

Exploring demographic differences in eating motivation patterns: A comparison of regional university students in Australia and Germany

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Abstract

This study investigates the difference in university students' motivation pattern for food choice, serving of food and attitude towards healthier eating in Australia and Germany by their gender and age group. In conducting this study, data collection was carried out using a self-administered questionnaire for 18 to 24 years old university students in Australia and Germany. Using a self-administered survey, 310 students in Australia and 305 students in Germany participated in the study. The findings suggest that there are few significant differences in their food choice motives, serving of food and attitude towards healthier eating.

Keywords: Germany, Australia, age group, gender, food choice

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Background

Obesity and overweight have been considered as the prominent public health issues in many developed countries (Mela and Rogers 1993; Wymer, 2010). A number of initiatives have been implemented at regional, national and global levels by the food industry, health care professionals, and policy makers to address what some refer to as the global obesity pandemic (Kraak et al. 2009). Despite these efforts, obesity has not been arrested (Popkin 2008) with the largest contributors to obesity resting principally with the increased availability of junk food, fast-food promotion, low cost of high fat and high calorie foods, advertising and increased portion sizes (Grier and Kumanyia 2008). Collectively, these create a so-called 'obesogenic environment' leading to the continuation of rising obesity rates (Cairns and Stead 2009).

Wide-spread awareness of the increasing prevalence and consequences of obesity and overweight for individuals and society at large over the last decade has been driven by international bodies, such as the World Health Organisation and the International Obesity Task Force (Aranceta 2009). As a result, social marketing campaigns that focus upon healthier eating have become commonplace the world over (Cairns and Stead 2009). Given the social and individual costs that the increasing rates of overweight and obesity have, understanding food choice from a consumer behaviour perspective may offer insights that enhance the effectiveness of healthier eating intervention strategies, especially those focused at youth. For example, the literature suggests that obesity has both physical and psychological consequences such as hypertension, asthma, breathing disorders, social ineptitude and laziness, negative self-image or decreased self-esteem, sweating during normal daily activities, sleeping problems, daytime sleepiness, low vitality, and depressive moods (Wardle 2009; Noble et al. 2007, Peck and Lightsey 2008, Hach et al. 2006).

Therefore, to reduce the threat of possible disease and health care costs, it is necessary to take necessary measures to prevent obesity in the first instance (Aramceta 2009; Lobstein and Baur 2005).

This paper examines the food choice motivations and attitudes toward healthier eating of two groups of university students – from Germany and Australia – in order to provide some direction for future social marketing campaigns aimed at this demographic. A particular focus of this paper is on the link between the demographics of age and sex on food choice behaviour. The findings presented in this paper are the result of a wider study concerned with the transition from home to university living and the impact on eating (Sharma et al. 2010; Piggford et al. 2008, 2009).

A recent study released by the International Association for the Study of Obesity (IASO) found that, among the European Union countries, Germany had the most overweight people. Further, among adults, the study found that nearly 6 in 10 (58.9%) German women were overweight, and that nearly three-quarters (75.4%) of German men were carrying excess pounds. In the IASO study, United Kingdom women came a close second, with a similar proportion (58.5%) being overweight. Among men, the Czech Republic came in second, but the thinnest Europeans of both sexes lived in Italy and France. The report estimated that rates of obesity and overweight in Germany now match those in the United States (Deutsche Welle 2007). Whilst the proportion of German people with a Body Mass Index¹ (BMI) between 25 and 30 has not changed essentially during the last 20 years, the proportion of **obese** individuals (BMI \geq 30) has increased considerably. Currently around 70% of men and 50% of women in Germany are overweight or obese (Mensink, Lampert and Bergmann 2005).

