, & Baer,
2008; Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Kashdan & Rottenberg, 2010).

Cognitive fusion and experiential avoidance have been conceptualized as key
mechanisms implicated in psychological inflexibility (Hayes et al., 2006). Cognitive
fusion refers to the tendency to become entangled with one’s internal events (such as
thoughts, perceptions, sensations and emotions) perceiving these transitory mental
contents as permanent and as reflecting reality (Gillanders et al., 2014; Hayes et al.,
2006; Hayes, Strosahl, Bunting, Twohig, & Wilson, 2004; Luoma & Hayes, 2003).

As a consequence, one’s behaviours tend to become dominated by these private
events, rather than by previous experiences and their direct consequences. Thus,
maladaptive experiential avoidance strategies may be adopted as reactive attempts to
avoid, escape or diminish such undesirable private events (Hayes et al., 2006). These
processes have been associated with difficulties in changing behaviour, even when
change is necessary, beneficial and committed with one’s life values. In this sense,
cognitive fusion and experiential avoidance have been identified as playing a key role
in the development and maintenance of a series of psychopathological conditions
(Gillanders et al., 2014; Hayes, 2004; Hayes et al., 1999; Kashdan & Rottenberg,
2010; Merwin & Wilson, 2009).
Specifically, a rising number of studies have demonstrated the deleterious effect of these processes in body image and eating related psychopathology (Duarte & Pinto-Gouveia, 2014; Ferreira, Palmeira, & Trindade, 2014; Ferreira, Trindade, & Martinho, 2015; Ferreira, Trindade, Duarte, & Pinto-Gouveia, 2015; Lillis & Hayes, 2008; Merwin et al., 2011; Sandoz, Wilson, Merwin, & Kellum, 2013). In this context, specific measures have been developed to address psychological inflexibility in domains that are central in eating psychopathology, such as body image (e.g., Body Image Acceptance and Action Questionnaire – BIAAQ; Sandoz et al., 2013), weight (Acceptance and Action Questionnaire for Weight-Related Difficulties – AAQW; Lillis & Hayes, 2008) and eating-related attitudes and behaviours (e.g., Inflexible Eating Questionnaire – IEQ; Duarte, Ferreira, Trindade, & Pinto-Gouveia, 2015). In what regards the specific dimension of food craving, the Food Craving Acceptance and Action Questionnaire – FAAQ (Juarascio, Forman, Timko, Butryn, & Goodwin, 2011) was developed to assess psychological flexibility in relation to food-related experiences, namely cravings and urges to eat. This scale assesses two specific constructs relevant to psychological flexibility, notably acceptance of food-related distressing thoughts and feelings, and willingness to engage in healthy eating despite this aversive internal experience. Although the psychometric properties and validity of this scale in community samples warrant further investigation, the FAAQ appears to be a measure with potential applicability in research focused on eating behaviours and weight management. Nonetheless, a measure that allowed for the assessment of the specific process of fusion with cognitive events related to food, was non-existent.

Gillanders et al. (2014) developed the Cognitive Fusion Questionnaire (CFQ), a widely used and validated measure of cognitive fusion in distinct populations. Nonetheless, the authors suggested the pertinence of developing measures of
cognitive fusion that addressed specific thought contents, and that the CFQ could form the basis for the development of such scales. Recently, Ferreira and colleagues (2015) developed the Cognitive Fusion Questionnaire – Body image (CFQ-BI) in order to address cognitive fusion in the specific domain of body image, that is, the tendency to get entangled with body image-related cognitions and to become highly regulated by them, presenting an inability to experiencing them as transient and subjective events.

Evidence has been supporting that body image-related cognitive fusion is significantly associated with eating psychopathology severity. Ferreira, Trindade, Duarte, et al. (2015), found that cognitive fusion focused on body image is a significant feature of women with higher levels of eating psychopathology. Moreover, body image-related cognitive fusion was identified as a mediator on the association between risk factors for eating disorders (namely eating and body image maladaptive attitudes and concerns, and perceptions of inferiority), and eating psychopathology in nonclinical samples (Ferreira et al., 2014; Trindade & Ferreira, 2014) and in patients with Binge Eating Disorder (BED; Duarte, Pinto-Gouveia, & Ferreira, 2015a).

Although based in cross sectional data, these studies offer important suggestions as to the important role that cognitive fusion may play on eating psychopathology.

Alongside with body image, disturbing and recurrent thoughts and maladaptive behaviours about eating, are a hallmark of eating psychopathology (Fairburn, 2008; Spoor et al., 2006). In fact, there is evidence that eating psychopathology is marked by the struggle with frequent eating concerns (e.g., what to eat, how much, when to eat), with resisting food cravings, and with feelings of guilt about indulging in such cravings eating or losing control over eating (Duarte, Pinto-Gouveia, & Ferreira, 2014; Goss & Allan, 2009; Goss & Gilbert, 2002; Heatherton & Baumeister, 1991).
In fact, food craving has been identified as an important precipitant for binge eating symptoms (Waters, Hill & Waller, 2001). Nonetheless, experiencing food-related thoughts and cravings is not necessarily pathological (Gendall, Joyce, Sullivan, & Bulik, 1998), which suggests the relevance of identifying potential mechanisms operating on the association between urges and desires to eat, and disordered eating. It is plausible that the extent to which individuals become trapped in disturbing thoughts, urges and cravings about eating, believing that these must be acted upon, create emotional distress and have an important impact on disordered eating behaviours. Actually, disordered eating, either in the form of eating restraint or binge eating behaviours, may be conceptualized as emerging from maladaptive control strategies. Such strategies seem to be adopted as a means to avoid or diminish the frequency, intensity and valence of disturbing and undesirable internal experiences about food, even that if this subsequently leads to functional and psychosocial impairment, and greater suffering (Goss & Gilbert, 2002; Heatherton & Baumeister, 1991; Striegel-Moore et al., 2000; Wilfley, Wilson, & Agras, 2003). Nonetheless, research on the dimension of eating-related cognitive fusion is scant. The development of a measure that specifically captures this process is an important step in better understanding the role that it may operate in eating psychopathology.

