



The perceived function of eating is changed during examination stress: a field study[☆]

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Abstract

Changes of eating in response to a real life stressor were examined in field study using a control group design with pre- and posttest. Students ($n=22$) awaiting an exam and control subjects ($n=20$) were assessed 3–4 weeks and 3–4 days before the exam. They were given a pager, which beeped ten times a day at random intervals. Upon each signal, participants rated their emotional state and motivations to eat. If they had eaten since the last signal they reported the perceived function of their actual eating behavior. Compared to control subjects, students awaiting an exam reported higher emotional stress and an increased tendency to eat in order to distract themselves from stress. Results indicate that emotion regulation through eating is experienced in a student population during stress under real life conditions with distraction as a possible mediating mechanism.

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1. Introduction

There is clear evidence that many people change eating in response to stress, but it is less clear, why they do so (for a review, see [Greeno & Wing, 1994](#)). One assumption is that negative emotions are

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decreased through eating (Bruch, 1973; Booth, 1994). Indeed, a tendency to eat in order to cope with stress has been reported in binge eaters (Arnou, Kenardy, & Agras, 1992; 1995) and may also play a role in the eating behavior of the non-clinical population (Macht & Simons, 2000; Pollard, Steptoe, Canaan, Davies, & Wardle, 1995). The present study assessed motivations to eat, food intake and food choice in students during examination stress. Furthermore, to explore the stress-reducing capacity of eating, perceived functions of eating were obtained, i.e. students were asked to what extent they were motivated to eat in order to distract themselves, to feel better and to relax.

2. Method

Participants were tested 3–4 weeks before end-of-semester examinations (baseline) and then 3–4 days before examinations (stress period). One group of students took examinations (exam group), while the other group did not have examinations during this time (control group). Ten times a day, on 2 successive days during baseline and during the stress period, participants reported their emotional state, their motivations to eat and perceived functions of their eating behavior. An electronic pager was used to prompt the ratings. The signal occurred at random intervals, once within 84-min time periods between 8:00 a.m. and 10:00 p.m. Participants were instructed to fill out an answer sheet, which took approximately 3 min to complete, upon receiving each signal.

Forty-two healthy student volunteers (20–33 years of age, $M=24$, $S.D.=3$) were screened during a short interview to exclude those who reported pathological eating patterns. Mean body mass index was 22 ($S.D.=2.9$) and mean cognitive restraint was 5.5 ($S.D.=4.2$, Three-Factor Eating Questionnaire by Stunkard & Messick, 1985). There were no significant differences in these measures between women and men or between the stress group and the control group. Participants rated on a seven-point scale (from 0=not at all to 6=very strongly) to what extent a number of emotion and eating-related items matched their present state (happy, relaxed, stressed, tense, fearful, sad, angry, in a negative mood, in a positive mood, hunger, tendency to eat to provide distraction, tendency to enjoy food, tendency to eat something to relax and tendency to eat to feel better). If participants had eaten since the last signal, they rated to what extent they had eaten “because of hunger”, “to feel better”, “to distract” and “to relax”. They also reported how much they had eaten (from 0=nothing to 6=a lot) and what they had eaten. Ratings obtained during baseline and during the stress period were averaged for each individual. Repeated measures ANOVAs were computed with group (exam vs. control) and sex as between-subjects factors and time (baseline, exam) as within-subjects factor.

3. Results

Stress and control subjects did not differ significantly in self-rated emotions during baseline, but 3–4 days before the exam the stress group showed higher ratings of tension, fear and emotional stress as well as lower ratings of happiness, relaxation and positive mood (Table 1). ANOVAs also revealed significant group \times time interactions for tension [$F(1,38)=19.0$, $p<0.001$], fear [$F(1,38)=10.5$, $p<0.01$] and emotional stress [$F(1,38)=8.1$, $p<0.01$], as well as for happiness [$F(1,38)=7.8$, $p<0.01$], relaxation [$F(1,38)=11.0$, $p<0.01$] and positive mood [$F(1,38)=9.2$, $p<0.01$]. ANOVAs revealed main effects of group and sex for tension [group: $F(1,38)=5.4$, $p<0.05$, sex: $F(1,38)=8.0$, $p<0.01$], relaxation [group:

