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**Longitudinal dietary change from adolescence to adulthood:  
perceptions, attributions and evidence.**

Amelia A. Lake, Andrew J. Rugg-Gunn, Rob M. Hyland, Charlotte E. Wood,  
John C. Mathers, Ashley J. Adamson.

*Human Nutrition Research Centre, University of Newcastle upon Tyne, U.K.*

Corresponding author.      Amelia A. Lake

Human Nutrition Research Centre  
University of Newcastle upon Tyne  
Wellcome Research Laboratories  
RVI, Queen Victoria Rd, Newcastle  
NE1 4LP

[amelia.lake@ncl.ac.uk](mailto:amelia.lake@ncl.ac.uk)

Tel.: +44191-282-4009

Fax: +44191-222-5276

## **Abstract**

Dietary patterns and change in eating habits are influenced by multiple factors from an individual's internal and external environment. A longitudinal dietary survey study provided quantitative evidence of dietary change and investigated factors influencing dietary change from adolescence to adulthood, using sociodemographic data and participants' own perceptions of, and attributions for, their dietary change. Longitudinal dietary data were obtained in 1980 and 2000 (average age 11.6 and 32.5 years respectively). Two questionnaires (2000) and 2 x 3-day food diaries (1980 and 2000) were collected from 198 participants. Foods consumed were assigned to one of the five food categories from The Balance of Good Health. Questionnaire responses were used to examine how subjects perceived their own dietary change and the factors to which they attributed such change. Six key factors were identified from the questionnaire: parents, partners, children, nutritional awareness, employment and lack of time . Demographic and key factors were associated with degree of change in intake. The complex process of change in food consumption can be linked with an individual's attributions for change.

Keywords: attributions, perceptions, dietary change, and longitudinal study.

## 1 Introduction

Habitual dietary intake can influence the risk of chronic diseases (Kleinman, 2000). Understanding when, how and why dietary changes occur over time is critical to developing strategies for intervention. There are few longitudinal data on the change in diet from adolescence through to adulthood (Parraga, 1990; Bertheke Post *et al.*, 2001) and limited research into the perceptions and attributions people offer in explanation of their own dietary change.

Food consumption evolves from infancy to adulthood. Transitions such as puberty or mid life crises are often significant factors in the formation of food choices (Lindeman & Stark, 1999). Food choices are rooted in past experiences, but are susceptible to change through exposure to new circumstances; reflecting both dietary persistence and change over time (Devine *et al.*, 1998).

Evidence indicates that parents provide an 'enduring family socialisation effect' even after children leave home (Lau, 1990; Rossow & Rise, 1994). Though often characterised by a quest for independence and the influence of peer culture, adolescent eating and dietary intake have been shown to have some correlation with parental intake (De Bourdeaudhuij, 1997). Others acknowledge that parents equip children with food preference messages but that a 'family paradox' exists (Rozin, 1990) where low correlations between food intakes of both younger children and adolescents

and their parents have been observed. Adolescent food choices have been shown to track from 10-11 to 16-17 years (Kelder *et al.*, 1994).

The transition from living with parents to independence and establishment of households affects many aspects of life including food choice. Interaction between family members influences dietary choice and food change (Furst *et al.*, 1996; Schafer *et al.*, 1999): strong similarities have been found between the food intakes of married and cohabiting couples (Kemmer *et al.*, 1998). Foods chosen by individuals depend on a number of factors including agreement with other family members and partner preferences (Bove *et al.*, 2003). Food choices may be constrained by the need to maintain harmony in the family; which is often of higher value than attaining a healthy diet (De Bourdeaudhuij & Van Oost, 1998).

Time is an important resource which may influence food choice (Gofton, 1995). Households with adults in employment appear to experience 'temporal pressures' (Schneider, 1997) and increased use of convenience foods, associated with labour saving (Warde, 1999).

Nutrition education has focused on increasing the public's knowledge about nutrition in an attempt to influence their behaviour though it is acknowledged that this does not guarantee adherence to a healthy diet (Shepherd & Towler, 1992) it appears to have 'generated new obsessions and new anxieties' (Warde, 1997). Nutrition knowledge and food consumption have been shown to be linked (Wardle *et al.*, 2000). People have concepts, definitions and understandings of 'healthy eating' (Povey *et al.*, 1998) and try to overcome the general confusion of food and health by choosing foods which meet their definition of healthy eating (Falk *et al.*, 2001). Food and

identity are inextricably linked. Some individuals actively seek the positive identities of being a 'healthy eater' (Bisogni *et al.*, 2002).

Diet is rarely static and the process of food choice has been described as 'complex, evolving, dynamic and situational' (Connors *et al.*, 2001).

Dietary behaviour does not stand in isolation from social change. Between 1980 to 2000 the North East of England experienced significant social and cultural changes as a result of the serious contraction of heavy industry (Robinson, 1994) and the virtual disappearance of coal mining. Also the range of foods available has been extended greatly by the dominance of food retailing by supermarkets (Wrigley, 1998).

