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BRIEF REPORT

Eating When Bored: Revision of the Emotional Eating Scale With a Focus on Boredom

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Objective: The current study explored whether eating when bored is a distinct construct from other negative emotions by revising the Emotional Eating Scale (EES) to include a separate boredom factor. Additionally, the relative endorsement of eating when bored compared to eating in response to other negative emotions was examined. **Method:** A convenience sample of 139 undergraduates completed open-ended questions regarding their behaviors when experiencing different levels of emotions. Participants were then given the 25-item EES with 6 additional items designed to measure boredom. **Results:** On the open-ended items, participants more often reported eating in response to boredom than the other emotions. Exploratory factor analysis showed that boredom is a separate construct from other negative emotions. Additionally, the most frequently endorsed item on the EES was “eating when bored.” **Conclusions:** These results suggest that boredom is an important construct, and that it should be considered a separate dimension of emotional eating.

Keywords: emotional eating, boredom, emotional eating scale

Emotional eating is a change in the consumption of food in response to emotional stimuli, and has been linked to negative physical and psychological outcomes (Arnow, Kenardy, & Agras, 1995). One shortcoming of the current literature on emotional eating is that few studies have examined *specific* emotional states that influence eating, as variability in emotional eating has been found across emotions (Arnow, Kenardy, & Agras, 1995). Particularly lacking is the study of eating when bored.

While there is anecdotal evidence that adults eat when bored, this construct has not been studied extensively. Leon and Chamberlain (1973) found that more than 25% of normal weight and overweight participants endorsed eating more when “lonely or bored”. Abramson and Stinson’s (1977) found that participants ate more in a boredom condition than in a control condition. Mehrabian’s (1980) participants reported that they would eat the most in response to low arousal negative emotions (e.g., boredom or concern) and would eat the least in response to high arousal negative emotions (e.g., feeling anxious, hostile, and angry). Finally, Caldwell, Smith, and Weissinger (1993) found that boredom proneness, along with poor impulse control, increases one’s likelihood of overeating.

The current study sought to further understand eating when bored. First, we elicited open-ended reports of behavior during

emotional experiences (i.e., depression, anxiety, anger, and boredom). We hypothesized that participants would report eating as a response to boredom more often than to other emotions. Second, this study explored whether eating when bored is a unique construct apart from eating in response to other negative emotions by adding boredom items to the EES and examining the factor structure. Finally, we hypothesized that scores on the boredom subscale of the revised EES would be higher than scores on the other subscales.

Method

Participants and Measures

One hundred and thirty-nine undergraduates (70% female; M BMI = 24.9 kg/m², SD = 5.1) were recruited from psychology classes at a Midwestern university. Participants had to be at least 18 years old and a student at the author’s university with access to the online recruitment system. Participants completed questionnaires online and received course credit for participation. University Human Subjects Review Board approved all measures and procedures for this study. Participants also reported their gender, height, and weight.

Open-ended vignettes. Participants read eight vignettes with the following instructions, “People respond differently to various situations. Please tell us the four things you are most likely to do if you are feeling the following emotions.” Participants responded freely, and were not given responses to choose from. The vignettes reflected the three original subscales of the EES, (anxiety, anger/frustration, and depression) as well as boredom. Because intensity of emotion affects behavioral re-

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sponses, (Mach, 2008; Mehrabian, 1980) two vignettes were created for each emotion (i.e., “When I’m feeling a little . . .” or “When I’m feeling extremely . . .”). Vignettes were created by discussion between the authors regarding scenarios that capture varying intensity of the emotional states presented in the revised EES. They were piloted with a small sample, and were found to adequately represent the essence of these emotions and their differing intensity levels. Vignettes were presented prior to administration of the revised EES.

Revised EES with boredom subscale. Participants completed a modified version of the Emotional Eating Scale (EES; Arnow, Kenardy, & Agras, 1995), a 25-item self-report measure that assesses desire to eat in response to various emotions. The EES has good construct validity, as shown by its relation to 7-day recall of binge eating, criterion validity, as shown by the relationship between changes in EES and response to treatment for binge eating symptoms, and discriminant validity, as shown by its lack of relation with measures of attitudes, psychological adjustment, and self-esteem (Arnow, Kenardy, & Agras, 1995). Participants rated their desire/urge to eat in response to given emotions on a 5-point scale from 1 (*No desire to eat*) to 5 (*An overwhelming urge to eat*). The original EES grouped emotions into three subscales: (a) Depression, (b) Anxiety, and (c) Anger/Frustration. For this study, six items were added (in addition to “Bored” from the original EES) to assess eating when bored for a total of 31 items. Additional items were thesaurus-guided synonyms for “bored” (i.e., “Blah,” “Nothing to do,” “Unstimulated,” “Unexcited,” “Restless,” and “Disinterested”).