Like many countries, there is a particular focus upon younger consumers in Germany as 31.1% of males, and 16.3% of females, aged 18 to 40 years are overweight; and these figures become more similar for the genders when it comes to obesity, with 7.4% of males and 6.2% of females being obese (Statistisches Bundesamt 2007). Similarly, the proportion of overweight or obese Australians aged 18 to 24 years who are classified as overweight has risen from 16% to 22% since 1995, while the proportion

¹ Body mass index is defined as the individual's body weight divided by the square of their height. The formulas universally used in medicine produce a unit of measure of kg/m².

considered obese increased from 5% to 7% during the same period (Australian Bureau of Statistics 2006, pp. 51-52). The concern with the younger consumer stems from research that tells us that if an unhealthy food choice pattern develops during young adulthood, it is likely that it will continue for the rest of their lives (Kraak et al. 2009; Betts *et al.* 1997; Haberman and Luffey 1998; Wardle 1995).

Thus the critical importance of early intervention to establish healthier eating habits has driven many of the youth-centred social marketing campaigns and empirical studies of factors such as socioeconomic position in countries around the world (e.g. Due et al. 2009, Shields and Tremblay 2010). Data from the Australian Bureau of Statistics (2006) reveals the extent of obesity and overweight among young adults. Unlike older Australian adults, the younger generation is more likely to be overweight or obese and less likely to consume the minimum recommended daily amount of fruit and vegetables (Australian Bureau of Statistics 2006). Such trends are mirrored in studies around the world (e.g. Steptoe et al. 1995; Stamatakis et al 2010), suggesting that benefit may be derived from exploring the factors which influence their food choices, as we have in this research. Hence, our study is germane as there is an apparent need to continue to inform social marketing interventions that are focused upon persuading healthier food choices among young adults both in Australia and abroad.

Literature review

Social marketing

Social marketing has been used to address the issues and implications of the 'obesogenic environment', offering a deeper understating of behaviour patterns and interpersonal factors as well as the link between intention and actual healthy eating behaviour (Cairns and Stead 2009). Today the altruistic application of marketing theory to bring about social benefits is commonplace, leading to recent suggestions by Wymer (2010) that the boundaries of social marketing will need to be re-evaluated and further extended if major improvements to public health and welfare are sought. Indeed, in terms of obesity there is growing tension between the commercial marketing and social marketing as research indicates that the former is encourages unhealthy behaviours (Wymer 2010).

Social marketing, in the first instance, encourages individuals to alter their behaviour so as to enhance their own wellbeing and welfare; as a consequence societal benefits follow this change to an advocated behaviour (Andreasen 1995; Bagozzi 1975; Bartels 1974; Kotler and Zaltman 1971). Indeed, changing behaviours requires social marketing efforts to be targeted at a range of stakeholders including parents, peer groups, and public health professionals; because the salient role of interpersonal and internal environmental influences are prominent in the underpinning social cognitive theory (Cairns and Stead 2009). For example, the structured and strategic whole-of-community approach by the Australian Government is a population-based approach to addressing childhood obesity and is aligned with the multilayered prevention program suggested by the World Health Organisation (Gill et al. 2009). Such multifaceted responses to addressing the prevalence of overweight and obesity are apparent worldwide (see Aranceta et al. 2009).

Social marketing involves not only the design of programs, but the operationalisation and measurement of outcomes that seek to increase a target groups' acceptance of a social idea or practice – such as reducing alcohol abuse, tobacco abuse and unsafe sexual behaviours (Bloom and Novelli 1981; Wymer 2010; Maibach *et al.* 2002). Importantly, these harmful or risky activities identified by experts in public health and welfare and are supported by governments (Donovan and Henley 2003; Fox and Kotler 1980; Sheth and Frazier 1982).

Social marketing involves the application of each of marketing's four Ps, namely product, price, place and promotion (Fox and Kotler 1980; Maibach *et al.* 2002), as well as broader frameworks that focus upon segmentation and targeting, exchange, competition and behaviour change – all necessary for effective interventions (Andreasen 2006; Cairns and Stead 2009). More comprehensive social marketing campaigns include an additional three elements – advocacy, motivation and education (Donovan and Henley 2003). Advocacy, which tends to align with 'upstream' social marketing campaigns (Andreasen 2006) comes at the problem from a different angle, involving lobbying, policy change and sometimes legislation change; addressing this issue in itself is a recommended area of further research. Both of the remaining two elements, motivation and education, may be informed by the findings of our research.

