BRIEF REPORT

DELAY OF GRATIFICATION IN OBESE CHILDREN

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Abstract—Obese (n = 20) and normal weight (n = 20) children (8-11 years) were compared using the delay of gratification paradigm. All children were asked to choose between an immediate reward or a larger delayed (one day) reward. Half the children were offered an edible incentive and half a non-edible incentive. Results showed that the obese choose immediate rewards more often than normals only when the incentive was edible. This suggests that deficits in delay of gratification shown by obese children are not generalized dispositions but are specific to food. A second aspect of the study examined preference for food vs non-food items and activities. Normals showed a much stronger preference for non-food items, nutritious foods and non-food related activities than the obese. This suggests that the deficits in delay of gratification shown by the obese children for food related items may be due to the stronger incentive value of these items for them.

The basic paradigm used to explore delay of gratification involves offering a child a choice of an immediate reward or a larger delayed reward (Mischel, 1974). According to externality theory (Schachter, 1971) the obese should have difficulty delaying gratification since an immediately attainable object can be construed as more salient than one which can only be obtained at a later time. The deficit in response inhibition theory (Singh, 1973) might similarly predict deficits due to the proposed inability of the obese to inhibit positive affective responses elicited by immediate gratification. These two theories imply that a stable behavioural response type is characteristic of the obese and that it should be apparent in non-food situations as well.

Empirical studies with obese children have produced conflicting results. Sigal and Adler (1976) and Johnson, Parry and Drabman (1978) reported that obese children chose immediate rewards more frequently than normals for a number of edible and non-edible incentives. On the other hand, Geller, Keane and Scheirer (1981) found no differences between the obese and normals for either edible or non-edible incentives. To further confuse matters, Bourget (1981) reported that obese children chose delayed rewards more often than normal weight peers but use less effective strategies to mediate the delay.

In all but the Sigal and Adler (1976) study the children had to make choices regarding hypothetical rewards. The present study used an actual reward as it was thought to better reflect a situation during which the processes proposed by Schachter and Singh should be in operation. However, Sigal and Adler's (1976) methodology was not replicated exactly. The one week delay period in that study was relatively long and as the study was conducted during a hospital visit it may not have been clear to subjects that they would be able to return to collect the delayed reward. Also, the choice of incentive was affixed to another task and the subject sample was restricted to boys. In the present study a balanced group of boys and girls was used and their choice of incentive was

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not attached to any task. Also, the delay was reduced to a day and the study was conducted in the familiar relaxed setting of a camp they attended daily.

EXPERIMENT 1

METHOD

Subjects
Twenty obese (mean age = 10.19 years; mean weight = 43.6 kg) and twenty normal (mean age = 9.75 years; mean weight = 40 kg) 8-11 year old children (half of each sex), participated in the study while attending summer day camp. Skinfold thickness of one standard deviation above the population mean was used to classify the children as obese (Seltzer and Mayer, 1965).

Procedure
The obese and normal children were assigned randomly to a non-edible (a Bic Banana pen) or an edible (a box of Smarties candy) incentive condition. All children were given a choice of taking the incentive immediately or receiving twice the amount the next day. The incentives were never shown or described, they were simply named four times in the course of asking for the child's choice. The following question was posed to all the children:

"I have a little reward for you but I don't have very many so I can only give you one (name of incentive). If you want to wait until tomorrow you can have two (name of incentive). Would you prefer getting one (name of incentive) right away or waiting until tomorrow and getting two (name of incentive) then?"

RESULTS AND DISCUSSION
In the edible incentive condition 9 out of 10 obese versus 4 out of 6 normals chose immediate rather than delayed reward (Fisher exact test, \( p < .0083 \)). In the non-edible incentive condition differences between the two groups were not significant (2 out of 8 obese versus 3 out of 7 normals chose immediate reward).