Data Analyses

Chi-square tests were used to examine the relationships between demographic variables, open-ended vignettes, and EES subscales. McNemar’s tests were conducted to examine the difference between the proportion of participants who endorsed eating when bored and each of the other emotions. Exploratory factor analyses were utilized to examine the factor structure of the revised 31 item EES data. Factors were extracted using principal axis factoring, and an oblique rotation (promax with Kaiser Normalization) was used to allow the factors to correlate and to facilitate interpretation. Primary loadings of > 0.40 with secondary loadings < 0.35 were considered acceptable. Repeated Measures ANOVA was conducted to examine differences between subscales.

Results

Chi-square tests indicated that overweight/obese participants were more likely to report eating more in responses to feeling a little frustrated, $\chi^2(1, N = 134) = 6.05, p < .05$, and a little bored, $\chi^2(1, N = 134) = 6.32, p < .05$. Additionally, females were more likely than males to report eating more in response to feeling extremely depressed, $\chi^2(1, N = 134) = 4.56, p < .05$. No other differences across gender or BMI were found.

Open-Ended Vignettes

Responses to the open-ended questions were independently coded by two raters and showed excellent agreement ($\kappa =$

0.97). The participant’s first response and all reported responses were coded as “eat more,” “eat less,” or “not related to eating”. Participants frequently listed eating more in response to feeling bored. See Table 1. McNemar’s tests revealed that the proportion of participants who reported eating more when bored for any response was significantly greater than the other emotions. In addition, significantly more participants reported eating more when a little bored as their first response than any of the other emotions. It is clear from these results that when given the opportunity to freely describe their responses to specific emotions, participants indicated that they eat more when bored.

Exploratory Factor Analysis

The initial exploratory factor analyses on the revised 31 item EES yielded a 4-factor solution. However, several items had low primary loadings and were removed from the scale. After trimming these items systematically (beginning with the item with the lowest primary loading), a 3-factor structure was the best fit to the data (i.e., Depression, Boredom, and Anxiety/Anger; see Table 2). This is consistent with a recent validation of the EES in children, indicating that the anxiety and anger/frustration subscales overlapped greatly, and were merged (Tanofsky-Kraff, et al., 2007). Interfactor correlations ranged from 0.43 for Depression and Anxiety/Anger to 0.54 for Depression and Boredom. Internal consistency for the entire EES scale and for the subscales using Cronbach’s alpha are as follows: Overall $\alpha = .93$; Depression subscale $\alpha = .88$; Boredom subscale $\alpha = .87$; and Anxiety/Anger subscale $\alpha = .83$.

Rates of Endorsement

Means for the Depression, Boredom, and Anxiety/Anger subscales were significantly different, $F(1, 126) = 64.55, p < .001$; Depression ($M = 2.20, SD = .86$) and Boredom ($M = 2.60, SD = .83; t = 6.61, p < .001$); Anxiety/Anger ($M = 1.88, SD = .70$) and Depression, $t = 4.63, p < .001$; and Boredom and Anxiety/Anger, $t = 11.68, p < .001$. “Bored” had the highest endorsement ($M =$

Table 1
Results of Open-Ended Responses to Vignettes Portraying Low and High Intensity Emotions (n = 139)

Negative emotion	Eating more:	
	1st response n (%)	Any response n (%)
Bored:		
Little	15 (10.8%)	41 (29.5%)
Extremely	6 (4.3%)	33 (23.7%)
Frustrated:		
Little	0 (0%)*	7 (5%)*
Extremely	2 (1.4%)	11 (7.9%)*
Anxious:		
Little	4 (2.9%)*	20 (14.4%)*
Extremely	3 (2.2%)	12 (8.6%)*
Depressed:		
Little	0 (0%)*	17 (12.2%)*
Extremely	2 (1.4%)	18 (12.9%)*

* Significantly less than eating when bored ($p < .05$).

