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Short communication

Emotional eating and its effect on eating behaviour after a natural disaster

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ABSTRACT

Emotional eaters are hypothesised to overeat in response to negative emotions or stress. However, the empirical evidence for such a moderating role is mixed. This study examined the effect of emotional eating on eating behaviour before and after the occurrence of a natural disaster (an earthquake) in a sample of predominantly middle-aged and older women. As expected, women who scored high on emotional eating reported an increase in overeating after the earthquake. This effect was qualified by an interaction: emotional eaters who reported high levels of post-earthquake distress reported an increase in overeating, whereas non-stressed emotional eaters and non-emotional eaters did not.

Introduction

Emotional eating is defined as 'the tendency to overeat in response to negative emotions such as anxiety or irritability' (van Strien et al., 2007, p. 106) and is thought to be a learned response in coping with stress and emotions (Bruch, 1973). According to psychosomatic theory, the typical response to stress is loss of appetite as stress and emotions induce physiological changes similar to feelings of satiety (Bruch, 1973). However, some people (referred to as emotional eaters) are poor at differentiating between hunger and physiological correlates of emotional arousal and as a result respond to stress with overeating.

If emotional eaters indeed behave in such a way and overeat in response to stress, then research should find that emotional eating moderates the relationship between negative emotions or stress and eating. The evidence for such a moderating effect is mixed. Oliver, Wardle, and Gibson (2000) and more recently O'Connor, Jones, Conner, McMillan, and Ferguson (2008) indeed found that emotional eaters under stress ate more unhealthy snacks than did unstressed and non-emotional eaters. Other studies found no evidence for such a moderating role. There are methodological differences between the studies and differences in study populations that may help explain the inconsistent findings. Four studies were conducted in a naturalistic setting: the three studies that used undergraduate students did not find support for moderation (Adriaanse, de Ridder, & Evers, 2011; Conner, Fitter, & Fletcher, 1999; O'Connor & O'Connor, 2004), whereas a study among adults aged 18–65 did (O'Connor et al., 2008). Perhaps the stress and daily hassles reported by students was not strong enough to produce the moderator effect. The four studies that were conducted in the laboratory induced different types of stressors. Oliver et al. (2000) had participants prepare a speech on a controversial topic, a stressor that induces considerable anxiety, and indeed found support for a moderator effect. The studies that failed to find support induced negative emotions (Evers, de Ridder, & Adriaanse, 2009), or stress using an unsolvable anagram task (Royal & Kurtz, 2010) or an ego-threatening Stroop task (Wallis & Hetherington, 2009). The inconsistent findings clearly warrant further research.

The present study examines the effect of emotional eating on eating behaviour in a naturalistic setting after the occurrence of a natural disaster (an earthquake) in a sample of predominantly middle-aged and older women. The study differs from previous research in three ways. First, the stressor involves a major life event instead of daily hassles or laboratory induced stress. Second, previous studies predominantly used young female students (O'Connor et al., 2008 is an exception) as their participants. Third, the current study uses a longitudinal design spanning almost 2 years. Specifically, healthy eating behaviours, snack food consumption and frequency of overeating were measured twice before the earthquake occurred (20 months and 2 months pre-earthquake) and one month after the earthquake. If emotional eaters overeat in response to stress then emotional eating should predict changes in overeating and snack food consumption from pre- to post-earthquake, but not from the first pre-earthquake assessment to the second pre-earthquake assessment. No relationship between emotional eating and healthy eating was expected as emotional eaters are hypothesised to increase sweet and snack food consumption and overeating behaviour in response to stress, but not healthy eating behaviours (O'Connor et al., 2008).

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In addition, although going through an earthquake and its aftermath is a stressful experience, it will not have been equally stressful for everyone. Some suburbs sustained much more damage (house and content damage, road damage, damage to facilities) than did other suburbs. Also, people differ in their appraisal of stressful circumstances and their way of coping (Lazarus & Folkman, 1984). We therefore expected that the level of post-earthquake distress would moderate the association between emotional eating and changes in overeating and snack food consumption from pre- to post-earthquake.

Method

Participants

Participants were recruited in 2007 (Time 1) to participate in a study on health and well-being and all lived in Christchurch or the surrounding region, New Zealand. Participants completed questionnaires 20 months (Time 2) and 2 months (Time 3) pre-earthquake and 1 month post-earthquake (Time 4). The study was approved by the university human ethics committee. For the present study, data were used from women who completed Time 2, 3 and 4 questionnaires and who were still living in the Christchurch area at the time of the earthquake ($N = 105$). Mean age of the sample at the time of the earthquake was 55.8 (SD = 16.1; range 21–85). The majority of women (59%) were married or in a romantic relationship and 82% percent of the women had one or more children.