Thus, the current study aimed at developing and examining the psychometric properties of a scale that specifically assesses the tendency to get fused with disturbing mental events around food craving – the Cognitive Fusion Questionnaire – Food Craving.
Method

Participants

Sample 1. The scale was initially examined in 300 women (171 college students and 129 women from the general population), with ages ranging from 18 to 55. Participants presented a mean age of 27.22 (SD = 10.04) years old and of 12.73 (SD = 2.81) years of education. Regarding Body Mass Index (BMI), participants presented a mean of 22.02 (SD = 3.02).

Sample 2. An independent sample of 518 participants was used to conduct a Confirmatory Factor Analysis and to further examine the scale’s validity. The sample included 292 women (145 college students and 147 from the general population) and 226 men (112 college students and 114 from the general population). Participants presented ages that also ranged from 18 to 55, with women presenting a mean age of 28.26 (SD = 10.64) and of 12.72 (SD = 2.84) years of education; and men a mean age of 29.11 (SD = 12.29) and of 12.29 (SD = 3.13) years of education. Results indicated no significant differences regarding these demographic variables t_{age(516)} = 0.902, p = .368; t_{education(516)} = 1.514, p = .131. Women presented a mean BMI of 23.21 (SD = 3.85), while men presented a mean BMI of 24.22 (SD = 4.23).

Sample 3. A sample of 54 participants (10 males and 44 females), with a mean age of 30.41 (SD = 10.44) and a mean of 13.09 (SD = 3.20) years of education was also used to analyse the temporal stability of the scale. These participants were asked to complete the CFQ-FC twice within a 3 to 4 week interval. Most of these participants presented a normal BMI (M = 22.10; SD = 3.19).
In all samples, the participants BMI’ distribution followed the distribution found for the Portuguese population for both men and women, and according to the age intervals considered in the current study (Poínhos, 2009).

**Measures**

*BMI.* Participants BMI’s was calculated by dividing self-reported current weight (in kg) by height squared (in m).

*Cognitive Fusion Questionnaire* (CFQ; Gillanders et al., 2014); Portuguese version by Pinto-Gouveia, Dinis, Gregório, and Lopes (2011). The CFQ is a brief self-report measure of cognitive fusion. Its more recent version comprises 7 items. Participants are invited to answer to the items using a 7-point Likert scale (ranging from “Never true” (1) to “Always true” (7). Higher scores indicate higher levels of cognitive fusion. Gillanders et al. (2014), found that the scale presents very good psychometric properties, including a Cronbach’s alpha of .90 in a community sample. The scale also presented a high internal consistency in the Portuguese version (with a Cronbach’s alpha of .89).

*Cognitive Fusion Questionnaire-Body Image* (CFQ-BI; Ferreira, Trindade, Duarte, et al., 2015). The CFQ-BI comprises 10 items that assess body image-related cognitive fusion. Participants are asked to rate the extent to which each statement reflect their experience using the same 7-point Likert scale (ranging from “Never true” (1) to “Always true” (7). Higher scores indicate that the respondent is highly fused with body image-related cognitions. The CFQ-BI was shown to present very good psychometric qualities (with a Cronbach’s alpha of .96; Ferreira, Trindade, Duarte, et al., 2015).
Acceptance and Action Questionnaire II (AAQ-II; Bond et al., 2011); Portuguese version by Pinto-Gouveia, Gregório, Dinis, and Xavier (2012). The AAQ-II is a 7-item scale designed to assess psychological inflexibility. Participants are asked to rate the extent to which each statement is true to them using a 7-point Likert scale (ranging from “Never true” (1) to “Always true” (7). Higher scores reflect greater psychological inflexibility. In the original study, the scale presented high internal consistency in distinct samples (with a Cronbach’s alpha mean of .84). The scale presented a Cronbach’s alpha value of .90 in the Portuguese population.

Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994; Portuguese version by Machado et al. (2014). The EDE-Q is a self-report version of the interview Eating Disorders Examination (EDE; Fairburn & Cooper, 1993). The EDE-Q includes 36 items and allows for a comprehensive evaluation of eating psychopathology, assessed through four subscales: restraint, eating concern, weight concern and shape concern. The items are rated for frequency of occurrence (on a scale ranging from “No days” (0) to “Every day” (6) or for severity (on a scale ranging from “Not at all” (0) “Markedly” (6). The EDE-Q total score is obtained by calculating the mean of the four subscales’ scores. Higher scores indicate greater levels of eating psychopathology severity. This measure has consistently demonstrated good psychometric properties in both clinical and community samples.

Intuitive Eating Scale-2 (IES-2; Tylka & Kroon Van Diest, 2013; Portuguese version by Duarte, Pinto-Gouveia, and Mendes (2015). The IES-2 assesses a form of adaptive eating – intuitive eating – that includes the awareness of internal hunger and satiety signals, the ability to eat in response to internal physiological cues, instead of following rigid dietary or as a way to cope with emotional distress, and to choose nutritious foods according to the body’s needs. The scale includes 23 items and
participants are asked to rate each statement selecting the option that better describes
their attitudes and behaviours, using a 5-point Likert scale (ranging from “Strongly
disagree” (1) to “Strongly agree” (5). Higher scores indicate higher intuitive eating.
The scale presented good internal reliability in the original (Cronbach’s alpha of .87; Tylka & Kroon Van Diest, 2013) and in the Portuguese version (.97; Duarte et al.,
2015).