Table 2
Rotated Factor Matrix for the EES With Additional
Boredom Items

	Factor 1: Depression	Factor 2: Boredom	Factor 3: Anxiety/Anger	<i>M</i>	<i>SD</i>
Upset ^b	.91	-.12	.03	2.20	1.37
Sad ^a	.81	.02	-.17	2.33	1.33
Worried ^b	.67	-.19	.30	2.10	1.29
Lonely ^a	.65	.26	-.17	2.85	1.34
Blue ^a	.60	.20	-.08	2.47	1.34
Inadequate ^c	.54	.11	.14	2.02	1.13
Discouraged ^c	.53	.08	.11	2.03	1.07
Guilty ^c	.45	.14	.12	1.99	1.21
Helpless ^c	.43	.13	.21	1.95	1.15
Disinterested	-.09	.75	.07	2.11	1.10
Unexcited	.11	.71	-.01	2.21	1.11
Nothing to do	.04	.71	-.03	3.52	1.07
Bored ^a	.27	.67	-.12	3.69	1.21
Restless	-.09	.58	.21	2.33	1.21
Unstimulated	.07	.56	.17	2.38	1.20
Blah	.25	.53	-.17	2.65	.99
Confused ^b	.01	.50	.25	1.94	.99
On Edge ^b	-.17	.16	.74	1.84	.98
Irritated ^c	.19	-.11	.67	1.96	1.05
Furious ^c	-.03	.11	.58	1.60	.88
Angry ^c	.22	-.08	.58	1.78	1.01
Jittery ^b	-.01	.00	.56	2.01	1.13
Rebellious ^c	-.24	.33	.52	1.90	1.00
Nervous ^b	.29	-.13	.47	2.04	1.23
Excited ^b	-.14	.35	.56	1.92	.98

Note. Factor intercorrelations are: (Factor 1 and 2, $r = .54$; Factor 1 and 3, $r = .43$; Factor 2 and 3, $r = .52$).

^a Originally on Depression Subscale of EES. ^b Originally on Anxiety Subscale of EES. ^c Originally on Anger/Frustration Subscale of EES.

3.69), followed by “Nothing to do” and “Lonely”. “Furious” was endorsed the least ($M = 1.60$). See Table 2.

Discussion

As expected, in response to open-ended vignettes, participants more often reported eating in response to feeling bored, compared to other emotions described (i.e., anger, anxiety, and depression). One critique of forced choice emotional eating questionnaires is that participants may not be accurate in their reports (Evers, De Ridder, & Adriaanse, 2009). Future research that combines open-ended responses with behavioral observation could examine this possibility further. Similarly, it would be beneficial to further validate the open-ended questions included in this study on larger, diverse samples to ensure that the vignettes adequately capture the intensity and content of their respective emotional states (e.g., depression, anxiety, etc.). In addition to the finding that boredom is a relevant emotion that precedes eating, the exploratory factor analysis showed that the inclusion of a boredom subscale is a psychometrically valid addition to the EES. The boredom subscale had good internal consistency and high rates of endorsement; higher in fact, than any of the other subscales, providing compelling evidence that boredom should be included in future research on emotional eating.

Despite these important findings, there are limitations to this study that should be addressed. First, participants were mostly average weight female college students. Given that variations in obesity and emotional eating exist between men and women, (Larsen, Van Strien, Elsinga, & Engels, 2006) this modified scale should be validated in more diverse samples. Further, this scale should be validated in treatment-seeking samples since those who have disordered eating or are participating in weight loss treatments may have different manifestations of emotional eating. Thus, generalizability of the findings in this study to other populations is uncertain.

This study did not exclude those with disordered eating (e.g., binge eating). Future studies should examine the impact of disordered eating on eating when bored. Additionally, a potential limitation may arise in the order of presentation of the measures. While we intentionally placed the open-ended questions before the EES to reduce suggesting eating as a response to emotional situations, it is possible, that by viewing the vignettes first, participants’ EES responses were influenced by a heightened awareness of how negative emotions could impact eating behaviors. This could impact responses to the EES in this study compared to other studies.

Another potential limitation arises from debate about whether eating in response to boredom is “emotional eating,” or if it should be seen as a form of external eating (Wardle, Guthrie, Sanderson, & Rapoport, 2001). Indeed, the current study shows that at the very least, eating when bored deserves attention as a unique or differential aspect of emotional eating, or potentially as an external eating response. Future studies would benefit from an examination into the discriminant validity of boredom as an emotional eating construct compared to external eating, restrained eating, and the relationships between these constructs.

Nevertheless, this study provides a significant contribution to the literature on emotional eating, and to the study of eating in response to boredom, pointing to the need for a boredom construct in measures of eating behaviors. Boredom as a unique trigger for eating has long been overlooked by researchers and clinicians, and in the future, boredom should be incorporated into the study of eating in response to emotional stimuli.

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