Table 1

Ratings of emotional state, of motivation to eat, of amount eaten and of perceived functions of eating (M±S.D.) in students 3–4 weeks (baseline) and 2–3 days before an exam

Ratings	Exam group (n=22)		Control group (n=20)	
	Baseline	Exam	Baseline	Exam
<i>Emotional state</i>				
Tense	1.5±1.0	2.1±0.9	1.4±0.9	1.1±0.6
Fearful	0.3±0.5	0.6±0.6	0.5±0.6	0.3±0.6
Stressed	1.8±1.2	2.3±1.1	1.4±0.9	1.2±0.8
<i>Motivation to eat</i>				
Feeling of hunger	1.5±0.7	1.2±0.5	1.4±0.8	1.2±0.7
Eat to distract	0.7±0.7	0.9±0.9	0.5±0.6	0.3±0.7
Eat to feel better	1.5±1.0	1.3±0.8	1.0±0.7	0.9±1.0
Eat to relax	0.9±0.7	1.0±0.8	0.6±0.6	0.5±0.7
Amount eaten	1.3±0.4	1.3±0.3	1.3±0.3	1.4±0.4
<i>Perceived functions of eating</i>				
Eaten because of hunger	3.6±0.8	3.1±1.0	3.5±0.9	3.4±0.9
Eaten to distract	0.8±0.9	1.4±1.3	0.7±1.0	0.5±0.9
Eaten to cope with stress	0.8±1.1	1.5±1.3	0.9±1.2	0.5±1.1
Eaten to feel better	2.6±1.1	2.6±1.2	1.9±1.3	1.8±1.2
Eaten to relax	1.5±1.1	1.8±1.2	1.3±1.2	1.2±1.3

Students were beeped at random intervals, 10 times daily, 2 days during baseline and 2 days during the stress period. Upon each signal, they rated their motivations to eat and, if they had eaten since the last signal, amount eaten and perceived functions of eating.

$F(1,38)=5.4$, $p<0.05$, sex: $F(1,38)=14.4$, $p<0.01$], emotional stress [group: $F(1,38)=9.3$, $p<0.01$, sex: $F(1,38)=7.4$, $p<0.05$] and a group×sex interaction for happiness [$F(1,38)=5.8$, $p<0.05$].

There was also a slight change in motivations to eat. ANOVAs revealed significant group×time interactions for the reported motivation to eat in order to provide distraction [$F(1,38)=4.4$, $p<0.05$], with higher values during stress. For feeling of hunger, a main effect of time occurred [$F(1,38)=5.7$, $p<0.05$] (Table 1). After approximately 40% of the signals, participants reported that they had eaten since the last signal (control group: $M=8.1$, S.D.=1.8 during baseline and $M=7.7$, S.D.=2.1, during stress, exam group: $M=8.3$, S.D.=2.1 during baseline and $M=9.1$, S.D.=2.2 during stress). ANOVAs did not reveal significant main effects or interactions for frequency of reported meals, amount eaten and food choice, but a highly significant group×time interactions for “eaten to distract”, $F(1,38)=7.7$, $p<0.01$ (Table 1).

4. Discussion

Students awaiting an exam experienced increased fear, tension and emotional stress and reported a higher tendency to eat in order to distract from stress. If eating in fact decreases stress, the underlying mechanisms of this stress-reducing capacity have to be examined. At least three psychological mechanisms can be proposed: (1) eating may distract from the experience of negative emotions (Spitzer & Rodin, 1983), (2) elicit positive affective reactions and (3) induce a feeling of bodily relaxation. The present results support the distraction hypothesis. Examination stress affected the tendency to distract by

eating, but did not affect the tendency to eat in order to relax or to feel better. It is open to question whether, in other stressful situations, the positive affect inducing or relaxing properties of eating are also experienced as regulators of stress. Whereas in a state of tension and fear distraction may be helpful, in a state of sadness, food-induced positive affect may be used to cope with stress.

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