While education alone has been found to be insufficient to generate behavioural change (Donovan and Henley 2003; Maibach *et al.* 2002), when combined with motivation, positive outcomes may be more likely. Motivation via proactive and influential messages, aims to persuade the consumer to adopt the suggested behavioural change; which in our study, is to make healthier food choices.

Overweight/obesity and eating behaviour

At the most basic level, there is general acceptance in the literature that obesity is influenced by a number of factors including the quantity and quality of food consumed, the level of physical exercise, lack of time for cooking, greater availability of high-energy foods and takeaways, a decline in cooking skills for healthier eating, misleading or inadequate food labelling and poor consumer information (Catford and Caterson 2003; Grier and Kumanyika 2008). Longer working hour, job stress and less physically active occupations and lifestyle are also known contributors to an ‘obesogenic environment’ (Hu 2008; Rhode Island Department of Health 2008; Swartz 2007). Socioeconomic status too has been the focus of empirical studies with Stamatakis *et al.* (2010) finding disparities in childhood obesity rates in England while Booth and colleagues (2001) Australian study found no consistent relationship between socioeconomic status and the prevalence of overweight or obesity. The comprehensive 35 country investigation of causes of adolescent overweight and obesity by Due *et al.* (2009) concluded that there was large international variation and these were linked to macroeconomic factors and social inequality.

In the absence of empirical evidence, we suspected that where people live may also be a factor to influence attitude toward food choice. In Australia and Germany, young adulthood represents a transitional stage in life when adult independence and self-responsibility are actualized; and attending university is one of the catalysts to many young adults moving away from the family home to begin living independently. A number of studies from other countries support this train of thought, reporting similar findings about food choice *behaviour*, in that tertiary education students’ generally **do not** make healthier food choices (e.g. Tavelli *et al.* 1998; Haberman and Luffey 1998; Huang *et al.* 2003).

In terms of education, Germans with a Hauptschulabschluss (those who finish school after 9th grade, with no further education) are twice as likely to be overweight or obese than Germans with an Abitur (general qualification for university entrance; finishing school after 13th grade) or Fachhochschulreife (finishing school after 12th grade, no general qualification for university entrance) (Brombach, Wagner, Eisings-Watzi and Heyer 2006). A study by Beasley *et al.* (2004) found that respondents who lived independently were more likely to consume a 'good' diet than those living in the family home (Beasley *et al.* 2004). Whilst the literature is peppered with possible links to obesity, this paper focuses on the demographics of age and sex.

The different dimensions of food choice behaviour of young adults that have been used in this study are based on the work of Steptoe *et al.* (1995). They developed a nine-factor model of food motives which are labelled as 'health', 'mood', 'convenience', 'sensory appeal', 'natural content', 'price', 'weight control', 'familiarity' and 'ethical concern'. Along with these factors, people's 'attitude towards healthier eating' is considered to play an important role in making the food choice. The scales for attitudes are based on the work of Bagozzi and Warshaw (1990) and Maheswaran and Meyers-Levy (1990). It has also been discussed that individual, interpersonal and social elements will have an influence on various dimensions of food motives (Marquis 2005). Some of those elements may include various demographic factors such as age and gender.

Research questions

Although there is some research available in the context of university students regarding their food choice behaviour, there is little research which has focused specifically on the food motives and amount of food consumed with this cohort by their age group and gender. As the data was collected for 18-24 years old students, the age group has further been divided into two categories. They are: i) the category of 21 years old and less and ii) the category of above 21 years old. In essence, this study investigates the following research questions:

Research question 1a

Is there a difference in food motives and the serving of food between German and Australian students for the age group of 21 years old and less?

Research question 1b

Is there a difference in food motives and the serving of food between German and Australian students for the age group of above 21 years old?

Research question 2a

Is there a difference in food motives and the serving of food between male students in Germany and Australia?

