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An exploration of the relationships between food lifestyle and vegetable consumption

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Abstract

A short questionnaire was completed by 276 South Australian consumers, which examined postulated relationships between personal values, food lifestyle, demographics and their usual consumption of 24 vegetables. Principal components analyses showed that consumers' vegetable consumption could be divided into several categories, most notably salad and boiled vegetables. In multiple regression analyses different sets of values and lifestyle factors predicted intakes of overall vegetable (Rsq=27 per cent), salad (16 per cent) and boiled (27 per cent) vegetables. Path analysis revealed a complex set of pathways leading from values and personal demographics through motives, perceived food attributes and cooking skills to consumption. These partly confirmed the food lifestyle model proposed by Grunert et al. The findings show that vegetable consumption has a number of contextual and cognitive antecedents but strongly suggest that other likely predictive variables require investigation.

Keyword(s):

Vegetables; Lifestyles; Social values; Australia; Critical path analysis.

Introduction

An adequate consumption of fruit and vegetables is important to reduce the risk of several kinds of cancer and coronary heart disease (Block et al., 1992; Hertog et al., 1993; Renaud et al., 1995). Because of their positive health effects the World Health Organization has recommended an intake of at least 400 grams or five or six servings of fruit and vegetables a day (WHO, 1990). Similar recommendations have been made in the USA in the Five-a-Day Program (US Department of Health and Human Services, 1990), in Australia (NHMRC, 1992) and in several European countries as well.

Although many Australian adults are aware of the positive health effects of fruits and vegetables, many do not consume the recommended minimal intakes of four servings of vegetables and three servings of fruit per day (CSIRO, 1993; Australian Horticultural Survey, 1990; Health Department of Western Australia, 1992). Health promotion programs are required to increase the population's intakes (SIGNAL, 2000). In order to be effective these programs must be based on knowledge about the factors influencing the fruit and vegetable consumption.

Most of the research done in this area has focused on socio-demographic (Kirby et al., 1995; Schafer et al., 1999; Trudeau et al., 1998; Uitenbroek et al., 1996; Wichelow and Prevost, 1996); household (Judson and Jussame, 1991; Macario and Sorenson, 1998), intra-individual (Schafer et al., 1999; Story et al., 1998); psychosocial (Brug et al., 1995; Krebs-Smith et al., 1995; Laforge et al., 1994; Trudeau et al., 1998) or cognitive (attitudinal) factors (Dittus et al., 1995; Keim et al., 1997; Treiman et al., 1996). For example, Brug et al. (1995) found that low fruit and vegetable consumers had lower self-efficacy expectations and less positive attitudes than higher consuming respondents. Trudeau et al. (1998) found that being married, being older, and having more years of education was associated with higher
vegetable consumption. This did not apply for fruit. Among men, duration of education predicted higher fruit consumption, whereas among women, fruit intake was positively associated with age as well as education. BMI was inversely related to fruit consumption.

Recently, Baranowski et al. (1999), in their review of the psychosocial correlates of dietary intake, have drawn attention to the limited utility of explanations of dietary behaviour based on highly specialised theoretical models. They suggest that more comprehensive modelling is required to predict dietary behaviours. Indeed, Reicks et al. (1994) and Uetrecht et al. (1999), in their qualitative studies, have identified several sets of factors which may influence the promotion of fruit and vegetables such as access and availability, price and season, food selection and preparation skills, convenience time, family influence, taste and sensory factors, among others. However, a more comprehensive formal model of food selection, which has not yet been applied to vegetable consumption, is the food lifestyle model developed by Klaus Grunert and his colleagues at the MAPP centre in Denmark (Grunert et al., 1993, 1996, 1997; Brunso and Grunert, 1998). This is directed towards food choice in general. It links lifestyle to underlying personal values and motivations on the one hand and, on the other, to the more concrete categories of perceptions and use of food products. It assumes a sequence of cognitive factors as in the means-end theory used in consumer behaviour (Peter and Olson, 1990). Thus, the model (Figure 1) links personal values, via five lifestyle components, to concrete food beliefs, attitudes and consumption. It includes not only declarative knowledge but also procedural knowledge like shopping scripts and meal preparation scripts.