Although all these factors are believed to be important in influencing food choices the reasons why people's dietary behaviour changes are poorly understood (Satia *et al.*, 2001).

The study sought to unravel this complex process through examining records of measured dietary intake of cases both as adolescents and as adults, as well as on their adult perception of what had driven dietary change. It investigated the diet of individuals in Northumberland, North East England in 1980 (Hackett *et al.*, 1984a) when participants were aged 11-12 years and again 20 years later in 2000, when they were in their early thirties.

Although the overall objective of this research was to examine longitudinal dietary change, the analyses in this paper seek to further the understanding of what inspires and contributes to the evolution of food choice.

The aim was to examine whether individuals who attributed change to a particular factor had indeed changed their dietary intake more or less than individuals who did not make such an attribution.

## 2 Methods

### 2.1 Dietary survey

In 1980, 405 11-12 year olds, from seven schools in Northumberland, completed two 3-day food diaries and social class information obtained (Hackett *et al.*, 1984a). Between 1997 and 2000, 298 of the original cases were retraced throughout the U.K. and of these 208 consented to take part in the study. One hundred and ninety-eight participants (81 male, 117 female) completed all aspects of the dietary collection, i.e. two 3-day food diaries collected 6 months apart, in 2000-2001 and social class information was obtained.

As in 1980, the 2000 dietary data were collected using two 3-day food diaries followed by a face to face interview to clarify uncertainties and to determine portion size. Where the most suitable method for quantifying food portion sizes in 1980 was calibrated food models (Hackett *et al.*, 1983), the photographic food atlas (Nelson *et al.*, 1997) was used in 2000. Foods consumed were allocated to one or a combination of up to five groups which comprise The Balance of Good Health food groups (BGH) from the food selection guide (Health Education Authority (HEA), 1994) according to specifications laid out by Gatenby *et al* (1995). The HEA model recommended that a balanced diet should consist of approximately 33% fruit and vegetables, 33% bread, other cereals and potatoes, 15% milk and dairy products, 12% meat, fish and alternatives and 8% foods containing fat and/ or

sugar (Gatenby *et al.*, 1995). Consumption of foods within groups was quantified by expressing the weight of food consumed from each of the five BGH food groups as a percentage of total weight of food consumed. Dietary change was expressed as the difference in percentage contribution made by each BGH food group to total weight of food eaten between 2000 and 1980 (2000 – 1980).

## **2.2 Questionnaire**

A questionnaire consisting of 21 questions - a combination of open-ended, Likert scale and closed questions - was designed to elicit whether participants believed their dietary behaviour had changed since 1980 and their perceptions of, and attributions for, such a change. It aimed to explore to which factors they attributed any dietary change. Question topics included perceptions of dietary change. Two potential factors, commonly identified in the literature as relevant influences upon dietary change at this life stage, partners and children (Wardle, 1995; Kemmer *et al.*, 1998; Feunekes *et al.*, 1998; Bove *et al.*, 2003), were included as specific questions. Examples of questions included:

Has your spouse/partner influenced the way you eat?

Has the way you eat changed since living with children?

The questionnaire was piloted and modified before being given to participants coincident with the collection of the second food diary in 2000-2001 and it was left for self-completion.

Ethical approval was obtained from the U.K. Multi Research Ethics Committee and from fifty local research ethics committees.

### **2.3 Analysis**

The questionnaire text was analysed using QSR N5 NUD\*IST. In addition to the two pre-specified topics (partners and children) built into the questionnaire, two independent analyses of the questionnaire data were undertaken to derive dominant attributional factors. Some factors were split further into direction of influence, i.e. positive, negative or non-direction influence, responses allocated to the positive group those who described factors as encouraging them to have a healthier, more varied diet, eating more fruit and vegetables or consuming less convenience foods. Factors implicated by respondents as encouraging a decrease in consumption of foods such as fruit, or inhibited dietary variety, were seen as negative.

Statistical analysis was carried out using SPSS. Dietary intakes (1980 and 2000) and changes in intake (2000 – 1980) of respondents who offered a particular explanation for dietary change were compared with those who did not nominate that explanation using either T-tests or for three or more factors an ANOVA and Dunnet's T3 post-hoc tests (significance  $p < 0.05$ ).

In order to compare social class at both time points the 1970 Registrar General's (Registrar General, 1970) definitions of social class were used, with 1980 and 2000 occupations fitted to the best possible classification. This was carried out under the supervision of the Occupational Information Unit of the

Office of National Statistics. Following the pattern used in 1980 (Hackett *et al.*, 1984b) social class was divided into four groups. Group 1, (high; social classes I and II), group 2, (middle; social class III), group 3 (low; social classes IV and V) and group 4 (unclassifiable VI, the retired or unemployed VII and the unknown VIII).

The percentage of respondents stated are of the total sample (n=198).