*Binge Eating Scale* (BES; Gormally, Black, Daston, & Rardin, 1982; Portuguese version by Duarte, Pinto-Gouveia, and Ferreira (2015b). The BES is a
self-report measure that assesses the emotional, cognitive and behavioural dimensions
of the severity of binge eating symptomatology. The BES comprises 16 items. Each
item includes three to four statements and respondents are asked to select the
statement that best describes their experience. Each statement reflects a rating of
severity that ranges from 0 (no symptoms of binge eating) to 3 (severe symptoms of
binge eating). Higher scores indicate more severe binge eating symptoms. The scale
has good psychometric properties, presenting a Cronbach’s alpha value of .85 in the
original study (Gormally et al., 1982), and .88 in the Portuguese validation study
(Duarte et al., 2015b).

Depression Anxiety and Stress Scales – 21 (DASS21; Lovibond & Lovibond,
1995); Portuguese version by Pais-Ribeiro, Honrado, and Leal (2004). DASS21 is a
self-report measure that includes three subscales that assess levels of depressive,
anxiety and stress symptoms, with 7 items each. Respondents are invited to indicate
the frequency with which they experienced each symptom over the past week, using a
4-point Likert scale (ranging from “Did not apply to me at all” (0) to “Applied to me
very much or most of the time” (3). Higher results indicate higher levels of
psychopathology symptoms. The scale presents high internal consistency, with the
depression, anxiety and stress subscales presenting Cronbach’s alpha values of .88, .82, and .90, respectively, in the original version (Lovibond & Lovibond, 1995), and .85, .74, and .81, respectively, in the Portuguese version (Pais-Ribeiro et al., 2004).

Procedure

The study was approved by the Ethic Committees and Boards of the institutions involved. The students were recruited in universities and higher education institutes, whereas the participants from the general population were collected within the staff of distinct labour sectors (e.g., schools, universities and higher education institutes, hospitals). The students completed the measures at the end of a lecture; the participants from the general population completed the measures at an authorized break. The researchers presented the study to the participants, clarifying that their collaboration was voluntary and that the data collected was confidential and only used for research purposes, and administered the self-report measures. Informed consent was obtained from all participants.

Development of the measure

The CFQ-FC was based on the original CFQ (Gillanders et al., 2014) and was developed to assess the degree to which individuals are fused with specific eating-related cognitions, including disturbing and undesirable thoughts and cravings about food. Approval was obtained from the authors of the original CFQ (Gillanders et al., 2014) to develop this specific measure. We focused on the original items of the CFQ and developed a pool of items in which the original content was adapted to focus on the specific dimension of eating-related cognitions and impulses. The preliminary version of the scale comprised a pool of 20 items that were analysed by a research
team with large clinical and research experience on the field of eating disorders. The items were also administered to a group of 10 patients with BED who reported higher levels of cognitive fusion with food-related content. They were asked to fill the measure and to comment on whether the statements reflected their experience. After this process, the items were further revised and minor changes of wording were made. The final version of the scale was then submitted to a Principal Component Analysis (PCA) with the aim of reaching a shorter and psychometrically robust measure.

The instructions of the CFQ-FC also follow the structure of the original CFQ (Gillanders et al., 2014), asking participants to evaluate the extent in which each statement is true to them. The respondents use a 7-point Likert scale (ranging from “Never true” (1) to “Always true” (7) to rate their responses.

**Analytic Strategy**

A PCA was conducted (Sample 1) with the aim of developing a brief measure that comprised items designed to capture the related facets that entail the unidimensional construct of cognitive fusion (Gillanders et al., 2014; Hayes et al., 2006; Hayes et al., 2004; Luoma & Hayes, 2003), but focused on the specific phenomenon of food craving. The analysis followed the procedures adopted in the adaptation of the CFQ (Gillanders et al., 2014) to other populations (e.g., (Pinto-Gouveia et al., 2011) and dimensions (e.g., Ferreira, Trindade, Duarte, et al., 2015); and taking into consideration the assumptions to conduct the analysis (DeVellis, 2003; Field, 2004). The number of factors to extract was further confirmed through a parallel analysis (Horn, 1965).

The obtained structure was then confirmed through a Confirmatory Factor Analysis (CFA) with Maximum Likelihood estimation method (Sample 2). The
plausibility of the model was examined by the Chi-Square ($\chi^2$) and the following fit
indicators: the Comparative Fit Index (CFI), the Tucker Lewis Index (TLI), and the
Normed Fit Index (NFI), which indicate a very good fit with values above .95
(Bollen, 1986; Kline, 2005). The Root-Mean Square Error of Approximation
(RMSEA), with 90% confidence interval, was also considered; with values below .10
indicating an acceptable fit (Byrne, 2010; Hair, Black, Babin, & Anderson, 2010;
MacCallum, Browne, & Sugawara, 1996). The model invariance between sexes was
also examined (Cheung & Rensvold, 2002).

Furthermore, the internal consistency of the measure was evaluated by
computing Cronbach’s alpha coefficients and item-total correlations. The scale’s
construct reliability and convergent validity was further established by the calculation
of the Composite Reliability and of the Average Variance Extracted.

The scale’s psychometric properties were further analysed in Sample 2. The
relationship between the CFQ-FC and other self-report measures was examined by
computing Pearson product-moment correlation coefficients (Cohen, Cohen, West, &
Aiken, 2003). The retest reliability of the measure was analysed by comparing the
values of the scale obtained in two assessment moments (with 3 to 4 weeks interval)
through paired samples t-tests and Pearson product-moment correlations. T-tests for
two independent samples were conducted to examine CFQ-FC’s ability to
discriminate between individuals from the general population with clinically
significant levels of binge eating symptoms from individuals with no symptoms.

