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How Where you Live Affects What you Eat: Examining German & Australian Students

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Abstract

It is suspected that the transition from dependent living in the family home to independent living during young adulthood influences food choice. Both Australia and Germany report record numbers of overweight and obese individuals with young adults in both countries in a particularly high-risk position. As such, this study sought to investigate if food choice varied by the place of residence (dependent or independent) of these young adults. A self-administered questionnaire was used to collect quantitative data from 305 German students and 310 Australian students between the ages of 18 to 24 years. Findings indicate that there is a significant difference in food motives of university students in these countries, particularly in terms of convenience, sensory appeal, natural content, price and attitudes towards healthy eating. German students also ate significantly **less** amounts of vegetables; milk, yoghurt or cheese; meat, fish, poultry, eggs, nuts, or legumes; and also the total number of serves than did Australian students. Further, German **dependent** students, compared to their Australian counterparts, have significantly different food motives for: convenience, sensory appeal, natural content and price. In terms of food serving, **dependent** German students, compared to their Australian counterparts, consume significantly less vegetables; meat, fish, poultry, eggs, nuts or legumes. In terms of food motives, **independent** German students are significantly lower than Australian independent students in: health, convenience, sensory appeal, and price but significantly higher in natural content. In terms of serving of food, independent German students eat significantly less vegetables; bread; milk yoghurt or cheese; meat, fish, poultry, eggs, nuts or legumes than independent Australian students. This is also the case for total number of serves.

Background

A 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 kilos. 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 Index 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, Bergmann 2005). Like many countries, there is a particular focus upon younger consumers in Germany as 31% of males, and 16% 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% of males and 6% 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 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 (Betts, Amos, Keim, Peters and Stewart 1997; Haberman and Luffey 1998; Wardle 1995).

In the absence of empirical evidence, we suspected that where people live is one factor that may 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; attending university is one of the catalysts to many young adults moving away from the family home to begin living independently. This paper examines the food choice motivations 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. The aim of this paper is to contribute to the debate on the development of effective social marketing intervention campaigns in this obesogenic area.

Developing Food Preferences: The University Transition

The transition to tertiary study is a time of great change for young adults and often involves moving away from the family home, which provides new challenges for students as they become responsible for their own food choices, planning and preparation. The term 'Freshman 15' was coined in the United States of America (Gores 2008) and refers to the weight gained by university students in their first year of study; in other words they gain 15 pounds by the end of their first year of tertiary study. Whilst the number of pounds gained may be an exaggeration, the weight gain seems to be the beginning of a drift toward obesity throughout the adult years (Lowry, Galuska, Fulton, Wechsler, Kann and Collins 2000). A number of studies report similar findings about food choice *behaviour*, in that tertiary education students' generally **do not** make healthy food choices. In American studies, for example, Tavelli, Beerman, Shultz and Heiss (1998) found that only 8% of college students consumed the minimum recommended intake for each of the food groups, Haberman and Luffey (1998) reported that more than 80% of college students consume inadequate quantities of grains, dairy products and fruit and vegetables, while Huang, Harris, Lee, Nazir, Born and Kaur (2003) found 69% of college students were not consuming the recommended amount of fruit and vegetables. Indeed, 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).

Overall, while research has been conducted on university students and their food choice behaviour, little research has focused on the differences between independent and dependent young adults' behaviour in regard to healthy eating. Thus, two research questions were set: first, is there a difference in food motives and serving of food between university students in Germany and Australia? And second, is there a difference in food motives and the serving of food by the type of residence (dependent or independent) of Australian and German students?

Method

This project used a descriptive research design in a cross-sectional setting. The research involved the self-administration of a questionnaire with 305 university students in Germany and 310 in Australia that was developed from a review of the literature in this area. For our study, the questionnaire was pre-tested on an expert panel and on a subsequent pilot with a small sample of respondents from the target population. Quota sampling was applied due to the unavailability of an appropriate sampling frame and as this method of sampling ensured control of particular characteristics of the target population (Moser 1952; Moser and Stuart 1953). Quantitative data was collected randomly from young adults aged 18 to 24 years at the German and Australian universities and a drop-off/pick-up technique was utilized. Useable

data from Germany included 111 males and 194 females whilst, in Australia, useable data from 124 males and 186 females was collected. In order to minimize selection bias, data was collected on different days, at various times and in an assortment of locations around the campuses (Sudman 1980; Sudman and Kalton 1986).