### **3 Results**

#### **3.1 Demographic descriptives**

At the time of data collection in 2000, 78% of participants were living in Northumberland or the contiguous Tyne and Wear area, with remaining 22% spread across 25 counties in the U.K. Social class in 1980 and 2000 are indicated in Table 1.

***Table 1 Social class in 1980 and 2000 according to 1970 classifications***

Thirty-five percent of respondents did not change social class between 1980 and 2000; 43% moved to a higher social class position; 22% moved to a lower social class.

#### **3.2 Dietary Change**

The extent of change in intakes is displayed in Figure 1.

**Figure 1 Mean change (2000-1980) in % contribution from the five BGH<sup>a</sup> food groups (n=198)**

The largest change was a mean increase of 10.6% (SE 0.80) in contribution to total food weight from fruit and vegetables (1980 average intake: 14.6% (SE 0.50), 2000 average intake: 25.2% (SE 0.8)) matched by falls in foods containing fat and/ or sugar and to a lesser extent in milk and dairy foods.

### **3.3 Questionnaire responses**

All respondents reported that their diet had changed since 1980. The six main factors used by respondents to explain change are listed in Table 2.

**Table 2 Attributional factors influencing dietary change from questionnaire analysis (n=198; male = 81, female = 117).**

### **3.4 Direction of partner's influence**

The majority of respondents lived with a partner; 60% cited their partner as a reason for dietary change (Table 2). Twenty-two percent claimed that their partner had not changed the way they eat and 18% did not mention a partner's influence.

Ten percent of participants, indicated that their partner's influence on their diet was negative:

Eating later, loads of foods with sauces. Eating more crap. Drinking wine or alcohol with meals. Eating out a bit more. (Female)

Eating more especially junk food. Unhappy so comfort eating. (Female)

Thirty-four percent of respondents felt their partners had a positive influence on their diet:

Introduced more healthy foods not tried before. (Male)

My partner always makes a wide choice of meals, to what I used to eat, he adds more veg, etc. (Female)

A significantly higher proportion of women than men described their partner's influence negatively, with the opposite seen for positive influence ( $\chi^2=10.40$ ;  $p=0.015$ ).

***Figure 2 Mean change (2000-1980) in % contribution from the five BGH<sup>a</sup> food groups according to perceived direction of partner's influence (n=198)***

The change in intake of bread, other cereals and potatoes was significantly different between the groups ( $p=0.041$ ) (Figure 2). There were no significant differences in intake of any food groups in 1980, but, in 2000, intake of bread, other cereals and potatoes differed between the four groups ( $p=0.02$ ). Those who claimed that their partners had a negative influence on the change in their food intake had the greatest intake of breads, other cereals and potatoes, while the smallest intake was recorded for those for whom the direction of partner's influence could not be determined.

### **3.5 Direction of parental influence**

Thirty percent of respondents described their parents' influence on their diet positively :

At age 11-13 my diet was heavily influenced by my parents who ensured it was basically healthy and I think I have maintained healthy eating habits since then.

(Male)

Twelve percent respondents described their influence as negative (Table 2):

My parents were not as aware of healthy eating when making my food as I am now.

(Male)

***Figure 3 Mean change (2000-1980) in % contribution from the five BGH<sup>a</sup> food groups according to perceived direction of parental influence (n=195)***

There were significant differences in the extent to which respondents had changed their intake of fruit and vegetables and meat, fish and alternatives ( $p=0.003$  and  $p=0.02$  respectively) (Figure 3). Those who reported that parents had a positive influence on their food choices showed a significantly smaller ( $p=0.005$ ) increase in intakes of fruit and vegetables (7.7% (SE 1.6)), less than half of the increase observed in those reporting parents as a negative influence (16.8% (SE 2.2)). A similar (but mirror image) pattern ( $p=0.002$ ) was seen for change in intakes of meat, fish and alternatives with the greatest reduction in intake being reported for those for whom parents were considered to have a negative influence on food choices (-3.5% (SE 1.5)).

In 1980, intakes of fruit and vegetables were higher ( $p<0.001$ ) for those who described parental influences positively (17.7% (SE 1.0)) than for the other two groups (13.0% (SE 1.4) and 13.5% (SE 0.5) for negative parental

influence and parents not mentioned respectively). By 2000, there were no significant differences between the groups for intakes of fruit and vegetables.

### **3.6 Influence of children on dietary change**

Fifty-nine percent of respondents (117) lived with children; 41% respondents without children were excluded from this analysis. Thirty-eight percent of all 198 respondents saw having children as an explanation for dietary change whereas only 18% participants had claimed that living with children had *not* influenced how they eat (Table 2).

. Significantly more women than men described the influence of children positively, with the reverse seen for those not influenced by children ( $\chi^2=12.32$ ;  $p=0.015$ ). Comments indicating the negative influence of children are shown below:

I pick at things, and would eat McDonalds more now than if I had no children.