Finally, a series of hierarchical regression analyses were conducted to examine the
scale’s incremental validity over a measure assessing broad cognitive fusion (CFQ) in
the prediction of eating psychopathology and, in particular, binge eating symptoms
(DeVellis, 2003; Field, 2004).
The PCA and the remaining psychometric analyses were conducted using IBM SPSS Statistics 20 (Statistical Package for the Social Sciences, Chicago, IL, USA); the CFA was conducted using the software AMOS (Analysis of Momentary Structure, software version 18, SPSS Inc. Chicago, IL).

Results

Preliminary data analyses

Preliminary data analyses were conducted and indicated that the Skewness and Kurtosis values did not represent a significant bias to normal distribution (Sk < |3| and Ku < |10|; Kline, 2005).

Principal Component Analysis

A PCA was conducted to examine the CFQ-FC factorial structure (Sample 1). The adequacy of the data to conduct the analysis was confirmed given the results of the Kaiser Meyer-Olkin test (.96) and the Bartlett’s sphericity test ($\chi^2_{(190)} = 4806.80; p < 001$). All items presented communalities above .59. Results indicated three factors with eigenvalues above 1. However, the visual inspection of the scree plot suggested a one-dimensional structure (Figure 1). This structure was further supported by a parallel analysis, which indicated that one factor presented an eigenvalue that exceeded the 95th percentile of the eigenvalues that emerge from a random data matrix.

Thus, the analysis was recalculated forcing the retention of one factor (Table 1). This solution accounted for a total of 57.14% (eigenvalue: 11.43). The items presented factor loadings ranging from .56 to .84. To develop a briefer measure the
authors selected the 15 items with the largest factor loadings (items 1, 2, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 18, 19 and 20). This approach revealed that this solution accounted for a total of 61.54% of the variance, with these items presenting factorial loadings ranging from .73 (item 2) to .86 (item 12).

With the aim of reaching a shorter but still a theoretically and psychometrically sound measure, these 15 items were further discussed and from these, 7 items were selected. The election of these items was grounded on empirical and theoretical criteria. Theoretically, this set of items was identified as covering the variability of the construct of cognitive fusion, as conceptualized by the authors of the original measure of fusion with cognition in general (CFQ; Gillanders et al., 2014), but being focused on the specific dimension of food craving and urges. This item reduction process was further corroborated by the factorial analysis. Results indicated that this approach resulted in an increase of the amount of variance explained to 66.14%, with the items presenting factor loadings ranging between .73 (item 2) and .88 (item 12). Moreover, results demonstrated that the 15-item solution and the 7-item one presented a nearly perfect correlation ($r = .98$).

Confirmatory Factor Analysis

To confirm the obtained shorter 7-item one-dimensional structure, a CFA was conducted in a distinct sample (Sample 2). Results indicated a significant chi-square goodness of fitness ($\chi^2_{(14)} = 141.98$), but given that this fit index has been regarded as leading to biases in results due to sample size (DeCoster, 1998), we considered the remaining goodness of fit indices to attest for the adequacy of the structure under
analysis. Results suggested a poor to adequate model fit (CFI = .95; TLI = .93; NFI = .95; RMSEA = .13, p = .000). The analysis of the modification indices suggested the correlation of the errors of items 2 and 7 (47.03) and 10 and 11 (30.77), which resulted in an improvement of the model to a very good fit ($\chi^2_{12} = 60.59$; CFI = .98; TLI = .97; NFI = .98; RMSEA = .09, p = .002).

The analysis of the local adjustment indices also confirmed the adequacy of the model (Table 1). In fact, the items presented standardized regression weights significantly above the recommended cut-off point of .40 (Tabachnick & Fidell, 2013), which ranged from .74 (item 2) to .88 (item 12). The individual items reliability was also corroborated through the values of the squared multiple correlations, which varied between .55 (item 2) and .77 (item 12).

The model invariance between men and women was examined through a multigroup analysis. Findings supported the model invariance between both males and females, with results showing that no differences were found in regard to factor weights ($\Delta$CFI = -.01); as well as regarding item’s means ($\Delta$CFI = -.04; Chen, Sousa, & West, 2005; Cheung & Rensvold, 2002).

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### CFQ-FC validity and descriptives

In Sample 1, results indicated that CFQ-FC presented a very good internal reliability, with a Cronbach’s alpha value of .90. Furthermore, the scale presented item-total correlations that ranged from .66 to .82, and the deletion of any item would not result in an improvement of the internal reliability of the measure.

The validity of the scale was further assessed through the calculation of the
Composite Reliability (CR) and Average Variance Extracted (AVE; Fornell & Larcker, 1981) in Sample 2. Results indicated that the scale presented a CR of .96, which indicates very good construct reliability. Furthermore, an AVE value of .77 was obtained, confirming the instrument convergent validity.

In regard to the descriptive statistics (Sample 2), results indicated that women presented higher scores of food craving-related cognitive fusion ($M = 15.37; SD = 8.67$), in comparison to men ($M = 10.58; SD = 5.17$), and these differences were statistically significant ($t_{(516)} = 7.81, p < .001$).

Retest Reliability

The retest reliability was examined in Sample 3. Results of the Pearson product-moment correlations showed strong positive correlations between the test and retest of the CFQ-FC ($r = .79; p < .001$). Furthermore, findings from the t-test for dependent samples showed that there were no significant differences between the two assessment moments of the CFQ-FC ($t_{(53)} = 1.05; p = .298$), further supporting the instruments’ temporal stability.