The basic components of the model include:

- **Values**, the guiding principles in people's lives, which direct many of their behaviours (Schwartz, 1992) such as tradition, security, hedonism, social power, benevolence and universalism.

- **Purchasing motives** refer to the perceived consequences people expect from a meal and their relative importance; for example, whether consuming a food will make them overweight, or earn them praise from their friends. The likely perceived consequences of the consumption of a food may be mixed; for example, it may have negative health consequences but positive social and sensory consequences. Consumers adopt various weighting strategies in coming to a purchasing decision.

- The **higher-order attributes or quality aspects** component refers to abstract product attributes like health, nutritional value, naturalness and freshness, which are used to judge the quality of the food.

- **Concrete attributes and product categories** include the organoleptic, appearance, price and other sensory aspects of the product. These are usually perceived according to expectations derived from prior experience with the product category; for example, fresh fruit may be squeezed and smelt prior to purchase.

- **Meal preparation scripts (cooking methods)** deal with the ways purchased products are transformed by consumers into meals, the planning and spontaneity involved, the time
In the model, direct links are proposed between quality aspects and concrete product attributes, and between them and the two procedural knowledge components: meal preparation scripts and shopping scripts. Meal preparation and shopping scripts are postulated to be linked to the purchasing motives component. Overall, the direction of causation moves from left to right in Figure 1, from underlying values through purchasing motivations, quality aspects, usage situations and ways of cooking and shopping, to selection of products according to their concrete properties and, ultimately, to consumption (which can be imagined at the extreme right of Figure 1).

This general schematic model raises the question: To what extent does it account for purchasing within a particular product category? Therefore, in view of the importance of vegetable consumption for health, the main purpose of this study was to determine the extent to which the food-related lifestyle model (including personal values), predicts differences in vegetable consumption.

**Methods**

**Subjects**

Questionnaires were administered to 370 randomly selected passers-by on three days in January 2000, in the central shopping district of Adelaide, South Australia. The respondents were asked to complete the questionnaires at home and to return them in free-post envelopes. After two weeks, non-respondents were reminded by telephone or, in its absence, by mail. If there was no response a week after the first reminder was sent out, a new questionnaire was mailed to the respondent.

**The questionnaire**

A questionnaire was developed, based on the food-related lifestyle model (Grunert *et al*., 1993). Shopping scripts, meal preparation scripts, higher order attributes, purchasing motives and usage situation were measured by means of 18, 18, 18, six and ten items, respectively. These items were derived from Grunert's original set of 69 items as modified by Brunsø *et al*. (1996). The wording of the items was altered appropriately to focus on vegetable rather than general food consumption. Five-point (disagree-agree) response scales were used with the addition of a “not applicable” category for items to do with the respondent's family.

Personal values were measured by a short version of Schwartz's personal value instrument (Schwartz, 1992). Schwartz distinguishes ten different motivational types (self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition, benevolence and universalism), which are measured through 56 items. In this study, 22 items were used. Previous research by Worsley *et al*. (1995) has shown that these 22 items yield similar values segments to those derived from the full instrument. A simple five-point response scale was employed, which ranged from “not important at all” to “very important”.

- People want to spend in food preparation, who does the cooking, etc.
- Shopping scripts address the ways people shop for food, such as, who does the shopping, the use of food labels, and referral to expert advice.
- The final lifestyle component refers to the situations in which foods are eaten, usage (or consumption) situations such as family meals, celebratory meals, eating alone at home, etc. This component influences all the other lifestyle components, particularly the purchasing motives component.
Vegetable intake was measured by recording how often the respondents consumed each of 24 different vegetables. Respondents indicated whether they consumed the vegetables daily, several times a week, fortnightly, monthly or rarely or never. Overall vegetable consumption was assessed by one single question in which respondents were asked to indicate how many servings of vegetables they usually have each day. Respondents could indicate the number of servings of different vegetables they ate per day or per week. One serving was set to be equal to one medium potato or 1/3 cup of other vegetables, which is based on the 12345+Food and Nutrition Plan (CSIRO, 1991).

**Statistical analysis**

Analysis was carried out using SPSS (1998) 9.0 for Windows. For each of the five components of the food-related lifestyle model the items were separately factor analysed via principal components analysis with Varimax rotation. Cronbach's alphas were calculated to estimate the internal reliability of the factors.