Having crisps/ biscuits/treats in the house. (Female)

Tend to "hoover" after my son's meals. Eat things like fish fingers, chocolate teddy bear cereal etc. (Male)

Responses which described the influence of children as positive included:

I have children and I find it important that they eat healthily. (Male)

We eat less convenience foods (or try to) and include more fresh fruit and vegetables in our daily diet. (Female)

Children were perceived as an important explanatory factor but intakes were not significantly different in terms of dietary change or intake (1980 and 2000).

### **3.7 Awareness of nutrition messages.**

Thirty-six percent of respondents suggested increased awareness regarding nutrition, food and health compared with their own awareness, that of their parents and of the general public in 1980 (Table 2):

My parents were not as aware of healthy eating when making my food as I am now.

(Male)

Increased awareness of good nutrition through education and media. (Female)

**Figure 4 Mean change (2000-1980) in % contribution from the five BGH<sup>a</sup> food groups according to perceived awareness of nutrition and health (n=198)**

Respondents who cited awareness had a significantly greater increase in intake from fruit and vegetables ( $p=0.002$ ) compared with those who did not mention this. Individuals citing awareness as a factor had decreased intakes of meat, fish and alternatives ( $p=0.05$ ), compared with the others who had increased their percentage contribution.

For all five BGH food groups there were no significant differences in intakes in 1980 between the two groups. In 2000, those citing awareness of nutrition and health messages had a significantly lower intake of foods containing fat and/ or sugar ( $p=0.044$ ) in the awareness group (11.2% (SE 0.6) compared with 13.1% (SE 0.6)) and a significantly higher intake fruit and

vegetables (27.9% (SE 1.1) compared with 23.7% (SE 1.0)) ( $p=0.005$ ) than those who did not mention awareness.

### **3.8 Employment**

Thirty-three percent of respondents indicated that their employment influenced their dietary changes::

Shift work for the past fourteen years has played a big part in my eating habits (Male)

Working away doing long hours, grabbing food when available. (Male)

Individuals who cited employment had a significantly smaller increase ( $p=0.05$ ) in fruit and vegetable intake than those who had not cited employment in their response (8.4% (SE 1.3) compared with 11.7% (SE 1.0) respectively). In both 1980 and 2000, the percentage contributions from all five BGH food groups were not significantly different.

### **3.9 Time**

Thirty-two percent of respondents mentioned 'time' as a factor influencing change in food consumption pattern. Lack of available time appeared to be an issue, as did the belief that parents in 1980 had more time, illustrated by these responses:

...I have a very busy lifestyle and do not have a lot of time to prepare healthy meals.

(Female)

... mother was a housewife with time to prepare 'balanced' meals and I was encouraged to eat healthily. No time pressures which now faced with in adult life.

(Male)

Those who cited lack of time as an explanation had a smaller increase (8.3% (SE 1.4)) in their intake of fruit and vegetables compared with individuals who had not used time as an explanation (11.7(% SE1.0)) ( $p=0.05$ ). However, intakes from the five BGH food groups between the two 'time' groups were not significantly different in 1980 or in 2000.

#### **4 Discussion**

This study has shown that dietary change can be related to attributions for change. Key attributional factors associated with degree of change in intake over twenty years (1980-2000) were awareness of nutritional messages, lack of time, employment, parental influence (either positive or negative) and the influence of partners. Significant gender differences existed in how participants perceived the influence of partners and children.

To measure the reasons for change directly would be difficult, what we have achieved is to elicit people's attributions for change. The grouping of foods using the Balance of Good Health model allows us to have an overall picture of change in diet as a whole, although the large BGH food groups do obscure potentially significant changes in consumption, for example, from whole milk to semi skimmed.

The dietary changes observed were in line with changes in the U.K. between 1975 and 2000 (DEFRA & National Statistics 2001) where fruit and vegetables increased (7%), foods containing fat and/ or sugar decreased (1%)

as did bread, other cereals and potatoes (4%) and milk and dairy foods (2%) while meat, fish and alternatives did not change.

In general, respondents believed that their diets had become healthier over the previous 20 years. However, factors such as employment, lack of time and having children or a partner were commonly implicated as making it more difficult to eat healthily. Others cited the encouraging and positive effects of health conscious partners and the desire to improve the health outcomes of their children through healthy eating.

Respondents indicated that in early adolescence they lacked interest or were unaware of the importance of diet. There was a general consensus that in 1980 diet and health were not given the media coverage they now receive. The increase in fruit and vegetables and decrease in meat, fish and alternatives in the 72 respondents who cited an increased awareness appeared consistent with Dittus *et al.* (1995) who reported that nutrition concerns were positively correlated with nutritional behaviour. Gibson *et al.* (1998) also reported that beliefs and attitudes regarding the 'diet-disease' relationship influenced fruit and vegetable consumption.

This attributional factor, awareness of nutrition and health messages, interrelates with the other five factors discussed in this study. It has an important overarching role in how the other factors are perceived and how individuals respond to them e.g. lack of time and knowledge or ability to choose healthy snacks. Orientation towards health may modulate how individuals respond to life pressures. Of the six factors presented in this paper, nutritional awareness might be the one most open to influence through

public health messages, though it is also susceptible to misinformation and confusion.

