COGNITIONS AND SELF-TALK DURING FOOD INTAKE OF RESTRAINED AND UNRESTRAINED EATERS

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Summary—In the present study, restrained subjects failed to regulate their ice-cream intake after a preload of milkshakes, while unrestrained subjects succeeded. Restrained subjects were not related to irrational thinking patterns, as reflected by scores on the Rational Behavior Inventory (RBI) and the Irrational Belief Test (IBT). During the disinhibition challenge, the self-talk of the subjects was recorded on tape. Restrained subjects in a disinhibition condition, i.e. preload condition, were expected to report significantly more disinhibitive thoughts than restrained subjects in a no-preload condition. Unrestrained subjects were expected to report no disinhibitive self-talk at all. The authors failed to find experimental confirmation for the widely held view that dichotomous thoughts such as "I've blown my diet, I might as well continue to eat" disinhibit restrained eaters.

INTRODUCTION

It has repeatedly been reported that milkshake preloads disinhibit the dietary constraint of restrained eaters. High scorers on the Restraint Scale (RS) (Herman et al., 1978) eat more ice-cream after a preload of milkshakes than they do without one (Herman and Mack, 1975; Hibshcher and Herman, 1977; Herman and Polivy, 1980). By manipulating subjects' beliefs concerning the caloric content of the preload, Polivy (1976) and Spencer and Fremouw (1979) demonstrated that this so-called 'counterregulation' of restrained eaters also occurs when they only think they have overeaten. Therefore, these authors conclude that counterregulation of restrained eaters is cognitive in nature. The maladaptive eating behavior is supposed to follow from an irrational thinking style and dichotomous, all-or-nothing reasoning. Dietary disinhibitors, such as milkshake preloads, should induce such thoughts as "The day is wasted", "My diet is ruined for the next two days. I may as well give up now," and "I've blow my diet; I might as well continue to eat", thereby leading restrained eaters to overeat (Polivy, 1976; Polivy and Herman, 1985; Ruderman 1985, 1986; Ruderman and Wilson, 1979; Ruderman, Belzer and Halperin, 1985).

However, self-talk during overeating has never been investigated experimentally (Wardle, 1987). Although Ruderman (1985) demonstrated that irrational beliefs, as measured by the Rational Behavior Inventory (RBI) (Shorkey and Whiteman, 1977), are more prevalent among restrained than unrestrained eaters, Sanderman et al. (1987) reasoned that self-statements in certain situations may not be reflected in RBI-scores.

Considering both the absence of direct evidence showing that disinhibitive self-talk is responsible for counterregulation and the imperfect association between irrational thinking and types of self-talk, the aim of the present study was 2-fold. First, the authors wanted to replicate Ruderman's findings that there is a close relationship between restraint and irrational thinking as measured by the RBI. Second, we wanted to examine self-talk of subjects during a disinhibitive challenge. It was hypothesized that (1) restrained eaters score significantly higher on measurements of irrationality than unrestrained eaters and that (2) restrained eaters in a disinhibition challenge, i.e. preload condition, report significantly more disinhibitive thoughts than restrained subjects in a no-preload condition. Unrestrained subjects were expected to report no disinhibitive thoughts at all.
METHOD

Subjects

Forty female students and employees of Limburg University volunteered to participate in what they believed to be a study on 'the influence of thoughts on taste-testing'. Their mean age was 25.5 yr (SD = 8.1) and their mean body mass index (BMI = weight/height²) was 22.8 (SD = 2.7). Participants were classified as restrained or unrestrained on the basis of the median split score on the RS. Subject characteristics are shown in Table 1.

Assessment

The following instruments were used:

