

Kiitos

Dietary monotony and food cravings in young and elderly adults

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Abstract

Many hypothesized mechanisms for food cravings focus on nutritional deprivation. However, outside of the laboratory, nutritional inadequacy is often confounded with dietary monotony. Therefore, one aim was to examine the effects of a nutritionally adequate, liquid, sweet, monotonous diet on food cravings in young and elderly adults. In addition, previous retrospective questionnaire work has indicated that elderly individuals report fewer food cravings than do young adults. Because there are possible age differences in cognitive capacity, another goal of this work was to develop a prospective method (i.e., a method that depends less on memory) of studying cravings that permits comparison of adults of different ages. Young adults reported significantly more cravings per day during the monotony manipulation than during the baseline period. Therefore, nutritional deprivation is not a necessary condition for food cravings. There were no gender differences. The increase was due primarily to a greater number of cravings for entrees (i.e., foods that differed in sensory quality from the monotonous diet). Cravings for sweets did not change. In contrast to predictions that liking for the monotonous diet would decline as a result of “repetition revulsion,” there was no significant change in liking for the diet over the study period. In contrast to the young adults, elderly subjects were not responsive to the monotony manipulation. Elderly men reported almost no cravings at any time during the study.

Elderly women reported as many cravings as did young adults during the baseline period, but did not show an increase in cravings during the monotony period. This lack of response to dietary monotony by the elderly could result in nutritionally inadequate diets.

Introduction

We define a food craving as an intense desire or longing 1, 2 to eat a particular food [3]. Food cravings are highly salient psychological phenomena, and are thought to be important because of their influence on snacking behavior and on compliance with dietary restrictions 4, 5, 6, 7. There are numerous theories of the basis for food cravings. One of the most common 8, 9, is that cravings have a homeostatic function, that is, that they arise in response to a nutrient or caloric deficit. However, results from previous studies have been mixed. There are a number of compelling case histories in which physiological need was accompanied by food cravings. For example, Olynk and Sharpe [10] reported that a woman who craved paper (a form of pica) was found to have an iron-deficiency anemia, and that when the latter was corrected, her craving for paper subsided. This does appear to be a case in which craving was linked to deficiency; however, it is noted that the craved substance did not correct the deficiency. Another famous case-history came from Wilkins and Richter [11], who reported extreme salt appetite in a very young child who was sodium deficient due to an adrenal disorder. Experimental studies have produced more mixed results.

n many cases, nutritional deprivation is confounded with dietary monotony (which could be seen as a form of sensory deprivation). Exposure to dietary monotony is common. It is probably the rule rather than the exception in many traditional cultures. It occurs during periods of famine in war-torn areas, during college when money is tight, and during liquid-diet-based weight loss programs. Anecdotally, monotonous diets are disliked. Research done by the U.S. Army confirmed this, and one study [22] reported cravings among well-nourished men on monotonous diets for foods other than those provided. Therefore, one aim of this study was to examine the effects of a nutritionally adequate, single-food diet on food cravings.

There has been relatively little work on food cravings in the elderly. An earlier study [14] indicated that the elderly have fewer cravings than do young adults. A better understanding of food selection in this age group is important because the elderly are known to be at nutritional risk. Many illnesses of old age make ingestion difficult or uncomfortable. Cognitive impairment such as dementia and motor impairments such as arthritis or stroke can complicate eating [23]. Dental problems can place limits on foods that can be consumed [24]. The elderly may be poorly motivated to ingest. Patients may fail to feel hungry due to depression or other illnesses [23]. Special dietary regimens involving restriction of salt, sugar, and fats prevent older individuals from eating foods that they like [25, 26].

Failure to heed these restrictions places them at risk, but the inability to eat preferred foods may result in inadequate appetite [27]. There are age-related declines in both gustatory and olfactory ability [27, 28, 29, 30, 31, 32, 33, 34]. Much of the pleasure of food and motivation to eat lies in the flavor—the taste and smell—of food, and this alone may diminish desire to ingest. Even when intake is good, nutrition of the oldest old can be poor. Illness, general physiological decline, and medications can reduce the absorption and utilization of nutrients [35]. Caloric needs and caloric intake are lower among the frail elderly [36], and when people decrease caloric intake, they may not get adequate levels of needed nutrients [25, 26, 35]. Seniors are less efficient in their responses to regulatory challenges, and are less likely to report hunger or thirst [37, 38]. Some reduction in hunger is understandable because of the decrease in caloric requirements with age, but reports of hunger are lower even when need exists. The elderly also compensate less for preloads, which may give rise to overeating [39]. In our previous work on cravings in the elderly [14], the measure of cravings was retrospective self-report. Thus, it is possible that the difference between young and elderly subjects in incidence of cravings is due, in part, to age differences in cognitive capacities such as memory. So, because of the level of nutritional risk in the elderly and possible age differences in cognitive capacity, another goal of this work is to develop a prospective method (i.e., a method that depends less on memory) of studying cravings that will allow us to compare adults of different ages.

Section snippets

Subjects

Eighteen young adult and 16 elderly subjects participated in the study. However, two of the elderly subjects were dropped from the study for failure to consume the prescribed number of calories during the monotony manipulation, giving a total of 14 elderly subjects who completed the study (see Table 1). Subjects were recruited through newspaper advertisements, lists of subjects who had participated in other, unrelated studies, and by word of mouth. Subjects were paid for their participation.

Results

In all, 312 cravings were reported over the 19-day period. There was a significant effect of the monotony manipulation on average number of food cravings per day, $F(2, 56) = 10.6$, $p < 0.001$. Post hoc tests (all post hoc tests are Tukey tests) showed that there were more cravings reported during the monotony period than during the baseline or recovery periods (see Fig. 1). Elderly subjects reported significantly fewer cravings than did young subjects, $F(1, 28) = 4.2$, $p < 0.05$.
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Discussion

There was a very large increase in food cravings in young subjects undergoing sensory but not nutritional deprivation. This shows that nutritional deprivation is not necessary, and that sensory monotony is sufficient to stimulate food cravings, at least in young adults. However, the elderly were markedly unresponsive to the monotony manipulation. It has also been reported that sensory-specific satiety is diminished in the elderly [46]. Thus, the response to dietary monotony in older adults...

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