Parental influence is one of the many factors affecting food choice at the adolescence phase of the lifecycle (Pirouznia, 2001). Respondents perceived their parental influence either as an enduring one or as an influence from which they were glad to escape. The majority of those who cited parents believed that their influence was positive; this was associated with a higher intake of foods that are regarded as 'healthy', when respondents were 11 - 12 years old. Escaping from a negatively perceived parental influence was associated with more than twice the increase in fruit and vegetable consumption (17%) compared with those who perceived their parents' influence positively (8%).

The 60% of respondents who reported that their partners were an influence on dietary change showed significant changes in bread, other cereals and potatoes consumption over twenty years. Gender difference is a strong factor in many aspects of food choice, but particularly in influencing partners within a marriage or cohabitation. Women are thought to positively influence their male partner's diet, with men gaining a greater health advantage (Roos *et al.*, 1998). A significantly higher percentage of males (41% males compared with 29% of female respondents) believed their partner's influence to be positive, encouraging them to eat more fruit and vegetables, introducing regularity into their eating patterns and taking control of food purchasing and preparation. The proportions were reversed for the negative influence of partners (3% men and 15% women). These findings are consistent with other research suggesting women have greater dietary

influence over their partners than do men (Craig & Truswell, 1994; Schafer *et al.*, 1999).

Significant gender differences were also seen regarding perceptions of the influence from having children. Only 24% of the male respondents identified children as having influenced their dietary change, compared with 49% of the female respondents. Comments regarding children were quite varied including how they affected the timings of meals, the notion of less time as a result of having children, issues of food preparation, the desire to provide 'healthy food' for children and the types of food children like to eat. The observation that many respondents stated they purchased what their children would actually eat raising the question of who actually controls food purchases and choices. Others have reported that family food preferences were put before mothers' preferences and their desire to eat healthily (De Bourdeaudhuij & Van Oost, 1998).

Time and employment are related factors perceived by respondents as influencing dietary change. Employment was often cited as reducing time available to cook and prepare foods, which then appeared to impact on dietary change. Respondents who perceived that they were experiencing a 'time famine' (Gofton, 1990) and those who cited employment as a reason for dietary change had smaller increases in intakes of fruit and vegetables over the twenty years. Fruit and vegetables, in particular, were perceived as requiring time for preparation and cooking; individuals felt they lacked time due to employment or family commitments.

People have varying awareness of nutrition and health message (Sparks *et al.*, 1995; Margetts *et al.*, 1997; Falk *et al.*, 2001). There is some

evidence from this study that a sense of nutritional awareness is associated with dietary change and, in particular, an increase in fruit and vegetable consumption. The direct impact of health promotion messages with regard to diet may not be dramatic, but developing such awareness may allow individuals to interpret healthy eating messages and apply them to their own circumstances in ways which are different from those whose interest or knowledge is more limited.

This study has shown that individuals can identify factors, e.g. parents, awareness of nutritional messages, which are related to the degree of change in intake of major groups of food over a twenty year time period between adolescence and adulthood. Attributions for change in intake, though difficult to quantify, illuminate factors which individuals perceive as important in shaping dietary choices over long time periods. Public health interventions designed to improve diet may benefit from taking into account attributional models used by individuals to explain health related behaviours.

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**Table 1 Social class in 1980 and 2000 according to 1970 classifications ( n=198)**

		Social Class Groups							
		1		2		3		4	
		High		Middle		Low		Unclassified	
		n	(%)	n	(%)	n	(%)	n	(%)
Social	1980	52	(26)	91	(46)	45	(23)	10	(5)
class by	2000	86	(43)	73	(37)	32	(16)	7	(4)
	1970 <sup>a</sup>								

<sup>a</sup>(Registrar General, 1970)

Table 2 Attributional factors influencing dietary change from questionnaire analysis (n=198; male = 81, female = 117).

Factor	Respondents		Male		Female	
	n	(%)	n	(%)	n	(%)
Influence of partners	119	(60)	50	(62)	69	(59)
Positive influence <sup>ac</sup> of partners	67	(34)	33	(41)	34	(29)
Negative influence <sup>bc</sup> of partners	20	(10)	2	(3)	18	(15)
Partner mentioned <sup>c</sup> , no direction	32	(16)	15	(19)	17	(15)
Influence of parents	86	(43)	31	(38)	55	(47)
Positive influence <sup>ad</sup> of parents	59	(30)	22	(27)	37	(32)
Negative influence <sup>bd</sup> of parents	23	(12)	7	(9)	16	(14)
Influence of children	76	(38)	19	(24)	57	(49)
Negative influence <sup>bc</sup> of children	22	(11)	9	(11)	13	(11)
Positive influence <sup>ac</sup> of children	17	(9)	2	(3)	15	(13)
Awareness <sup>de</sup>	72	(36)	27	(33)	45	(39)
Employment <sup>d</sup>	65	(33)	29	(36)	36	(31)
Time <sup>d</sup>	63	(32)	29	(36)	34	(29)