CFQ-FC relation with other measures

Pearson product-moment correlations coefficients were calculated (Sample 2) to examine the convergent validity of CFQ-FC in association with similar constructs, as well as to the scale’s association with important indicators of eating and general psychopathology (Table 2). Findings revealed, for both men and women, positive moderate associations between CFQ-FC and broad cognitive fusion (CFQ). Stronger associations were found in the association between CFQ-FC and cognitive fusion related to the specific dimension of body image (CFQ-BI). Moreover, results
indicated that CFQ-FC was positively and moderately associated with psychological inflexibility (AAQ-II). Results also revealed that CFQ-FC was strongly and positively associated with a global indicator of eating psychopathology, as well as with a more specific measure of binge eating symptoms. On the contrary, CFQ-FC was negatively associated with intuitive eating (IES-2). CFQ-FC was only marginally associated with BMI in women. Finally, positive moderate associations were found between CFQ-FC and symptoms of depression, anxiety and stress. Overall, the correlations were stronger in the case of women.

Discriminant validity

To confirm the CFQ-FC ability to discriminate between individuals with the presence of clinically significant symptoms of binge eating from individuals with no significant symptoms, we compared two samples with similar demographic characteristics, namely age ($t_{(108)} = .111; p = .319$) and years of education ($t_{(108)} = .001; p = .999$). The group with higher levels ($n = 42; 5$ men and $37$ women) was selected based on the cut point for the BES $> 17$ (Duarte et al., 2015b; Marcus, Wing, & Lamparski, 1985). The group with lower levels of disordered eating symptoms included $68$ ($11$ men and $57$ women) randomly selected controls. Results revealed that participants with significant scores of binge eating present significantly higher scores of cognitive fusion with food-related thoughts ($M = 27.33; SD = 9.88$), in comparison to the participants with no symptoms ($M = 14.87; SD = 6.81; t_{(108)} = 7.83 ; p < .001$).

Incremental validity
To test the CFQ-FC incremental validity over a global measure of cognitive fusion, a series of hierarchical regression analyses were conducted for both sexes (Sample 2). As criterion variables we first considered the EDE-Q, and in a second set of analyses we considered the BES. In all analyses the CFQ was included as the predictor in the first step, and CFQ-FC was further added as a predictor in the second step.

In women, results revealed that cognitive fusion measured by the CFQ accounted for 17% of EDE-Q variance ($\beta = .41; F_{(1,266)} = 54.62; p < .001$). On step two, when CFQ-FC was included, findings revealed that the model was significant and accounted for 52% of EDE-Q variance ($F_{(1,266)} = 190.72; p < .001$). CFQ-FC emerged as the best global predictor ($\beta = .67; p < .001$), followed by CFQ ($\beta = .10; p = .034$). In men, findings indicated that CFQ accounted for 7% of EDE-Q variance ($\beta = .27; F_{(1,183)} = 14.35; p < .001$), and that when CFQ-FC was included, the model accounted for 43% of EDE-Q variance ($F_{(1,182)} = 113.20; p < .001$). CFQ-FC emerged as the only significant predictor ($\beta = .66; p < .001$), followed by CFQ ($\beta = -.00; p = .970$).

Regarding binge eating symptoms, the analysis conducted in women indicated that CFQ accounted for 18% of BES variance ($\beta = .43; F_{(1,269)} = 60.27; p < .001$). The inclusion of CFQ-FC in the second step resulted in an increase of the variance of the BES to 62% of BES ($F_{(1,268)} = 307.74; p < .001$). In this model, CFQ-FC emerged as the best global predictor ($\beta = .74; p < .001$), followed by CFQ ($\beta = .09; p = .042$). The same analysis conducted in men indicated that CFQ accounted for 14% of BES variance ($\beta = .38; F_{(1,183)} = 30.43; p < .001$). On step two, when CFQ-FC was included, the models was significant and accounted for 38% of the variance ($F_{(1,182)} = 113.20; p < .001$).
Discussion

The current study presents the development and validation of a new measure designed to assess cognitive fusion with undesirable thoughts regarding food craving and urges to eat – CFQ-FC. This specific measure was first examined in a sample of women from the general population, with ages ranging from 18 to 55 years old. The analysis confirmed that all CFQ-FC’ items presented strong factorial loadings. With the aim of reaching a shorter and psychometrically robust measure, a stringent item reduction process was conducted. Although all items presented high factorial loadings, were elected to be included in the final version of the scale 7 items that comprehensively addressed the dimensions of food craving-related cognitive fusion. In fact, these items mirrored the content of the original CFQ (Gillanders et al., 2014), but specifically focused on the domain of eating (e.g., CFQ item: “I tend to get very entangled in my thoughts”; CFQ-FC item: “I tend to get very entangled in my food urges or cravings”). Thus, the items comprising the one-dimensional structure of the CFQ-FC are also strongly theoretically supported. Moreover, this structure accounted for 66.14% of the variance and was found to have high internal consistency. Findings also supported that CFQ-FC presents strong temporal stability.

This obtained shorter structure of the CFQ-FC was further examined in a distinct sample of 518 participants comprising men and women from the general population, with the same wide age interval. The CFA findings confirmed the plausibility of the one-dimensional model (Kline, 2005; Tabachnick & Fidell, 2013).
In fact, results indicated that the model presented a very good fit to the data and that all items significantly contributed to the assessment of the construct of food craving-related cognitive fusion. The items presented high factor loadings and strong individual item reliability. Results indicated the pertinence of specifying correlated measurement errors between two pair of items, which had similar content and involved the same key terms (Brown, 2006). In particular, the formulation of items 2 and 7 in their original language may be analysed by respondents in a similar way. In fact, the language in which the measure was developed and tested (Portuguese) could have had implications in these method effects, and thus these specifications should be analysed in future studies. Furthermore, an additional explanation for this question may be related to the content of the items. Specifically, item 10 and 11 were generated to address specific aspects of fusion, namely the way behaviour may come to be dominated by thoughts and the tendency to overanalyse one’s food cravings even when this is unhelpful, respectively (Gillanders et al., 2014; Hayes et al., 2006). Nonetheless, it is plausible that these items both capture the dimension of how fusion with one’s internal experiences may govern one’s behaviours and may hinder or limit one’s ability to engage in valued helpful actions towards wellbeing. These assumptions should be further explored in future research examining the factorial structure of this new measure and the potential existence of constructs underlying fusion related to this specific eating-related dimension.