Research question 2b

Is there a difference in food motives and the serving of food between female students in Germany and Australia?

Method

This cross-sectional study involved the self-administration of a questionnaire with 305 university students in Germany and 310 in Australia; and is part of a wider research program by the authors. Following a pre-test of the questionnaire and assessment by an expert panel the main study data was collected. Given the unavailability of an appropriate sample frame and the need to control for specific characteristics in the target population, quota sampling was employed.

Quantitative data was collected randomly from young adults aged 18 to 24 years at the German and Australian universities using a drop-off technique. Selection bias was minimized with data collected on different days, at various times and at a range campus locations such as outside classrooms, the campus eateries and high and low traffic communal areas. Following Burns and Bush (2003) recommendations, the process for the drop-off technique firstly saw prospective students were randomly approached by the researcher who then introduced the purpose of the study to the prospect. Following an invitation to participate in the study, the participants were initially screened to ensure their eligibility. Prospect whose

underlying medical condition required a special diet were excluded. Next, the participants were left with the questionnaire with them to complete, and the researcher returned. The person-to-person contact of this process was advantageous to building rapport with prospects in addition to minimizing interviewer bias and expediting survey completion time. Gender was the control characteristic of our study with useable data from Germany including 111 males and 194 females whilst, in Australia, useable data from 124 males and 186 females was collected.

Measures were drawn from the extant literature. Attitudes toward healthier eating, residence and food choice were drawn from Bagozzi and Warshaw (1990), Steptoe, et al. (1995) and Marquis (2005) and measured by five-point semantic differential scales. Residence scales were developed from Crossley and Nazir (2002) and Beasley et al (2004) and food choice measures were drawn from 2004-2005 Australian National Health Survey (NHS) (Australian Bureau of Statistics 2006). The ten food motives of interest were health, mood, convenience, sensory appeal, natural content, price, weight concern, familiarity, ethical concern and attitudes towards healthier eating. A series of colour photographs of various foods from each of the five food groups examined – vegetables; fruits; bread; milk, yoghurt or cheese; and meat, fish, poultry, eggs, nuts or legumes – accompanied the questionnaires.

Results

In the sample, 41% of German respondents were 21 years old and less in terms of age, and 68.6% were male. 80% of Australian respondents were 21 years old and less, and 40% were male. For both the German and Australian students, it is found that the most important factor in making a food choice was 'price'. In both countries, the results suggest that 'ethical concerns' were of least concern to students in both countries.

The focus of this paper was two-fold. The first research question was concerned with whether there was any difference on food motives and serves of food of university students in Germany and Australia by their age group (Tables 1a and 1b). The age group of students was classified as either under 21 years old and less and above 21 years old. .

(Table 1a about here)

In the 21 years old and less age group, there is a significant difference in the following food motives between Germany and Australia: convenience, sensory appeal, natural content, and price. In other dimensions including the attitude towards healthier eating, there is no evidence of difference between these countries. Germans are found to be higher in seeking natural content than Australians. In terms of food serving, Germans students in the age group of 21 years old and less tend to consume more fruit than similarly aged Australians, however they are significantly lower than Australians in the consumption of vegetables, and meat, fish, poultry, eggs, nuts or legumes. Overall, in this age group, there is no significant difference in the consumption of total number of serves.

(Table 1b about here)

Table 1b indicates that there is a notable difference in the attitude towards healthier eating for the over 21 years old in this study. German students are found to be significantly lower than Australians in their attitude for healthier eating but in natural content they are higher than their Australian counterparts. In terms of consumption of food, German students of this age group consume significantly less vegetables; meat, fish, poultry, eggs, nuts or legumes than Australians. In terms of overall consumption, Australians consume significantly higher than Germans. It would appear, from our research, that students in the older age group are more conscious than the younger students, and this is especially so in Australia.

Our second research question was concerned with the investigation of difference on food choice by students' gender (Tables 2a and 2b).