<sup>a</sup>Positive influence on respondent's perceived healthfulness of diet

<sup>b</sup>Negative influence on respondent's perceived healthfulness of diet

<sup>c</sup>Significant gender difference  $p=0.015$

<sup>d</sup>Non-significant gender difference ( $p>0.05$ )

<sup>e</sup>Awareness = awareness of nutrition and health messages

### **Figures**

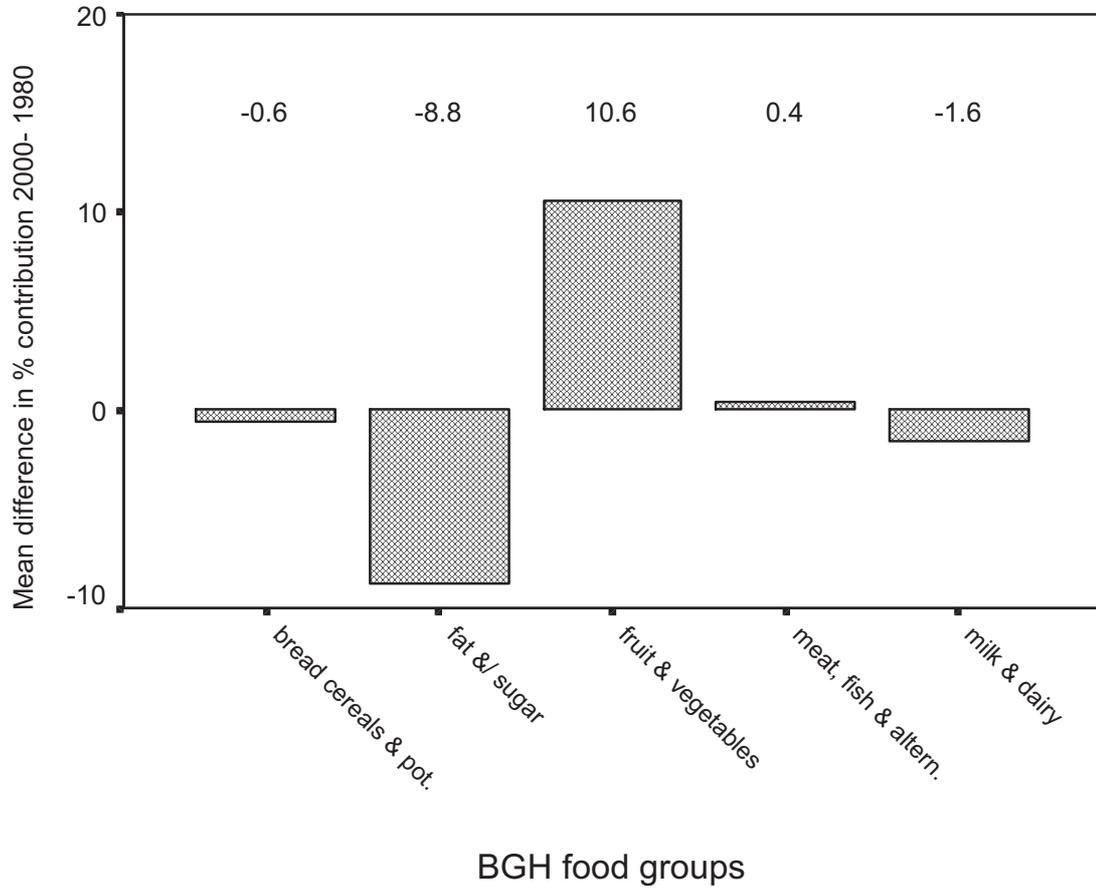
Figure 1 Mean change (2000-1980) in % contribution from the five BGH<sup>a</sup> food groups (n=198)

Figure 2 Mean change (2000-1980) in % contribution from the five BGH<sup>a</sup> food groups according to perceived direction of partner's influence (n=198)

Figure 3 Mean change (2000-1980) in % contribution from the five BGH<sup>a</sup> food groups according to perceived direction of parental influence (n=195)