Similar analyses were conducted on the personal values and the frequencies of consumption of the individual vegetables. The derived personal values and lifestyle factors scores were entered into linear stepwise regression analyses in order to predict respondents’ consumption of salad and boiled vegetables as well as their estimated total vegetable intake.

Finally, path analysis was carried out in order to determine whether the personal values and the five components of the food-related lifestyle model were ordered in the sequence suggested in the original model.

**Path analysis**

Partial least squares path analysis was performed via the PLSPATH program on the sets of factor scores and the demographic variables (Sellin, 1986). This conducts a form of “soft modelling” which iteratively estimates the parameters of latent variable path models using least squares methods. Soft modelling approaches have been developed for initial exploration of cross-sectional and categorical data sets, in which the relationships between the various sets of observed variables are not well defined. As such, these techniques are more appropriate alternatives to more rigorous parametric methods, such as structural equation modelling (Falk and Miller, 1992). In soft modelling two sorts of variables are considered – observed or manifest variables and deeper, underlying, purer, latent variables.

Thus, the factors identified from the present data were used as the manifest (or observed) variables for path analysis. Similarly, the data sources of those factors were used as the latent (or unobserved overarching characteristic) variables. For example, the manifest variables quality, organic products, freshness, novelty and taste derived from factor analysis, contributed to the latent variable attrib(utes).

The latent variables were placed mathematically in relative positions approximating those suggested by Grunert *et al.* (1993), and the model tested with all latent and manifest variables present and all possible paths between the latent variables intact.

Those manifest variables which made no significant contribution to their respective latent variable were progressively removed and the analysis repeated until all the manifest variables remaining were significant. Following this process and in the same way, pathways between the latent variables which were small or mathematically insignificant were successively removed. The final resulting path coefficients formed the basis for the path diagram shown in Figure 2.

**Results**

A total of 276 completed questionnaires were returned (out of 370), yielding a response rate of 75 per cent of those who had initially agreed to take part in the survey. After excluding
data from six respondents who had not completed the questionnaire satisfactorily, the sample consisted of 270 respondents, of whom 96 were male and 174 were female. The mean age of the respondents was 38.4 with a SD of 15.3. The demographic characteristics of the respondents are described in Table I.

**Vegetable consumption**

The average consumption of vegetables was 2.8 servings a day (SD=1.65) with males and females having intakes of 2.6 and 2.9 servings a day, respectively. About one quarter (29.8 per cent) of the respondents consumed the recommended daily intake of four or more servings of vegetables.

Factor analysis of the reported frequencies of the 24 vegetables revealed six factors, which were interpreted as salad vegetables (21 per cent variance), boiled vegetables (9 per cent), cruciferous vegetables (7 per cent), root vegetables (6 per cent), frozen vegetables (5 per cent) and starchy vegetables (5 per cent). The additional variance of the last four factors was relatively small, so only the salad and boiled vegetables factor scores were used as outcome variables, together with the overall vegetable intake score, in the regression and path analyses described below.

**Food-related lifestyle model and personal values**

Table II shows the results of the factor analysis conducted on the items of the food-related lifestyle model and personal values. Five factors were derived from the shopping scripts; namely, product information (use of a shopping list, interest in shopping, attitudes to advertising and price criteria). The meal preparation script items also yielded five factors, which were provisionally named: new preparation ways, convenience, (cooking as a woman’s task), meal planning and interest in cooking.

Four factors were identified in the analysis of the higher order attribute items which reflected respondents’ interest in: quality, natural products, freshness, novelty and taste.

The usage situations items derived two factors: snacks versus meals and eating as a social event. Self-fulfilment in food, security and social relationships, were derived from the purchasing motives items. Finally, the 22 personal values were reduced to six factors: universalism/stimulation, power, security, control in life, tradition and conformity.

**Predictors of vegetable consumption**

The consumption of the specific groups of vegetables was predicted by quite different sets of factors (Table III). Only convenience was a common predictor for the three types of vegetable intake.

Security, convenience and conformity were positively related to overall vegetable intake. However, novelty, new preparation ways and (cooking as a woman's task) were negatively related to vegetable consumption. For salad vegetables, new preparation ways (negative relationship), convenience, quality and attitudes to advertising were significant predictors. The intake of boiled vegetables was explained by novelty, eating as a social event, product information and, negatively, by convenience and meal planning.