(Table 2a about here)

The male students in Germany are significantly more conscious about the natural content of their food than the Australian male students, but significantly lower in convenience, sensory appeal, and price. Their attitude towards healthier eating is also significantly lower (negative) than Australian male students. This is supported by their food intake quantity. They are found to consume significantly lower amount of vegetables; bread; milk, yoghurt or cheese than the Australian male students. This is also the case for total number of serves.

(Table 2b about here)

As opposed to male students, there is no difference in attitude towards healthier eating, and total number of serves consumed by German and Australian female students. German female students are found to consume significantly higher amount of fruit than Australian female students but in terms of vegetable consumption they are lower than Australian female students which is consistent with the eating habit of male students. Australian female students, however, consume higher amounts of meat, fish, poultry, eggs, nuts or legumes than German female students. There is no evidence of difference in the consumption of bread; and milk, yoghurt or cheese between German and Australian female students.

Discussion

For the students in the sample, age group seems to play an important part in their choice of food and their general attitude towards healthier eating. The older the student in the age group, the more likely it is that they will choose responsibly when it comes to food. As discussed earlier, if an unhealthy food choice pattern develops during young adulthood, it is likely that it will continue for the rest of their lives (Kraak et al. 2009; Betts *et al.* 1997; Haberman and Luffey 1998; Wardle 1995) which is a matter of concern and should draw the attention of relevant institutions and individuals to respond to this issue. This aspect needs early intervention which could involve youth-centred social marketing campaigns and perhaps these initiatives should be backed up by further studies to investigate other relevant factors such as socioeconomic position in countries around the world (e.g. Due et al. 2009, Shields and Tremblay 2010). As identified by Maibach *et al.* (2002) and Donovan and Henley (2003), social marketing initiatives/campaigns such as education and motivation components could focus on the improvement of attitude toward healthy eating among young German and Australian adults prior to leaving their family home, and should encourage the young adults to be an influence in food purchases from their early age. As a part of social marketing campaigns, some motivational measures could be designed through some

persuasive messages highlighting the benefits of healthier eating in line with Sheth and Frazier's (1982) inducement process.

Gender seems to play less of a part in influencing food choice in this study, although German female students consumed more fruit and fewer vegetables than their Australian counterparts. German males, too, are more conscious about the natural content of food compared to the Australian males. The findings from this study are based on the data collected from one university each in Australia and Germany in the age group of 18 to 24 years which is one of the major limitations of this study. To ensure the effectiveness of social marketing initiatives, it will be a good idea to extend this study in a wider age group possibly covering the school students in different geographic locations and investigate their attitude for their food preference (healthy or unhealthy).

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TABLE 1a: Test of difference in the food motives and serving of food that influence food choice by respondents' country – Germany vs. Australia for the age group of 21 years old and less

Food motives and serving of foods	Germany Mean (N) (SD)	Australia Mean (N) (SD)	t-value	Germany
Food motives²				
Health	3.48 (122) (0.47)	3.51 (240) (0.64)	-0.29	Equal
Mood	3.08 (122) (0.61)	3.21 (240) (0.69)	-1.80	Equal
Convenience	3.44 (122) (0.84)	3.65 (240) (0.64)	-2.56*	Lower
Sensory appeal	3.43 (122) (0.63)	3.73 (240) (0.55)	-4.65***	Lower
Natural content	3.32 (122) (0.66)	2.87 (240) (0.86)	5.06***	Higher
Price	3.72 (122) (0.68)	3.92 (240) (0.69)	-2.67**	Lower
Weight concern	3.31 (122) (0.84)	3.11 (240) (1.00)	1.89	Equal
Familiarity	2.78 (122) (0.64)	2.87 (240) (0.74)	-1.09	Equal
Ethical concern	2.53 (122) (0.76)	2.51 (240) (0.84)	0.29	Equal
Attitudes towards healthier eating	3.87 (119) 0.59)	3.81 (240) (0.71)	0.79	Equal
Serving of food				
Vegetables	2.17 (121) (1.19)	2.60 (240) (1.32)	-3.01**	Lower
Fruit	1.68 (122) (0.58)	1.46 (240)(0.73)	2.94**	Higher
Bread	2.60 (122) (0.91)	2.60 (240) (1.01)	0.02	Equal
Serves of milk, yoghurt or cheese	1.60 (122) (0.60)	1.70 (240) (0.59)	-1.55	Equal
Serves of meat, fish, poultry, eggs, nuts or legumes	0.78 (122) (0.42)	0.93 (240) (0.26)	-4.07***	Lower
Total number of serves ³	8.83 (121) (1.95)	9.28 (240) (2.41)	-1.81	Equal