Studies on food craving have been conducted predominantly in women (e.g., Forman et al., 2013; Hill, 2007; Hooper et al., 2012) and thus questions remain about the experiences associated with food craving across men and women, that can potentially be addressed through the use of the CFQ-FC. In fact, results supported that the CFQ-FC has high construct reliability and convergent validity for both men and
women (Hair et al., 2010). CFQ-FC also demonstrated a strong measurement invariance for both sexes (Chen et al., 2005; Cheung & Rensvold, 2002), which supports that the scale has a simple and consistent structure across distinct populations.

The current study also contributed to clarify sex differences in regard to cognitive fusion with craving related to food. Results revealed that women present statistically significant higher scores on the CFQ-FC in comparison to men. Prior research showed that, in comparison to men, food cravings are more common in women (Weingarten & Elston, 1990). Moreover, prior evidence showed that there are important sex differences in regard to the subjective experience related to food cravings, with this phenomenon being experienced by women as more problematic (Lafay et al., 2001). The current study extends these findings by showing that women from the general community, in comparison to men, present a stronger tendency to become entangled with thoughts involving craving and impulses to eat, perceiving them as events that need to be acted upon, at the expense of helpful or important actions towards wellbeing.

The correlation’s analyses conducted for both men and women confirmed that CFQ-FC was associated with other related measures in the expected directions. In fact, results revealed that CFQ-FC was positively but moderately linked to a broad measure of cognitive fusion. This result suggests that although CFQ-FC development and content closely followed the original broad measure of CFQ (Gillanders et al., 2014), the two measures assess specific and non-overlapping constructs. That is, CFQ-FC seems to cover a specific construct that is related but distinct from a global tendency to become entangled with one’s internal experiences. Furthermore, cognitive fusion focused on eating-related thoughts – CFQ-FC – was found to be closely linked
but distinct from cognitive fusion focused on other construct that is key to disordered eating problems – body image (CFQ-BI; Ferreira, Trindade, Duarte, et al., 2015).

Prior evidence showed that cognitive fusion is a central component of psychological inflexibility, being associated with emotional distress and suffering (Ferreira, Trindade, Duarte, et al., 2015; Gillanders et al., 2014; Hayes, 2004; Hayes et al., 1999). In line with such findings, results also confirmed that cognitive fusion focused on eating-related thoughts is associated with higher psychological inflexibility and symptoms of depression, anxiety and stress (DASS21; Lovibond & Lovibond, 1995). This result suggest that relating with one’s internal events about eating as these were permanent events that reflect reality and require a reactive response to them, may generate emotional distress and become problematic in one’s life. The current findings are therefore in line with prior research that demonstrated that food craving is associated with negative mood (e.g., depressive symptoms; Lafay et al., 2000), while also supporting the assumption that more than this phenomenon itself, it is the subjective experience and relationship the individual establishes with it that may cause it to become associated with a range of deleterious psychological and behavioural consequences (Gendall et al., 1998; Lafay et al., 2001). Although these conclusions cannot be established through the current study’s findings and need to be addressed through prospective experimental designs, it is plausible that the tendency to become fused with the experience of food-related cognitive contents plays a critical role in these associations.

In particular, our findings indicate that a higher tendency to become fused with disturbing thoughts involving desires to eat, and with the struggle to resist impulses to eat, is associated with a higher severity of eating psychopathology symptoms (EDEQ; Fairburn & Beglin, 1994), namely binge eating (BES; Gormally et al., 1982). On the
other hand, as expected, a negative association was found between CFQ-FC and the
capacity to guide one’s eating behaviour by accepting, understanding and using one’s
internal hunger and satiety signals, instead of eating in response to emotional or
external cues (IES-2; Tylka & Kroon Van Diest, 2013). Overall, the direction and
strength of the examined associations were similar in both sexes, although the link
between CFQ-FC and the study measures was stronger in women. These findings
corroborate prior studies that show that food cravings are associated with increased
maladaptive eating attitudes and behaviours, including episodes of loss of control
over eating (Greeno et al., 2000; Joyner et al., 2015; Waters et al., 2001).
Nonetheless, the associations examined in this study seems to support the hypothesis
that it is when individuals become fused with impulses or urges to eat that they tend
to present increased eating psychopathology symptoms. These findings are therefore,
in line with prior evidence that suggests that more than the occurrence of urges and
desires to eat, it is the cognitive and emotional processes associated with this
phenomenon that may determine its maladaptive impact.

Finally, although prior research suggest that food cravings are associated with
higher BMI, and overweight/obesity (e.g., Flegal et al., 2010; White et al., 2002), the
results from this study revealed that the tendency to become fused with one’s eating-
related thoughts is marginally or nonsignificantly associated with current BMI, in
men and women from a nonclinical general community sample with normative weight
status. These findings need to be analysed with caution given existent evidence on the
limitations of considering BMI as a reliable indicator of healthy weight (Bhurosy &
Jeewon, 2013). Future studies should clarify the strength of these associations and the
link between food craving-related cognitive fusion and other measures of body
composition and related health risks, in community samples, in individuals struggling with managing their weight and in clinical samples with eating disorders.