Measures for 1) attitudes toward healthy eating, 2) residence and 3) food choice were adapted from existing literature. Firstly, attitude towards healthy eating was measured by five semantic differential scales. Four of the bipolar adjectives were from Bagozzi and Warshaw's (1990) scale, which reported a good test-retest reliability, being: pleasant/unpleasant, good/bad, enjoyable/unenjoyable and satisfying/unsatisfying. The fifth bipolar adjective, favorable/unfavorable, was from Maheswaran and Meyers-Levy (1990). Measures concerning residence were created based on definitions of independence and dependence provided by Crossley and Nazir (2002) as well as Beasley, Hackett and Maxwell (2004).

Findings

The focus of this research was two-fold. The first research question was concerned with whether there was a significant difference in food motive and the serving of food between university students in Germany and Australia. There is a **significant difference** in food motives of university students in Germany and Australia particularly in terms of convenience, sensory appeal, natural content, price and attitudes towards healthy eating. The comparison indicates that German students are **lower** in these dimensions except for natural content. In other words, German students are less motivated by the convenience, sensory appeal, and price of the food they choose than are Australian students. However, there is no evidence of difference in these countries in the following dimensions: health, mood, weight concern, familiarity, and ethical concern. When attention is focused on the consumption pattern of food, it was found that German students ate significantly less amounts of vegetables; milk, yoghurt or cheese; meat, fish, poultry, eggs, nuts, or legumes; and also the total number of serves than did Australian students. There is, however, no significant difference in the consumption of fruit and bread between Germany and Australia. The high level of obesity thus leads to a question of other lifestyle difference such as amount of exercise, how people spend their time and so forth. This study, however, does not cover the lifestyle aspect.

Our second research objective was concerned with whether there was a difference in food motive and the serving of food by the type of residence (dependent or independent) of these students. Those students who lived with their parents or grandparents were considered as dependent and those who lived in student accommodation, shared accommodation or their own house or apartment were considered as independent.

Table 1: Food motives, serving of food and food choice by country (dependent students)

Food motives and serving of foods	Germany Mean (N) (SD)	Australia Mean (N) (SD)	t-value	Germany
Food motives¹				
Health	3.55 (82) (0.55)	3.47 (173) (0.65)	0.98	Equal
Mood	3.15 (82) (0.65)	3.17 (173) (0.67)	-0.17	Equal
Convenience	3.29 (82) (0.80)	3.63 (173) (0.63)	-3.70***	Lower
Sensory appeal	3.56 (82) (0.59)	3.73 (173) (0.56)	-2.18*	Lower
Natural content	3.39 (82) (0.67)	2.83 (173) (0.83)	5.37***	Higher
Price	3.58 (82) (0.67)	3.85 (173) (0.69)	-2.91**	Lower

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

Weight concern	3.14 (82) (1.03)	3.06 (173) (1.02)	0.56	Equal
Familiarity	2.84 (82) (0.64)	2.88 (173) (0.75)	-0.46	Equal
Ethical concern	2.68 (82) (0.86)	2.56 (173) (0.84)	1.09	Equal
Attitudes towards healthy eating	3.73 (79) (0.64)	3.70 (173) (0.69)	0.34	Equal
Serving of food				
Vegetables	2.13 (82) (1.12)	2.53 (173) (1.19)	-2.54*	Lower
Fruit	1.67 (82) (0.65)	1.49 (173) (0.72)	1.91	Equal
Bread	2.63 (82) (0.95)	2.54 (173) (1.03)	0.72	Equal
Serves of milk, yoghurt or cheese	1.61 (82) (0.58)	1.64 (173) (0.65)	-0.31	Equal
Serves of meat, fish, poultry, eggs, nuts or legumes	0.84 (82) (0.37)	0.92 (173) (0.26)	-2.07*	Lower
Total number of serves ²	8.89 (82) (2.19)	9.12 (173) (2.39)	-0.74	Equal

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

German **dependent** students have **significantly different** food motives in the following areas: convenience, sensory appeal, natural content and price. In terms of food serving, **dependent** German students consumed significantly less vegetables; and less meat, fish, poultry, eggs, nuts or legumes than did Australian **dependent** students. However, there is no evidence of difference in the consumption of fruit; bread; milk, yoghurt or cheese; and also the total number of serves between dependent German and Australian students.