† stands for $p < 0.10$, * stands for $p < 0.05$, ** stands for $p < 0.01$, *** stands for $p < 0.001$

² On a 5-point scale with 1 = not important at all to 5 = very important.

³ Maximum no of serves = 14 where low = 0 to 7 and high = 8 to 14.

TABLE 1b: Test of difference in the food motives and serving of food that influence food choice by respondents' country – Germany vs. Australia for the age group of above 21 years old

Food motives and serving of foods	Germany Mean (N) (SD)	Australia Mean (N) (SD)	t-value	Germany
Food motives⁴				
Health	3.47 (176) (0.59)	3.58 (58) (0.66)	-1.15	Equal
Mood	3.26 (176) (0.64)	3.12 (58) (0.58)	1.52	Equal
Convenience	3.35 (176) (0.79)	3.59 (58) (0.54)	-2.16*	Lower
Sensory appeal	3.53 (176) (0.59)	3.69 (58) (0.59)	-1.89	Equal
Natural content	3.39 (176) (0.72)	2.95 (58) (0.89)	3.87***	Higher
Price	3.67 (176) (0.65)	3.78 (58) (0.75)	-1.16	Equal
Weight concern	3.10 (176) (1.05)	3.25 (58) (1.15)	-0.89	Equal
Familiarity	2.77 (176) (0.66)	2.79 (58) (0.85)	-0.12	Equal
Ethical concern	2.63 (176) (0.79)	2.64 (58) (0.91)	-0.09	Equal
Attitudes towards healthier eating	3.59 (171) (0.64)	4.09 (58) (0.53)	-5.30***	Lower
Serving of food				
Vegetables	2.11 (174) (1.27)	2.53 (58) (1.39)	-2.15*	Lower
Fruit	1.51 (176) (0.68)	1.50 (58) (0.71)	0.05	Equal
Bread	2.34 (176) (1.01)	2.53 (58) (1.01)	-1.30	Equal
Serves of milk, yoghurt or cheese	1.52 (176) (0.63)	1.59 (58) (0.68)	-0.71	Equal
Serves of meat, fish, poultry, eggs, nuts or legumes	0.70 (176) (0.46)	0.98 (58) (0.13)	-4.56***	Lower
Total number of serves ⁵	8.17 (174) (2.37)	9.14 (58) (2.55)	-2.65**	Lower

† stands for $p < 0.10$, * stands for $p < 0.05$, ** stands for $p < 0.01$, *** stands for $p < 0.001$

⁴ On a 5-point scale with 1 = not important at all to 5 = very important.

⁵ Maximum no of serves = 14 where low = 0 to 7 and high = 8 to 14.

TABLE 2a: Test of difference in the food motives and serving of food that influence food choice by respondents' country – Germany vs. Australia for male students