1. The Restraint Scale (RS) (Herman et al., 1978), measuring attitudes toward eating, frequency of dieting, and weight fluctuations.
2. The Rational Behavior Inventory (RBI) (Shorkey and Whiteman, 1977), measuring irrational thinking patterns. The total score can be broken down into 11 factors, each of which measures a different dimension of rationality: (1) catastrophizing, (2) guilt, (3) perfectionism, (4) need for approval, (5) caring and helping, (6) blame and punishment, (7) inertia and avoidance, (8) independence, (9) self-degradation, (10) projected misfortune and (11) control of emotions.
3. The Irrational Belief Test (IBT) (Jones, 1968), also measuring irrational thinking patterns. The total score can be broken down into 10 factors, each of which, again, measures a different dimension of rationality: (1) demand for approval, (2) high self-expectations, (3) blame, (4) frustration, (5) emotional irresponsibility, (6) anxious overconcern, (7) problem avoidance, (8) dependency, (9) helplessness with regard to change and (10) perfectionism.
4. The Think Aloud on Tape (TAP). Subjects were asked to provide continuous verbal expression of their thoughts during the 10-min taste-testing period. The reported thoughts were registered on tape.
5. The Self-Talk Questionnaire (STQ), a list of disinhibitory self-statements composed by the authors (see Table 2). 4 of the 25 statements were taken from the literature; 21 were based on an n = 1 pilot study and intuitively chosen. For each self-statement, the frequency of having had this thought during ice-cream tasting was rated on a visual analogue scale (VAS).
6. The amount of ice-cream consumed was registered.

Procedure

Subjects were asked to have breakfast, lunch, or dinner 1–3 h before participating in the study. Taste-testing thus served as a caloric overload and was not influenced by deprivation. After entering the laboratory, subjects were asked to complete a questionnaire in which items of the RS were hidden. Subjects 1–20 were randomly assigned to the preload or no-preload condition; subjects 21–40 were assigned to one of these conditions on the basis of their RS scores in relation to the median split score of the subsample of subjects already tested. Each of the four cells (restrained/unrestrained × with/without preload) included 10 subjects.

All subjects completed the RBI. Then, subjects in the preload condition were asked to drink two milkshakes—one vanilla and one chocolate—each containing 150 calories. During the 10-min interval between drinking the milkshakes and tasting the ice-cream, subjects completed the IBT. Participants in the no-preload condition completed the IBT directly after the RBI. All subjects were then presented with three dishes of ice-cream—one chocolate, one vanilla, and one strawberry—
Table 2. Self-talk questionnaire

1. This is a wasted day
2. I don’t have myself under control
3. I’ve already eaten too much, let me have another bite
4. I’m really not supposed to have ice-cream because ice-cream is bad for me
5. It’s going all wrong
6. I’m giving in completely
7. I’ll sneak another bite
8. I cannot control myself
9. It’s hard not to eat it all
10. Ice-cream is really ‘off-limits’
11. My diet is ruined for the next two days. I may as well give up now
12. Everything has got to be eaten
13. The experimenter had better come back before I finish it all off
14. I’ll start my dieting again tomorrow
15. I must not eat too much
16. My day is already shot, I may as well keep eating
17. I don’t have a hold of myself
18. This has been a bad day. I’ve eaten too much
19. I haven’t kept to my good dieting resolutions
20. I’m afraid I’m going to eat it all up
21. I’m really full, but I’ll have another bite
22. I can’t help it that I have to eat ice-cream. Let me take advantage of this opportunity
23. I’ve already gone over my limits, let me just keep on going
24. I’m afraid I can’t stop eating any more
25. I’ve failed

The subjects were instructed to taste and rate the different flavors. At the same time, they were asked to express all of their thoughts aloud into the microphone of the audiotape. Subjects were encouraged to eat as much ice-cream as they wanted and needed in order to make good taste tests.

After starting the audiotape, the experimenter left the laboratory for 10 min. When the experimenter came back, the ice-cream that remained was reweighed and the subjects completed the STQ. Then, each subject’s weight and height were measured. Finally, the subjects were debriefed and paid for their participation.

RESULTS

1. RS

The median split score on the RS was 12. Subjects scoring 12 or more were classified as restrained eaters. Scorer below 12 were classified as unrestrained eaters.

2. Ice-cream intake

Because restrained and unrestrained subjects differed significantly in BMI (see Table 1), a 2 x 2 analysis of covariance was carried out on ice-cream data. Main factors were Group (restrained vs unrestrained) and Condition (preload vs no-preload), with BMI as covariate. The ANCOVA showed no main effects. The interaction Group x Condition was significant \(F(1,39) = 4.97, P = 0.03\) (see Fig. 1). t-Tests showed that unrestrained subjects regulated for a preload. In contrast, restrained subjects did not eat significantly more or less after a preload than after no preload (see Table 3).

3. IBT and RBI

No significant differences in irrationality were found between restrained and unrestrained subjects (see Table 4). Pearson P-M correlations between the RS, IBT, and RBI (total and factor scores) were calculated. Neither the RS-IBT and RS-RBI total scores (see Table 5) nor the RS-IBT and RS-RBI factor scores revealed significant correlations.