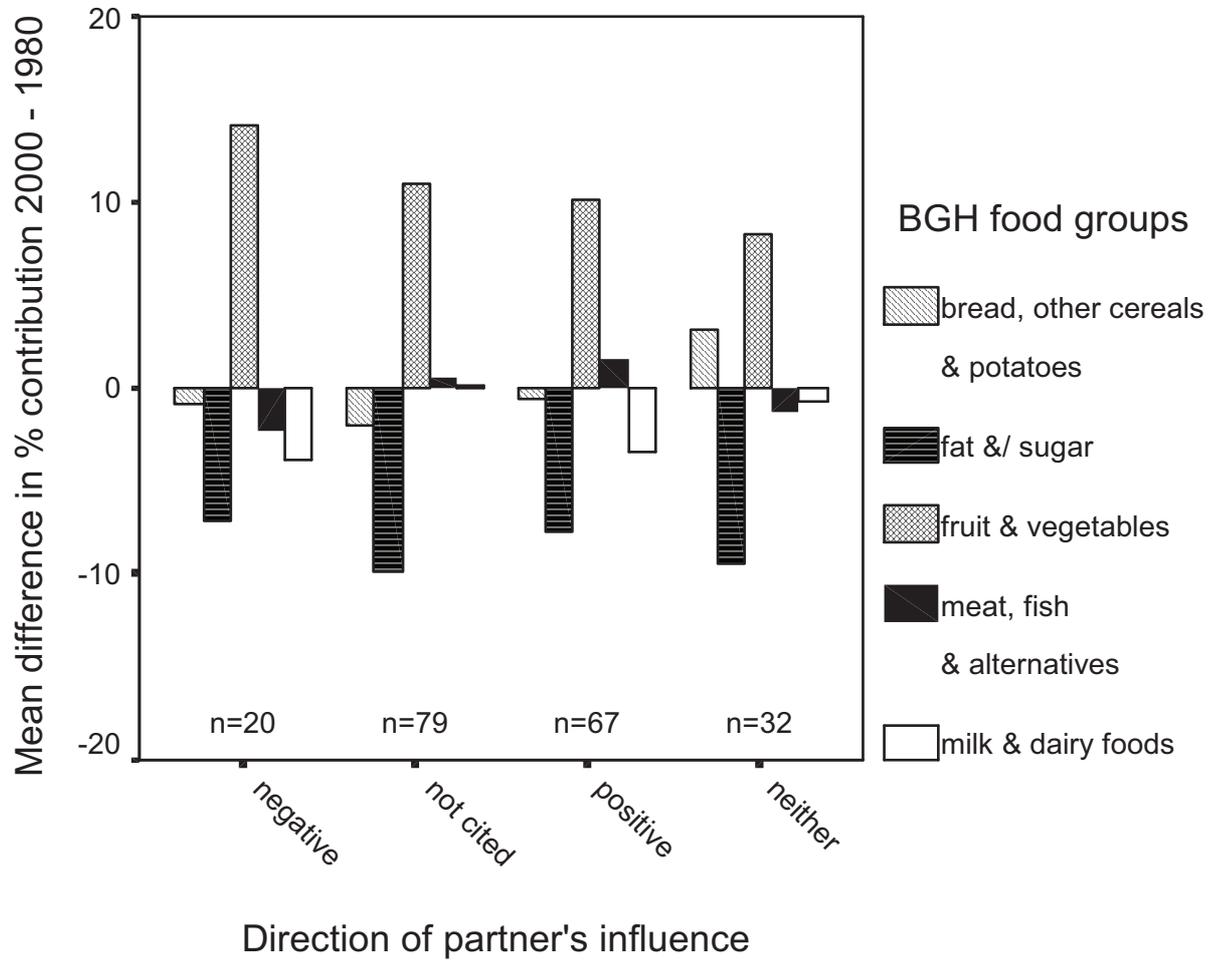
Figure 4 Mean change (2000-1980) in % contribution from the five BGH<sup>a</sup> food groups according to perceived awareness of nutrition and health (n=198)

**Figure 1 Mean change (2000-1980) in % contribution from the five BGH<sup>a</sup> food groups (n=198)**



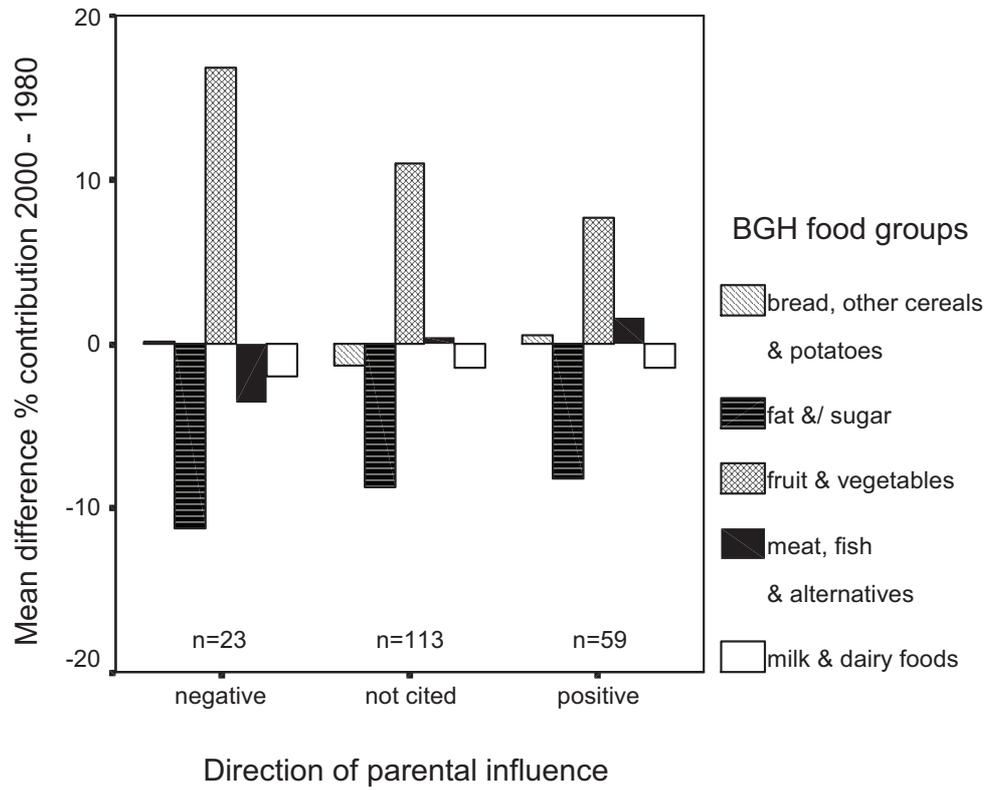
<sup>a</sup>(HEA, 1994)