Normals, as a group, did not show differences in their choice of immediate or delayed reward as a function of incentive type. The obese showed a reliable difference (\( p < .03 \)), selecting immediate reward more frequently than delayed reward for the edible incentive and the opposite pattern in the non-edible incentive condition.

In terms of clarifying the literature, the present results are in agreement with those of Geller et al. (1981), in showing that the obese can delay gratification as well as normals for non-edible incentives and in disagreement with the findings of Johnson et al. (1978) and Sigal and Adler (1976) on this point. However, the Geller et al. (1981) finding—that no differences exist between the two groups for edible incentives as well—was not supported and in this respect the present results are in agreement with those of Johnson et al. (1978) and Sigal and Adler (1976). The findings of the latter two studies are consistent with a generalized deficit in delay of gratification for obese children but our findings support only a deficit specific to food. All of the above findings are in opposition to Bourget's (1981) report of more frequent delayed choices by the obese, regardless of incentive type. This may be a function of her sample selection which was comprised of a more restricted and younger age group (6-8 yrs.) than the samples used in the other studies (6-13 yrs.). Also, the sex ratio for her sample was 5:1 in favor of girls while the other studies either equated the sexes or had a preponderance of boys.
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EXPERIMENT 2

There are a number of possible explanations as to why the obese child might be less willing to delay gratification of food related items than normal children. First, the obese children may have had less experience refusing or delaying the consumption of food. Second, the obese child may find food of particular interest or particularly reinforcing and as a result would have more difficulty delaying gratification. One way to assess this possibility is to examine the obese child's preferences for food and non-food related items, as compared to the preference shown by normals.

METHOD

Each child who participated in the previous experiment was asked to fill out a brief questionnaire comprised of three sets of three questions. The first set of three questions examined preference for edible and non-edible items; the second set for food and non-food related activities; the last set for "junk" versus "nutritious" foods. Within each preference set the first question required the child to select his favorite 6 items from the 12 items listed, the second to select his three favorites from the 6 previously selected, the third to select his most preferred item from the 3 previously selected. Each of the 12 items associated with a preference set was assigned a score; (a) 0 if it was never selected, (b) 1 if it was selected for preference choice question 1, (c) 2 if it was selected for questions 1 and 2, and (d) 3 if it was selected for all three questions. The scores for the six food items and for the six non-food items were summed separately to provide the child's food and non-food preference scores.

RESULTS AND DISCUSSION

The scores for each set of questions were analysed separately using two-tailed t tests. Between group comparisons carried out for the various question sets and item types revealed that obese children selected significantly more food-related activities than did normals, $t(19) = 2.30, p < .033$. Within group comparisons showed that normal weight children greatly preferred non-food items, $t(19) = 4.49, p < .0001$ and non-food related activities, $t(19) = 5.43, p < .0001$ to food items and food related activities whereas the obese showed no preference on these items. The obese did exhibit a tendency to select nutritious food items over junk food items, $t(19) = 2.08, p < .05$, but in the normals this preference was stronger, $t(19) = 3.34, p < .003$. In general this pattern of results suggests that the obese may have difficulty delaying gratification for edible incentives because they have a stronger preference for these items than do normals.

GENERAL DISCUSSION

The present study does not lend support to the notion that the obese are generally unable to delay gratification as might be expected on the basis of Schachter's or Singh's theory. They are as willing as normals to delay gratification for a non-edible reward but, when this choice involves an edible reward they choose the immediate rather than the delayed prize. The results of the preference questionnaire suggest that the latter may be due to their greater preference for edible items.

The finding that normals have a greater preference for non-food related activities than do obese children implies that the latter are more likely to place themselves in situations which will lead to behaviours which are maladaptive in terms of weight control. Whether such a preference precedes or follows the weight problem is not clear.
In future, treatment packages may benefit from the development of specific strategies aimed at teaching obese children to better delay gratification for food and to evolve ways of changing their preference for food related activities.

REFERENCES