Food motives and serving of foods	Germany Mean (N) (SD)	Australia Mean (N) (SD)	t-value	Germany
Food motives⁶				
Health	3.29 (108) (0.58)	3.40 (120) (0.69)	-1.35	Equal
Mood	3.06 (108) (0.69)	3.08 (120) (0.69)	-0.28	Equal
Convenience	3.33 (108) (0.89)	3.61 (120) (0.63)	-2.77**	Lower
Sensory appeal	3.41 (108) (0.66)	3.65 (120) (0.54)	-3.03**	Lower
Natural content	3.16 (108) (0.68)	2.67 (120) (0.83)	4.84***	Higher
Price	3.62 (108) (0.72)	3.86 (120) (0.71)	-2.52*	Lower
Weight concern	2.72 (108) (0.93)	2.72 (120) (0.99)	-0.02	Equal
Familiarity	2.78 (108) (0.76)	2.76 (120) (0.73)	0.19	Equal
Ethical concern	2.45 (108) (0.73)	2.39 (120) (0.89)	0.55	Equal
Attitudes towards healthier eating	3.48 (105) (0.62)	3.80 (120) (0.66)	-3.78***	Lower
Serving of food				
Vegetables	1.69 (106) (1.16)	2.44 (120) (1.27)	-4.62***	Lower
Fruit	1.41 (108) (0.74)	1.51 (120) (0.71)	-1.05	Equal
Bread	2.53 (108) (1.00)	2.84 (120) (0.93)	-2.45*	Lower
Serves of milk, yoghurt or cheese	1.47 (108) (0.66)	1.73 (120) (0.58)	-3.18**	Lower
Serves of meat, fish, poultry, eggs, nuts or legumes	0.93 (108) (0.26)	0.97 (120) (0.18)	-1.38	Lower
Total number of serves ⁷	8.02 (106) (2.34)	9.49 (120) (2.27)	-4.79***	Lower

† stands for $p < 0.10$, * stands for $p < 0.05$, ** stands for $p < 0.01$, *** stands for $p < 0.001$

⁶ On a 5-point scale with 1 = not important at all to 5 = very important.

⁷ Maximum no of serves = 14 where low = 0 to 7 and high = 8 to 14.

TABLE 2b: Test of difference in the food motives and serving of food that influence food choice by respondents' country – Germany vs. Australia for female students

Food motives and serving of foods	Germany Mean (N) (SD)	Australia Mean (N) (SD)	t-value	Germany
Food motives⁸				
Health	3.58 (192) (0.49)	3.59 (183) (0.61)	-0.31	Equal
Mood	3.26 (192) (0.58)	3.25 (183) (0.64)	0.10	Equal
Convenience	3.42 (192) (0.77)	3.65 (183) (0.63)	-3.22**	Lower
Sensory appeal	3.54 (192) (0.58)	3.77 (183) (0.57)	-4.02***	Lower
Natural content	3.47 (192) (0.69)	3.02 (183) (0.85)	5.56***	Higher
Price	3.72 (192) (0.62)	3.90 (183) (0.71)	-2.58*	Lower
Weight concern	3.45 (192) (0.90)	3.40 (183) (0.96)	0.46	Equal
Familiarity	2.76 (192) (0.59)	2.92 (183) (0.77)	-2.19*	Lower
Ethical concern	2.67 (192) (0.79)	2.63 (183) (0.80)	0.51	Equal
Attitudes towards healthier eating	3.83 (187) (0.61)	3.90 (183) (0.70)	-1.01	Equal
Serving of food				
Vegetables	2.39 (191) (1.21)	2.68 (183) (1.36)	-2.18*	Lower
Fruit	1.68 (192) (0.57)	1.45 (183) (0.72)	3.41**	Higher
Bread	2.40 (192) (0.96)	2.44 (183) (1.04)	-0.45	Equal
Serves of milk, yoghurt or cheese	1.60 (192) (0.59)	1.64 (183) (0.62)	-0.65	Equal
Serves of meat, fish, poultry, eggs, nuts or legumes	0.63 (192) (0.48)	0.92 (183) (0.27)	-7.03***	Lower
Total number of serves ⁹	8.69 (191) (2.13)	9.13 (183) (2.51)	-1.83	Equal

† stands for $p < 0.10$, * stands for $p < 0.05$, ** stands for $p < 0.01$, *** stands for $p < 0.001$

⁸ On a 5-point scale with 1 = not important at all to 5 = very important.

⁹ Maximum no of serves = 14 where low = 0 to 7 and high = 8 to 14.