Enhanced Behavioral Inhibition in Restrained Eaters

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INTRODUCTION

It has been demonstrated that impulsivity plays a major role in disorders that are related to eating binges. Patients with bulimia nervosa, binge eating disorder or obesity show impulsive behaviors in behavioral measures of reward sensitivity and inhibitory control as well as in self-report instruments [1]. It is suggested that these impulsive traits contribute to the maintenance of pathalogical behavior, namely engaging in overeating, in three different ways: (1) they have precipent responses to eat that are triggered by palatable food as a result of poor inhibitory control, (2) make wrong food choices due to high reward sensitivity, and (3) have a lacking ability to plan meals or to stick to their diet because of an impulsive personality. Impaired behavioral inhibition has even been found in women with a high restrained eating behavior [2]. Moreover, only those restrained eaters who also exhibited poor response inhibition showed disributed food consumption when directly exposed to the smell of food or after eating a preload [3].

HYPOTHESES

Based on aforementioned findings we expected restrained eaters to show impaired behavioral inhibition after eating a preload and during presentation of high caloric food pictures as compared to low restrained eaters and in response to neutral pictures, respectively. Subsequently, they were supposed to show increased food consumption after the task compared to the low restraint group.

METHOD

69 women participated in the experiment and N = 61 participants remained for analyses (exclusion criteria: exceeding omission errors, psychiatric disorders, psychopharmacological medication). Upon arrival, participants were given an information that comprised a cover story. Accordingly, a preload was presented as a taste test: participants ate several pieces of salty and sweet nuts and rated their taste. Subsequently, all participants performed a modification of the XY-task [4]. Here, subjects are required to press a button on every target that is different from the preceding one. When the same target appears consecutively, the response should be withheld. In addition to the original version, pictures of high caloric food or neutral objects surrounded the targets (Fig. 1). Afterwards, participants were allowed to help themselves from the remaining food while completing several questionnaires. Participants’ food consumption was counted after they had left.

RESULTS

Food consumption did not differ between groups. We found no significant interaction of restraint status and impulsivity (η² [εK-W] = .682, p = .510, η² [εK-W] = .024, \textit{Fig. 2}).

Significant group differences in reaction times were found for \( F_{(1,58)} = 6.2, p = .004, \eta^2 = .175 \). Post-hoc t-tests showed that the medium restraint group reacted slower than the low restraint group (\( p < .01 \), all other comparisons n.s.). Neither the main effect of picture type (\( F_{(1,58)} = 2.4, p = .127, \eta^2 = .040 \)) nor the group x picture type interaction (\( F_{(1,58)} = 8, p = .004, \eta^2 = .067 \)) reached statistical significance (\( \text{Fig. 3} \)).

Significant main effects of group (\( F_{(1,58)} = 5.3, p = .027, \eta^2 = .221 \)) and picture type (\( F_{(1,58)} = 4.2, p = .046, \eta^2 = .067 \)) were found for commission errors. Pairwise comparisons (Bonferroni adjusted) showed that the low restrained group made more commission errors in the food condition than medium and high restrained eaters (both \( p < .01 \)). Low restrained eaters made also more errors in response to neutral pictures than the medium restrained group (\( p < .05 \)). Within-group comparisons revealed differences between the two conditions only in the high restrained group (\( p < .05 \)) but not within the low or medium restraint group (both n.s., \( \text{Fig. 4} \)).

DISCUSSION

The current study showed that medium- to high-restrained eaters performed better in a Go/No-Go task compared to unrestrained eaters by making less commission errors. The difference in behavioral inhibition was especially pronounced when pictures of high-calorie foods were exposed (\( \text{Fig. 4} \)). Furthermore, and as expected, restrained eaters were significantly more impulsive in response to food cues compared to low restrained eaters and in response to neutral pictures.

In conclusion, the current study showed that restrained eaters do not show impulsive behavior at any time. In certain circumstances, e.g. when confronted with incidental and peripheral food-related cues which may activate their eating goals, they are able to increase self-regulation as measured with a task requiring motor response inhibition.

REFERENCES