4. STQ

On each of the 25 STQ self-statements, a 2 x 2 ANCOVA (Group x Condition with BMI as covariate) was carried out. A main effect for Group was found for the statement “I cannot control myself” \(F(1,39) = 4.97, P \leq 0.05\). Thus, restrained subjects in both conditions reported significantly more frequently than unrestrained subjects that they could not control themselves
during ice-cream testing. Main effects for Condition were found for the following statements: "I'll start my dieting again tomorrow" (I) $[F(1,39) = 4.94, P \leq 0.05]$; "I must not eat too much" $[F(1,39) = 5.11, P \leq 0.05]$; "This has been a bad day. I've eaten too much" $[F(1,39) = 3.94, P = 0.055]$; "I am really full, but I'll have another bite" $[F(1,39) = 5.69, P \leq 0.05]$. These thoughts were significantly more often reported in the preload condition, independent of the restraint of subjects. No significant Group x Condition interaction effects were found.

5. TAP

The total number of reported thoughts was divided into 5 exhaustive and mutually exclusive categories:

(a) Non-food statements (e.g. "I really need to trim my finger nails"),
(b) Statements literally read from the taste-testing list (e.g. "Flavor one is really quite sweet"),
(c) Task-relevant statements concerning taste (e.g. "delicious") or test behavior (e.g. "I'll have another bite"),
(d) Statements concerning associative past or future food situations (e.g. "Ice-cream makes me think of going on vacation, of sitting at a café in the sun"), and
(e) Statements concerning food or eating behavior which were not relevant to the experimental task of tasting (e.g. "I have to force myself not to finish the strawberry ice-cream").

Statements from categories a, b, c, and d were either a result of the experimental task or concerned past or future events. They were considered not to contain disinhibitive thoughts. We did, however, expect to find disinhibitive thoughts in category 'e' statements. Concerning the proportion of food items that were classified as 'e' statements, no difference emerged between restrained and unrestrained subjects; in the restrained group, 9.2% of the 1379 statements was

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Table 3. t-Tests on ice-cream intake

<table>
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<tr>
<th></th>
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<tr>
<td></td>
<td>-</td>
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<tr>
<td>Unrestrained</td>
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<td>50.2</td>
</tr>
<tr>
<td></td>
<td>SD 50.5</td>
<td>58.9</td>
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<tr>
<td></td>
<td>N 10</td>
<td>10</td>
</tr>
<tr>
<td>Restricted</td>
<td>M 83.3</td>
<td>93.5</td>
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<tr>
<td></td>
<td>SD 52.9</td>
<td>82.9</td>
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<tr>
<td></td>
<td>N 10</td>
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*P ≤ 0.001.

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Table 4. t-Tests on measurements of irrationality

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<tr>
<td>RBI</td>
<td>M 28.2</td>
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<td>NS</td>
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<td></td>
<td>SD 4.9</td>
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<td></td>
<td>N 20</td>
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<tr>
<td>IBT</td>
<td>M 275.6</td>
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<tr>
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<td>SD 26.7</td>
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<td></td>
<td>N 20</td>
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Table 5. Pearson P-M correlations of the RQ with IBT and RBI (N = 40)

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<tr>
<th></th>
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<th>III</th>
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<th>VI</th>
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<th>VIII</th>
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<tbody>
<tr>
<td>RQ</td>
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<td>0.01</td>
<td>-0.04</td>
<td>-0.08</td>
<td>-0.11</td>
<td>-0.11</td>
<td>-0.09</td>
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<td>-0.15</td>
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Restraint and unrestrained eaters

classified as 'e'; in the unrestrained group the figures were 8.9% from 1339 statements. The binomial distribution indicates that this difference is not significant. Though the idea that category 'e' statements should contain all disinhibitive thoughts seems plausible, the absence of a difference between restrained and unrestrained eaters led to an examination of the content of the category 'e' statements in both groups. As a first step in this content analysis two psychologists were asked to rate the statements on dichotomy. Interrater reliability between the two psychologists was low (Cohen's Kappa = 0.41). Then, 5 psychologists with experience in cognitive therapy were asked, after a short training, to rate the statements independently from one another. In the meantime, in order to detect whether or not the dichotomous thoughts were actually disinhibitive, and could be expected to lead to counterregulation, two bulimia nervosa patients were asked if they had ever had comparable thoughts during a binge. If they had, this was considered an indication of disinhibiteness. However, interrater reliability among the 5 cognitive psychologists was low (Cohen's Kappa = 0.31), as was the interrater reliability between the bulimia nervosa patients (Cohen's Kappa = 0.42). To examine whether it was at all possible to distinguish restrained from unrestrained self-talk, a behavior therapist who works with anorexia and bulimia nervosa patients and a psychology student who was well acquainted with the concept of restraint, were asked to identify the thoughts as coming from a restrained or from an unrestrained eater. Again, interrater reliability was very low (Cohen's Kappa = 0.19).