More of the variance of the overall and boiled vegetable scores was explained by the predictors (27 per cent in both cases) than that of the salad vegetable score (16 per cent).

Figure 2 presents the final food-related lifestyle model derived from path analysis showing the proportions of variance in the latent components contributed by the manifest variables derived from factor scores. Consume (the consumption of various vegetables) is shown as the outcome variable to which all the other latent variables are anticipated to contribute directly
or indirectly. The constructed model was based on that described by Grunert et al. (1993) and some departures from that model were found. The latent variable usage situations was not related to any of the other latent variables and was removed. In addition, values had a link to attributes which was not present in the model proposed by Grunert et al. (1993). Furthermore, the latent variable shopping scripts did not in fact contribute to consume, though it was itself influenced by three of the other latent variables.

Considering the path analysis in detail, the value factors “power” and “security” made large but opposing contributions to the latent value component. The “other values” factor, composed of the sum of the control in life, tradition and conformity factors, was also a substantial contributor. Except for “taste” all the higher order attributes factors contributed strongly to the latent attributes component. Self-fulfilment in food and security made large but opposing contributions to the (purchasing) motive component. New preparation ways was positively related, and convenience and dislike were negatively related to the latent cooking/meal preparation component. Product information, interest in shopping and shopping list contributed positively, and attitudes to advertising, negatively, to the shopping component. Age and gender dominated the person latent component.

Following the model further to the right, purchasing motives had strong negative effects (> 30) on attributes and cooking (meal preparation scripts). Self and social were more important predictors of attributes than security. However, the direct effect from motives to consume was positive, meaning that secure was more important in determining consumption.

The attributes latent variable, in its turn, had a strong link to cooking (meal preparation scripts) and shopping scripts. Cooking (meal preparation scripts) predicted vegetable consumption and shopping scripts as in the original model.

Discussion

The respondents’ overall vegetable consumption was less than recommended and similar to that reported in other Australian studies (CSIRO, 1993; Australian Bureau of Statistics, 1995).

Factor analysis of the items describing the food-related lifestyle model revealed, except for a few differences, the same factors as in the original model (Grunert et al., 1993). However, differences were found in shopping scripts set: the original factors “enjoyment from shopping” and “shopping in specialty shops” were combined into the “interest in shopping” factor. The factor analysis of higher order attributes resulted in an “importance of quality” factor instead of the factors “health” and “price/quality relation”. The meal preparation scripts set did not contain the factor addressing the “whole family” because items concerning family issues were not included in the analysis. They were not applicable to many of the respondents. The usage situations and purchasing motives factors did not differ from those in the original model.

“Convenience” was a central factor in vegetable consumption. This is consistent with previous research by Steptoe et al. (1995) and Worsley (1995) which also showed that convenience is an important factor in determining food choice.

Overall, meal preparation (cooking) scripts made an important contribution in explaining differences in vegetable intake, for total vegetable intake as well as for the salad and boiled vegetables.

Apart from convenience, totally different factors explained the consumption of salad and boiled vegetables. Brug et al. (1995) have also observed similar differences. They found that social influence was associated with salad consumption, but not with the consumption of boiled vegetables. Gibson et al. (1998) has also reported quite different sets of predictors of fruit and vegetable consumption.
The “planning” and “social event” factors were statistically significant predictors of the consumption of boiled vegetables, but not of salad vegetables. Perhaps this was because cooking is required for the preparation of boiled vegetables, which is more time consuming than salad preparation. Cooking needs more effort and can be seen as a barrier to vegetable consumption.

Contrary to our expectations, values added little additional predictive power over the other food-related lifestyle factors. Only “conformity” made a statistically significant contribution in regression analysis. This last effect was also found by Grunert et al. (1995), who examined values associated with attitudes towards the purchase of organic food products.

A limitation of the present study is that the effect of family on vegetable consumption could not be assessed because too few of the respondents had a family which could help in meal preparation. Other studies have shown that family has an influence on food intake (Laforge et al., 1994). They showed that respondents with children at home were at greater risk of eating two or fewer servings of fruit and vegetables a day.

