



## The importance of taste on dietary choice, behaviour and intake in a group of young adults



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### ABSTRACT

The 'taste of food' plays an important role in food choice. Furthermore, foods high in fat, sugar and salt are highly palatable and associated with increased food consumption. Research exploring taste importance on dietary choice, behaviour and intake is limited, particularly in young adults. Therefore, in this study a total of 1306 Australian university students completed questionnaires assessing dietary behaviors (such as how important taste was on food choice) and frequency of food consumption over the prior month. Diet quality was also assessed using a dietary guideline index. Participants had a mean age of  $20 \pm 5$  years, Body Mass Index (BMI) of  $22 \pm 3$  kg/m<sup>2</sup>, 79% were female and 84% Australian. Taste was rated as being a very or extremely important factor for food choice by 82% of participants. Participants who rated taste as highly important, had a poorer diet quality ( $p = 0.001$ ) and were more likely to consume less fruit ( $p = 0.03$ ) and vegetables ( $p = 0.05$ ). Furthermore, they were significantly more likely to consume foods high in fat, sugar and salt, including chocolate and confectionary, cakes and puddings, sweet pastries, biscuits, meat pies, pizza, hot chips, potato chips, takeaway meals, soft drink, cordial and fruit juice ( $p = 0.001$ – $0.02$ ). They were also more likely to consider avoiding adding salt to cooking ( $p = 0.02$ ) and adding sugar to tea or coffee ( $p = 0.01$ ) as less important for health. These findings suggest that the importance individuals place on taste plays an important role in influencing food choice, dietary behaviors and intake.

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### 1. Introduction

Food choice is a dynamic process that changes over an individual's lifespan and can be influenced by a number of personal and environmental factors (Barclay & Brand-Miller, 2011). Consumers' likelihood of buying and consuming a food product involves an interaction between the liking of the sensory properties of the food, factors specific to the individual and environmental, cultural and contextual influences (Drewnowski, Henderson, Driscoll, & Rolls, 1997; Furst, Connors, Bisogni, Sobal, & Winter Falk, 1996; Olsen, Menichelli, Sørheim, & Næs, 2012). A small number of food choice studies have demonstrated that taste is rated as one of the most important factors individuals consider when determining which food to purchase and consume (Biloukha & Utermohlen, 2001; Glanz, Basil, Maibach, Goldberg, & Snyder,

1998; Lennernas et al., 1997).

Food consumption data has indicated that most individuals in economically developed countries are consuming more energy than is physiologically required, resulting in an energy imbalance (Australian Bureau of Statistics, 2013). This excess intake of energy has been identified as a leading contributor to the increasing levels of overweight and obesity worldwide (Australian Bureau of Statistics, 2013; National Health and Medical Research Council, 2013; World Health Organisation, 2008). Furthermore, an increased consumption of fat, sugar and salt has been linked with energy imbalance in adults (Grimes, Riddell, Campbell, & Nowson, 2013). Fat, sugar and salt have been associated with increasing the liking and palatability of foods (Drewnowski & Specter, 2004; McCroy, Saltzman, Rolls, & Roberts, 2006; Vadiveloo, Morwitz, & Chandon, 2013) and increased palatability of single foods is associated with increased energy intake (Biloukha & Utermohlen, 2001; Glanz et al., 1998; Lennernas et al., 1997; McCroy et al., 2006). Repeated exposure to certain foods, can also alter taste perception by either increasing or decreasing consumption (Drewnowski & Specter, 2004; McCroy et al., 2006).

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When young adults begin university and make the transition from living in a home environment to one elsewhere, a change of diet and dietary behaviors has been reported (Ansari, Christiane & Mikolajczyk, 2012; Bagordo, Grassi, Serio, Idolo, & De Nonno, 2013; Deliens, Clarys, De Bourdeaudhuij, & Deforche, 2013; Gökhan, Aktaş, Arıkan, Aysan, & Elçi, 2014; Ridell, Ang, Keast, & Hunter, 2011; Thorpe, Kestin, Ridell, Keast, & McNaughton, 2013). This transition has been shown to result in the development of dietary habits which may be considered less healthy (Ansari et al., 2012; Bagordo et al., 2013; Deliens et al., 2013; Gökhan et al., 2014; Ridell et al., 2011). These dietary habits include a decrease in fruit and vegetable consumption and food variety in general (Ansari et al., 2012; DeBate, Topping, & Sargent, 2001; Papadaki, Hondros, Scott, & Kapsokafalou, 2007; Silliman, Rodas-Fortier, & Neyman, 2004) and an increase in consumption of high-fat foods (Anderson, Shapiro, & Lundgren, 2003), alcohol (Glanz et al., 1998; Lennernas et al., 1997) and convenience meals (Barclay and Brand-Miller, 2011).