Nonetheless, the current study contributed to demonstrate that the tendency to be fused with eating-related urges and impulses may be an important construct to understand binge eating symptomatology. In fact, the current study demonstrated that women from the general population who present significant symptoms of binge eating, present significantly higher levels of food craving-related cognitive fusion, in comparison to women who do not report these symptoms. This finding supports the discriminant validity of this scale and indicates that it may be a particularly useful instrument for the research of disordered eating behaviours, namely binge eating.

The incremental validity of the measure was also confirmed, with results indicating that CFQ-FC accounted for overall eating psychopathology symptoms (EDEQ; Fairburn & Beglin, 1994) and specific symptoms of binge eating (BES; Gormally et al., 1982), above a global measure of cognitive fusion (CFQ; Gillanders et al., 2014). These findings corroborate prior suggestions regarding the pertinence of developing and using measures that cover specific contents of cognitive fusion (Ferreira, Trindade, Duarte, et al., 2015; Gillanders et al., 2014). In particular, data from the current study suggest that the tendency to get entangled with the content of undesirable and disturbing thoughts about eating and cravings and impulses to eat, may be associated with maladaptive eating attitudes and behaviours. More specifically, our results suggest that a fused relationship with one’s internal events about eating and seeing them as permanent and not transitory subjective experiences, is linked with an increased tendency to engage in reactive attempts to control these unwanted experiences, such as binge eating. Prior evidence demonstrated that the tendency to get entangled with thought contents focused on specific dimensions
relevant in eating psychopathology is associated with eating psychopathology severity
in women from the general community (Ferreira et al., 2014; Ferreira, Trindade,
Duarte, et al., 2015; Trindade & Ferreira, 2014), and emerged as an important process
operating in the severity of binge eating symptomatology in women with BED
(Duarte et al., 2015a). The current study constitutes an important contribution to
develop this line of research by providing an instrument that allows for the
examination of cognitive fusion related with the specific dimension of food craving.

These findings support that the CFQ-FC holds therefore potential interest for
researchers and clinicians as it allows for the brief and reliable assessment of a
specific psychological process that seems particularly relevant in disordered eating
behaviours. In fact, this measure provides a means to clarify the role that fusion with
eating-related cognitive content may play in the engagement in maladaptive eating
behaviours, such as binge eating. Moreover, as an important direction for future
research, CFQ-FC can be used to examine changes in interventions, and to test
hypotheses regarding the mediating mechanisms operating in such changes
throughout treatment.

This data needs to be analysed with caution given that measures of eating
psychopathology inherently comprise the dimension of the excessive dominance of
eating-related cognitions (e.g., concerns about eating, attempts to control eating
behaviour or reactively eating in response to urges to eat), which could result in
artificially large associations between constructs, such as food craving-related
cognitive fusion and binge eating (e.g., as measured by the BES; Gormally et al.,
1982). The CFQ-FC items were carefully developed taking this aspect into
consideration. In fact, the items that comprise the final version of the CFQ-FC assess
the multiple dimensions of cognitive fusion (including the tendency to overidentify
with, evaluate, overanalyse and try to control thought content, and to emotionally react to it), instead of overly focusing on the impact of cognitive fusion over eating behaviour. Nonetheless, future research should clarify these associations and examine the relationship between CFQ-FC and other behavioural and experimental methods to assess cognitive fusion related to eating, and its effect on eating behaviour and psychological adjustment.

Some limitations should be considered in the current study. The CFQ-FC’ factorial structure should be confirmed in different samples. In particular, future research should investigate the invariance of this model in groups at increased risk for eating struggles (e.g., adolescent girls, homosexual/bisexual males), individuals with difficulties in regulating eating behaviour, and patients with eating psychopathology, namely bulimia nervosa and BED.

The clinical sensibility and specificity of this measure should also be further investigated in these specific samples. Furthermore, given the relevance of investigating disordered eating behaviours in the community, findings from the current study should be corroborated in future investigations in other languages (e.g., English). Lastly, results from the current study suggest that CFQ-FC seems to be particularly useful to address an important dimension for the conceptualization and treatment of eating-related difficulties.

Nonetheless, future research is needed to further understand how this dimension of cognitive fusion focused on eating interacts with other dimensions of cognitive fusion (e.g., body image), and other processes (e.g., experiential avoidance) relevant for eating psychopathology. In particular, it would be pertinent to investigate how this new measure correlates with an existing food-craving measure focusing on the ACT model processes of acceptance and willingness to experience aversive internal
experiences, the FAAQ. This is an important limitation of the current study (as the FAAQ is still not validated in the Portuguese population), which should be addressed by future research.

Moreover, the development of the CFQ-FC seems to be an important contribution, as this specific measure may provide clinicians and researchers a better understanding of how fusion focused on eating and food craving can have an impact on eating behaviours. In particular, this measure is of potential use for researchers in experimental studies investigating the effect of cognitive fusion on food consumption.

Moreover, it can be a particularly relevant tool to track changes in this psychological process, and its mediator effect, in treatments for disordered eating.

In conclusion, the CFQ-FC is a short and psychometrically valid measure with important implications for research and clinical practice in the field of eating behaviours.