**Figure 2 Mean change (2000-1980) in % contribution from the five BGH<sup>a</sup> food groups according to perceived direction of partner's influence (n=198)**



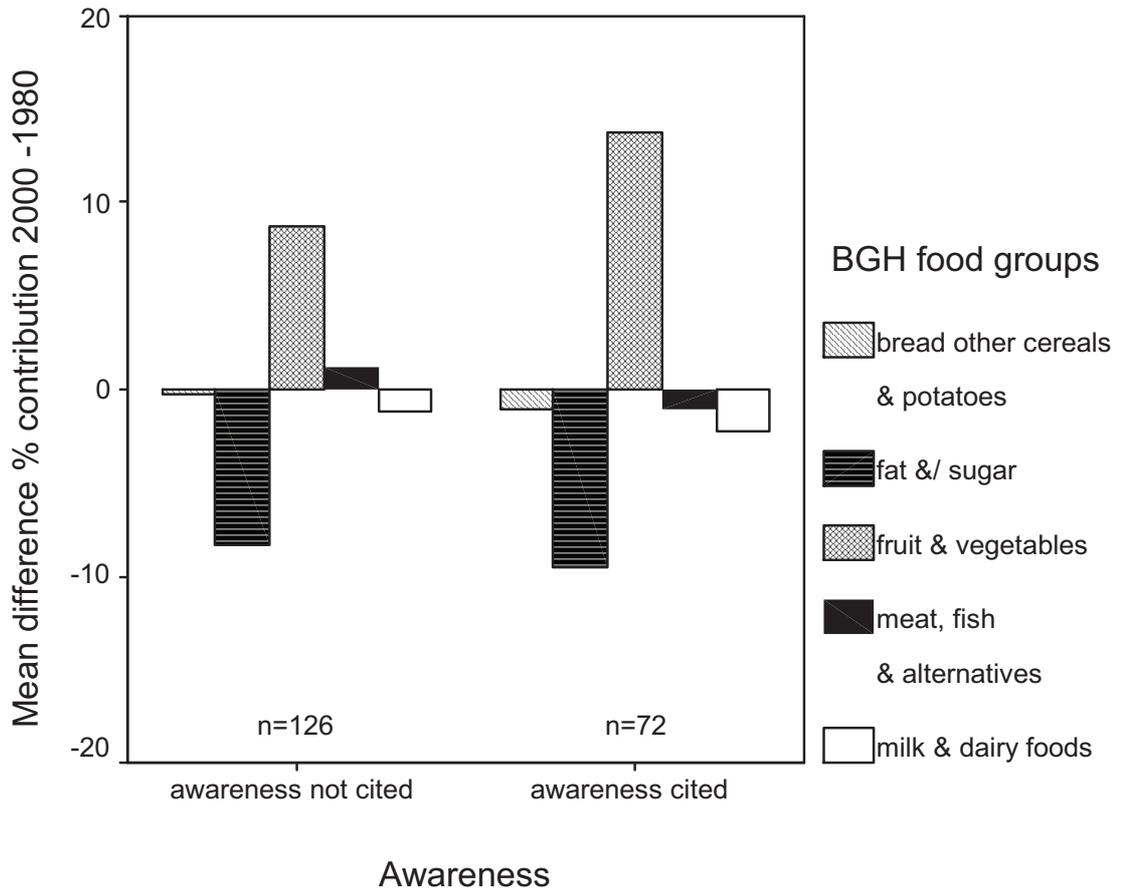
<sup>a</sup>(HEA, 1994)

**Figure 3 Mean change (2000-1980) in % contribution from the five BGH<sup>a</sup> food groups according to perceived direction of parental influence (n=195)**



<sup>a</sup>(HEA, 1994)

**Figure 4 Mean change (2000-1980) in % contribution from the five BGH<sup>a</sup> food groups according to perceived awareness of nutrition and health (n=198)**



<sup>a</sup>(HEA, 1994)