As there is limited research specific to the investigation of taste as a factor influencing food choice in young adults, the present study aims to examine the relative importance of taste on food choice and consumption in a group of university students. Considering previous food choice studies have demonstrated the importance of taste when individuals are considering which food to purchase and consume and the palatable-appetitive nature of fat, sugar and salt, it is hypothesized that taste will indeed be an important factor influencing food choice in Australian university students. Furthermore, if an individual does in fact place a high importance on taste, they will consume a greater amount of energy dense, nutrient poor foods and have an overall poorer diet quality.

## 2. Methods

### 2.1. Participant recruitment

Participants were recruited from a convenience sample of 1603 students enrolled in a first-year food and nutrition class during 2011–2013 at Deakin University, Melbourne. A total of 1374 participants agreed to take part in the study (response rate 86%). The study design and protocol were approved by the Deakin University Human Research Ethics Committee (EC 163-2009) and research was carried out in accordance with the *National Statement on Ethical Conduct in Human Research (2007) guidelines*. Written informed consent was obtained from all participants and no compensation was provided to participants.

### 2.2. Study design and data collection

Participants completed a Food and Diet Questionnaire (FDQ) and a Food Frequency Questionnaire (FFQ). The questions within the FDQ had been developed and used in previous research studies (Georgiou et al., 1997; Ridell et al., 2011; Soriano, Molto, & Manes, 2000; Thorpe et al., 2013). The paper-based FDQ contained 22 items which included questions about participant demographics, self-reported body weight and height, food shopping and preparation practices, beliefs on diet and healthy eating and the importance of particular dietary activities. To assess the importance of taste when choosing food whilst shopping, the FDQ asked participants to "... think about the level of importance the following factors have on influencing [their] choice of foods when shopping". The factors listed alongside taste included; habit or routine, price, quality and freshness, environmental reasons among others. The importance of each of these factors was measured on a 5-point scale, including 1 ("not important"), 2 ("slightly important"), 3 ("moderately important"), 4 ("very important") and 5 ("extremely important"). The

questionnaire also included questions regarding common food practices, such as "... how important it was to avoid adding salt to their cooking for their health", "how important it was to avoid adding sugar to their tea/coffee for their health" and "how important they considered eating two serves of fruit and five serves of vegetables daily was for their health", with options being "not important" "quite important" "important" and "very important".

The FFQ was an adapted version of the 1995 Australian National Nutrition Survey FFQ (McLennan & Podger, 1999) and was paper-based. Questions from the FFQ assessed intake frequency of selected foods and drinks and vitamin and mineral supplements over the prior month. Participants were instructed to select the most appropriate answer on a 9-point scale, with options "never or less than once a month", "1–3 times per month", "once per week", "2–4 times per week", "5–6 times per week", "once per day", "2–3 times per day", "4–5 times per day" and "6 or more times per day". The FFQ also assessed how often participants engaged in certain behaviors such as adding salt to cooked food, with response options ranging from "never or rarely", "sometimes" and "usually".

The diet quality of participants was assessed using data from the FFQ and a previously developed Dietary Guideline Index (DGI) (McNaughton, Ball, Crawford & Mishra, 2008; Thorpe et al., 2013). The DGI is a 150-point diet quality index, made up of fifteen components that reflect the 2005 Dietary Guidelines for Australian Adults (National Health and Medical Research Council, 2005), with each individual component contributing 10 points to the total DGI score. A higher score indicates better adherence to the dietary guidelines. Twelve of the fifteen components consist of diet variety, intakes of fruit, vegetables, cereal, meat and protein, dairy, alcohol, saturated fat, added sugar, added salt, fluids and 'extra' foods (high-energy and nutrient-poor foods). The final three components reflect the usual dietary choices made by the individual, including consuming wholegrain cereal, lean protein and reduced-fat dairy products. The current study focussed on the total DGI score as well as the scores of the following six components: vegetables, fruit, saturated fat, added sugar, added salt and 'extra' foods.

### 2.3. Statistical analysis

Data analysis was performed using SPSS statistical software version 22.0 (SPSS Inc, Chicago, IL, USA). Numerical data was expressed as means  $\pm$  standard deviation (SD). Descriptive statistics were used to summarise demographic information such as age, gender, nationality and living arrangements and also BMI (calculated from self-reported height (m) and weight (kg)). In order to run the analyses, the 5-point scale used to measure taste as a factor influencing food choice was further dichotomised into not important-moderately important (N/MI) and very-extremely important (V/EI). A one-way, between-groups analysis of variance (ANOVA) was used to examine the relationship between taste importance and age and taste importance and BMI. Chi-square test for independence was used to examine the importance of taste and its relation to dietary intakes and behaviors. An independent samples *t*-test was used to examine differences in total DGI score and DGI component scores for vegetable, fruit, saturated fat, salt, sugar and 'extra' food consumption according to taste importance. *P* values < 0.05 were considered statistically significant. In order to conduct the appropriate statistical analyses, response options for consumption variables were mostly collapsed. An example of this is that of the cakes category being collapsed from the original 9 response options, down to 5 response options. Refer to [Supplemental Table 1](#) for a detailed account of the collapsed variables.

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