References


inflexibility and experiential avoidance. *Behavior Therapy, 42*, 676–688.

doi:10.1016/j.beth.2011.03.007


Duarte, C., & Pinto-Gouveia, J. (2014). Returning to emotional eating: The psychometric properties of the EES and association with body image


doi:10.1016/j.brat.2004.03.005

doi:10.1016/0306-4603(85)90022-X


doi:10.1080/10640266.2011.533606


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<tr>
<th>Items</th>
<th>M</th>
<th>SD</th>
<th>λ</th>
<th>( h^2 )</th>
<th>Item-total correlation</th>
<th>α if item deleted</th>
<th>SRW</th>
<th>SMC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My desires to eat in excess (large amounts) disturb me or cause me emotional distress.</td>
<td>1.61</td>
<td>1.04</td>
<td>.74</td>
<td>.55</td>
<td>.71</td>
<td></td>
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<td>2. I tend to get very entangled in my food urges or cravings.</td>
<td>1.83</td>
<td>1.20</td>
<td>.74</td>
<td>.55</td>
<td>.72</td>
<td>.89</td>
<td>.74</td>
<td>.55</td>
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<tr>
<td>3. I feel distressed when I have urges to eat something that is not healthy.</td>
<td>2.00</td>
<td>1.33</td>
<td>.72</td>
<td>.51</td>
<td>.69</td>
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<td>4. If I have the desire to eat something that is not healthy I cannot resist it.</td>
<td>2.73</td>
<td>1.46</td>
<td>.56</td>
<td>.32</td>
<td>.54</td>
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<tr>
<td>5. I focus too much on my disturbing thoughts about my eating pattern.</td>
<td>1.58</td>
<td>.095</td>
<td>.77</td>
<td>.59</td>
<td>.73</td>
<td></td>
<td></td>
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<tr>
<td>6. My urges to eat ‘force’ me to stop whatever I am doing.</td>
<td>1.50</td>
<td>.92</td>
<td>.74</td>
<td>.55</td>
<td>.70</td>
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<tr>
<td>7. It’s very difficult for me to let go of my food urges or cravings even when I know that letting go would be helpful.</td>
<td>1.81</td>
<td>1.23</td>
<td>.77</td>
<td>.59</td>
<td>.74</td>
<td>.88</td>
<td>.77</td>
<td>.59</td>
</tr>
<tr>
<td>8. My food urges or cravings distract me from what I am doing at the moment.</td>
<td>1.60</td>
<td>.96</td>
<td>.77</td>
<td>.60</td>
<td>.74</td>
<td></td>
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<tr>
<td>9. I feel that my food urges or cravings control my eating.</td>
<td>1.67</td>
<td>1.12</td>
<td>.69</td>
<td>.48</td>
<td>.66</td>
<td></td>
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<tr>
<td>10. I get so caught up in my urges to eat that I am unable to do the things that I most want to do.</td>
<td>1.30</td>
<td>.71</td>
<td>.80</td>
<td>.63</td>
<td>.74</td>
<td>.88</td>
<td>.80</td>
<td>.64</td>
</tr>
<tr>
<td>11. I overanalyse my urges or cravings to eat to the point where it’s unhelpful to me.</td>
<td>1.42</td>
<td>.82</td>
<td>.80</td>
<td>.64</td>
<td>.75</td>
<td>.87</td>
<td>.80</td>
<td>.64</td>
</tr>
<tr>
<td>12. I struggle to control my food urges or cravings.</td>
<td>1.45</td>
<td>.96</td>
<td>.84</td>
<td>.71</td>
<td>.81</td>
<td>.89</td>
<td>.88</td>
<td>.77</td>
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<tr>
<td>13. I get upset with myself for having certain urges or cravings for unhealthy foods.</td>
<td>1.99</td>
<td>1.35</td>
<td>.77</td>
<td>.59</td>
<td>.75</td>
<td>.88</td>
<td>.81</td>
<td>.65</td>
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<td>14. Whenever I have an impulse or desire to eat something that is not healthy (for example, candies, fries) I find it difficult to concentrate is</td>
<td>1.73</td>
<td>1.03</td>
<td>.76</td>
<td>.58</td>
<td>.73</td>
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anything else.

15. I need to control the food cravings that come to my mind.  1.89  1.24  .77  .60  .76

16. I make a great effort to control or avoid my urges or cravings to eat.  1.78  1.17  .73  .54  .71

17. If I have the craving to eat something that is not healthy I cannot ‘let go’ until I do it.  1.82  1.15  .69  .48  .67

18. My food-related thoughts cause me distress or emotional pain.  1.30  0.76  .80  .63  .74  .95  .86  .75

19. My urges and cravings to eat cause me great distress and impairment in my life.  1.27  0.72  .82  .68  .77

20. I am afraid of my urges to eat something that is unhealthy or to eat excessively.  1.46  1.08  .79  .63  .75

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<td>956</td>
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Table 2.
CFQ-FC correlations with other measures and their respective Cronbach’s alphas (n = 518)

<table>
<thead>
<tr>
<th>CFQ</th>
<th>CFQ-BI</th>
<th>AAQ-II</th>
<th>EDE</th>
<th>BES</th>
<th>IES-2</th>
<th>DEP</th>
<th>ANX</th>
<th>STR</th>
<th>BMI</th>
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<tbody>
<tr>
<td>α</td>
<td>.94</td>
<td>.97</td>
<td>.94</td>
<td>.95</td>
<td>.92</td>
<td>.87</td>
<td>.90</td>
<td>.86</td>
<td>.91</td>
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<tr>
<td>CFQ-FC</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Women</td>
<td>.46***</td>
<td>.68***</td>
<td>.44***</td>
<td>.71***</td>
<td>.78***</td>
<td>-.59**</td>
<td>.43***</td>
<td>.40***</td>
<td>.40***</td>
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<tr>
<td>Men</td>
<td>.42***</td>
<td>.66***</td>
<td>.48***</td>
<td>.68***</td>
<td>.60***</td>
<td>-.41**</td>
<td>.35***</td>
<td>.45***</td>
<td>.38***</td>
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*** p < .001; ** p < .010
Figure 1. Scree plot for the Principal Component Analysis for the Cognitive Fusion Questionnaire - Food Craving (n = 300)