DISCUSSION

As expected, unrestrained subjects regulated for a preload; they ate significantly more ice-cream in a no-preload condition than in a preload condition. However, ice-cream intake in restrained subjects without a preload did not differ from intake of those with a preload. Therefore, it was concluded that in restrained eaters, non-regulation rather than counterregulation took place. This finding is a fairly exact replication of the data obtained by Ruderman and Christensen (1983).

On the other hand, contrary to Ruderman's findings (1985), we did not find any relationship between restraint and irrationality. Restrained subjects scored just as high as unrestrained subjects. Moreover, we found no significant correlations between restraint and factor scores on the RBI and IBT. Therefore, we conclude that irrational thinking, as measured by the RBI and IBT, is not a necessary prerequisite for the occurrence of non-regulation.

Restrained eaters are supposed to think in a dichotomous way, and dichotomous thinking is believed to promote disinhibitive eating behavior. That is, overeating is thought to occur because restrained eaters think that they have already broken their diets.

The authors first examined whether the supposedly disinhibitive thoughts were more prevalent in restrained preloaded subjects than in subjects in the other conditions. We did, indeed, find differences in the frequency of disinhibitive thoughts between experimental groups, but independently from the restraint of subjects. With one exception, ("I cannot control myself"), the occurrence of disinhibitive thoughts was reported as often by preloaded, unrestrained subjects as by preloaded, restrained ones. Although all preloaded subjects reported having had these thoughts more often than subjects without a preload, unrestrained subjects regulated for their preload while restrained eaters did not. Clearly, 'disinhibitive' thoughts, as reflected in self-talk are not responsible for the occurrence of non-regulation.

In the present study, it was by no means possible to differentiate restrained from unrestrained self-talk. On dimensions of dichotomy, self-talk of restrained subjects could not reliably be differentiated from that of unrestrained subjects, not even by trained psychologists with experience in cognitive therapy. Nor did bulimic patients agree about having comparable thoughts during binges.

Before jumping to conclusions, we must say that we are aware of the methodological problems concerning the measurement of cognitions. It is questionable whether people actually do verbalize all of the things they are thinking to themselves (e.g. Nisbett and Wilson, 1977); even when asked to do so. However, if they do not report these thoughts during eating, how can we be sure that these are, in fact, the thoughts that disinhibit restrained eaters? It is interesting that, even retrospectively, restrained subjects did not report having had these thoughts.
Retrospectively, restrained subjects reported more often than unrestrained subjects that they could not control themselves during ice-cream tasting. This perceived uncontrollability was not dependent upon being preloaded or not. Clearly, this perceived uncontrollability is a better predictor for the occurrence of non-regulation in experimental situations like these than the supposedly 'disinhibitive' thoughts. This is also clearly in line with the finding of Ruderman et al. (1985), which suggested that "disinhibition is not an all-or-no phenomemon and that some degree of loss of control typifies restrained eaters in many situations involving food" (p. 555).

All in all, the present data provide robust confirmation of non-regulation in restrained eaters vis-à-vis unrestrained eaters. However, no differences were observed on questionnaire scores believed to reflect 'irrational' beliefs or thinking. The widely held and popular view of the dichotomous thinking is responsible for non-regulation could not be corroborated. It is acknowledged that the interrater agreement on classifying self-statements as disinhibitive was fairly low. Still, the fact that hypothetical, disinhibitive cognitions are apparently not freely accessible to subjects poses fundamental methodological problems for a cognitive explanation of experimental disinhibitive eating. Of course, better instruments may eventually show different data. The fact the restrained eaters reported significantly more often not being able to control themselves was not dependent upon having had a 'disinhibitor', but was a more general characteristic of our restrained eaters. Exploration of this perceived uncontrollability in non-regulation might prove more rewarding.

REFERENCES