Table 2: Food motives, serving of food and food choice by country (indep. students)

Food motives and serving of foods	Germany Mean (N) (SD)	Australia Mean (N) (SD)	t-value	Germany
Food motives³				
Health	3.45 (216) (0.54)	3.58 (130) (0.64)	-2.15*	Lower
Mood	3.19 (216) (0.61)	3.21 (130) (0.66)	-0.11	Equal
Convenience	3.42 (216) (0.82)	3.64 (130) (0.63)	-2.68**	Lower
Sensory appeal	3.46 (216) (0.61)	3.72 (130) (0.56)	-3.88***	Lower
Natural content	3.35 (216) (0.71)	2.95 (130) (0.89)	4.54***	Higher
Price	3.71 (216) (0.65)	3.93 (130) (0.74)	-2.84**	Lower
Weight concern	3.21 (216) (0.96)	3.23 (130) (1.03)	-0.22	Equal
Familiarity	2.75 (216) (0.65)	2.82 (130) (0.78)	-0.95	Equal
Ethical concern	2.56 (216) (0.75)	2.50 (130) (0.87)	0.65	Equal
Attitudes towards healthy eating	3.69 (211) (0.63)	4.08 (130) (0.62)	-5.42***	Lower
Serving of food				
Vegetables	2.14 (214) (1.28)	2.65 (130) (1.50)	-3.37**	Lower
Fruit	1.54 (216) (0.65)	1.45 (130) (0.72)	1.28	Equal
Bread	2.36 (216) (0.97)	2.68 (130) (0.99)	-2.97**	Lower
Serves of milk, yoghurt or cheese	1.53 (216) (0.63)	1.73 (130) (0.54)	-2.98**	Lower
Serves of meat, fish, poultry, eggs, nuts or legumes	0.69 (216) (0.46)	0.95 (130) (0.21)	-6.03***	Lower
Total number of serves ⁴	8.27 (214) (2.22)	9.47 (130) (2.45)	-4.66***	Lower

² Maximum no of serves = 14 where low = 0 to 7 and high = 8 to 14.

³ On a 5-point scale with 1 = not important at all to 5 = very important.

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

Analysis of difference in food motives between **independent** German and Australian students shows that German students living away from the family home have a significantly lower attitude towards healthy eating than their Australian counterparts. In terms of food motives, they are **significantly lower** than Australian independent students in the following dimensions: health, convenience, sensory appeal, and price but **significantly higher** in natural content. In terms of serving of food, independent German students eat significantly less vegetables; bread; milk yoghurt or cheese; meat, fish, poultry, eggs, nuts or legumes than independent Australian students. This is also the case for total number of serves.

Conclusion

In terms of our first research objective, overall we found that there are significant differences in some food motives of university students in Germany and Australia. However, when we focused on the amount of food consumed, it was found that German students ate significantly **less** amounts of most food groups than did the Australian students. Similarly, German students also have **less** serves of food than the Australian students.

Compared to their Australian counterparts, German students, whether they lived at home or independently, had different food motives on many dimensions. However, it would seem that it is the amount of food being consumed when the young adult leaves home that could be the real problem for this cohort. An analysis of difference in food motives between the **independent** German and Australian students shows that German students have a significantly lower attitude towards healthy eating than their Australian counterparts. In terms of serving of food, independent German students eat significantly less of the staples of a 'good' diet than the Australian students. German students living independently also have fewer total serves of food compared to the Australian independent students.

Whilst this is not surprising for a student cohort, our findings can inform social marketing campaigns, particularly in terms of the education and motivation components identified by Maibach, Rothschild and Novelli (2002) and Donovan and Henley (2003). In terms of education, campaigns may consider focusing upon improving the attitude toward healthy eating among young German adults specifically. Furthermore, we suggest that social marketing campaigns that educate young adults about food-related activities, such as budgeting, preparation and cooking, in readiness for, or in the early stages of, their transition to independent living would yield positive results. The motivation component of social marketing may also be informed by our research findings. Specifically, persuasive messages which correspond with Sheth and Frazier's (1982) inducement process may encourage healthier eating amongst both cohorts.

⁴ Maximum no of serves = 14 where low = 0 to 7 and high = 8 to 14.

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