The event

On September the 4th, 2010, the Canterbury region was struck by an earthquake measuring 7.1 on the Richter scale. The quake occurred at 4.35 am with the epicentre 40 km west of Christchurch city. The earthquake and its aftershocks caused significant damage in the city and the Canterbury region, however, no loss of life occurred.[1] The post-earthquake questionnaire was sent out one month after the earthquake and was completed on average 37 days post-earthquake (SD = 5.7; range 30–57). During that month the frequent occurrence of aftershocks (close to 1,000 aftershocks were recorded) served as a continuous reminder of the main quake (GNS Science, 2010). About half of the participants (47%) felt their life had been in danger during the main earthquake, 9% were injured and 4% had family members who were injured during the earthquake. Twenty-eight percent of the women reported no damage to their home, 56% minor damage, 15% moderate damage and 1% major damage. Nine percent reported loss of income.

Measures

Eating behaviour

(Time 2, 3 and 4) was assessed with 5 items asking participants to recall their behaviour over the past 2 weeks (Baker, Little, & Brownell, 2003). The items asked on how many days participants (a) ate healthy amounts of food (not too much or too little), (b) ate in a balanced way with a lot of fruit and vegetables, (c) ate junk food (potato chips, desserts, sweets, candy bars, etc), (d) overate (kept eating while you were already full), and (e) ate breakfast. All items were scored on a five point scale (1 = less than once a week, 5 = every day). Data from a small validation study ($N = 25$) showed that the retrospective recall of the 5 eating behaviours correlated highly with a 2 week diary report of those behaviours (correlations varied from 0.49 to 0.93). Moreover, the retrospective recall was found to be a fairly accurate estimate of the eating behaviours as reported during the diary period (i.e. no significant differences were found between the recall estimate and the summed score of any of the 5 behaviours over the 2 week diary period, all $ps > 0.20$). The healthy eating behaviours (item a, b, e) were combined to form a subscale (Cronbach's alpha ranged from 0.69 to 0.74 over the three assessments; M Time 4 = 4.28, SD = 0.81; range 1.33–5.00). The unhealthy eating behaviours (item c, d) did not correlate highly with each other (r ranged from 0.08 to 0.19) and were thus treated as separate variables (M junk food Time 4 = 1.84, SD = 0.88; M overeating Time 4 = 1.35, SD = 0.68; range 1–5). The item for overeating was log-transformed for all correlational analyses to deal with high skewness and kurtosis (all in the acceptable range after transformation).

Emotional eating

(Time 2) was assessed using 3 items: "When I am feeling anxious or tense, eating helps me relax", "When I feel sad or blue, I have a desire to eat", and "When I feel emotionally upset, I find myself eating" (1 = never, 5 = always; alpha = 0.89; $M = 2.30$, SD = 0.99; range 1–5). The items were based on items from the Stunkard-Messick Eating Questionnaire (1985).

Earthquake stress reactions

(Time 4) were measured with the Impact of Event Scale-Revised (Weiss & Marmar, 1997). The IES-R asks to what extent people have experienced a list of 22 difficulties during the past 7 days in relation to the traumatic event (0 = not at all, 4 = extremely). The IES-R can be used as a total score, or divided into three subscales: hyperarousal (e.g., feeling angry, irritable, jumpy, or reminders causing physical arousal), intrusion (e.g., intrusive thoughts or images) and avoidance (e.g., psychological numbness, repression or denial). As emotional eaters are specifically expected to overeat in response to emotions such as irritability and anxiety (van Strien et al., 2007), only the hyperarousal subscale was used for the present study (alpha = 0.91; $M = 1.04$, SD = 0.93; range 0–3.57).[2] However, we did examine the IES-total to get some idea of the level of posttraumatic stress experienced by the sample. Twenty percent scored at or above the cut-off score of 1.5 indicating these women may suffer from posttraumatic stress (Creamer, Bell, & Failla, 2003).

Results

Descriptive statistics

On average, eating behaviours did not change much over time. The means over time were not significantly different, Fs < 2.20, ns, and the correlations between the three assessments ranged from 0.41 to 0.79, $ps < 0.001$, indicting moderate to high stability. Women who scored higher on emotional eating reported more overeating at all time points (r ranged from 0.22, $p < 0.05$ to 0.40, $p < 0.001$) but not higher consumption of junk food or general unhealthier eating habits (r ranged from −0.02 to −0.16, ns). Women who reported more earthquake related hyperarousal reported more overeating ($r = 0.25$, $p < 0.05$), and less healthy eating post-earthquake ($r = -0.41$, $p < .001$). As older participants consumed less junk food and ate healthier at all time points, age was included as a control variable in all regression analyses.

[1] It is important to note that although initially the earthquake and aftershocks did not result in loss of life, a major 6.3 magnitude aftershock on February 22nd, 2011 (5 months after data collection) did.

[2] Although we did not expect the subscales of intrusion and avoidance to moderate the relationship between emotional eating and eating behaviour, we did check whether this was the case. There were no main or interaction effects for either subscale, R^2change < 0.01, ns.