Although the reproduced food-related lifestyle model revealed some of the links suggested by the original model it did not confirm all of the original model. Further, the model only accounted for a quarter of the variance in vegetable consumption which suggests that other predictive factors have been excluded from the model; for example: food habits, tradition and ethical concerns. In particular, usage situations played no role in the revised model and shopping scripts were not linked to vegetable consumption. These findings do not invalidate Grunert et al.‘s (1995) model, but they do indicate that much more remains to be known about the predictive pathways of vegetable consumption. For example, more exploration of the behaviours involved in choosing vegetables during shopping is required in order to produce more realistic shopping scripts.

Therefore, several improvements in the measurement of the variables might be incorporated in future research. Changes in the measurement of the shopping scripts are warranted. Although the product information factor made a large contribution to the shopping script latent variable, it probably has little relevance to vegetable shopping. New items which describe more clearly the ways in which shoppers choose vegetables (e.g. squeezing, smelling, looking at them) would probably measure shopping scripts more appropriately and perhaps explain more of the consumption variance.

Further, rather than attempting to measure several values segments it might be better to measure one value type, such as security or universalism, in greater detail. The degree of congruence between values items and those included in the purchasing motives and higher order attributes could be increased.

**Conclusion**

Overall, the predictive model derived from the data was broadly consistent with the food-related lifestyle model. That is, vegetable consumption appears to be related to a means-end pathway which precedes as well as includes attitudinal variables.

Personal characteristics such as age and gender, along with product attributions and purchasing motivations, influence the ways vegetables are prepared, and thus consumed.

The findings suggest that the promotion of vegetable consumption might be best achieved through the communication of skills for the cooking and preparation of high quality, convenient, safe vegetable meals.

Clearly, as the derived model accounted for only one quarter of the variance in vegetable consumption, further exploration of likely predictors is indicated along with refinements in their content and measurement. In particular, the relationships between cooking and
shopping styles and the predictive status of family and shopping variables require further examination.

**Figure 1** Grunert's cognitive structure model for food-related lifestyle

**Figure 2** Food-related lifestyle model via pathway analysis
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Category</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>35.6</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>64.4</td>
</tr>
<tr>
<td>Education (highest level)</td>
<td>Primary school</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>Secondary school</td>
<td>32.0</td>
</tr>
<tr>
<td></td>
<td>Certificate or diploma education</td>
<td>29.0</td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>34.6</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>5.7</td>
</tr>
<tr>
<td>Annual household income</td>
<td>Up to $20,000</td>
<td>26.3</td>
</tr>
<tr>
<td></td>
<td>$20,001-$30,000</td>
<td>14.3</td>
</tr>
<tr>
<td></td>
<td>$30,001-$40,000</td>
<td>12.7</td>
</tr>
<tr>
<td></td>
<td>$40,001-$80,000</td>
<td>20.7</td>
</tr>
<tr>
<td></td>
<td>$80,001 or more</td>
<td>25.9</td>
</tr>
<tr>
<td>Household compilation</td>
<td>Live by myself</td>
<td>12.7</td>
</tr>
<tr>
<td></td>
<td>Live with spouse/partner</td>
<td>23.5</td>
</tr>
<tr>
<td></td>
<td>Live with family</td>
<td>50.0</td>
</tr>
<tr>
<td></td>
<td>Sharing a house</td>
<td>9.3</td>
</tr>
<tr>
<td></td>
<td>Live in a boarding situation</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>3.4</td>
</tr>
<tr>
<td>Employment status</td>
<td>Employed, full-time</td>
<td>37.2</td>
</tr>
<tr>
<td></td>
<td>Employed, part-time</td>
<td>19.3</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>Houseperson</td>
<td>7.1</td>
</tr>
<tr>
<td></td>
<td>Student</td>
<td>19.0</td>
</tr>
<tr>
<td></td>
<td>Pensioner</td>
<td>7.8</td>
</tr>
<tr>
<td></td>
<td>Seasonal worker</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>6.5</td>
</tr>
</tbody>
</table>

*Table I.* Distribution of demographic characteristics of the respondents (n=270)
Table II

<table>
<thead>
<tr>
<th>Item</th>
<th>B</th>
<th>SE B</th>
<th>Beta</th>
<th>t</th>
<th>p(t)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vegetables intake, total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>2.10</td>
<td>1.074</td>
<td>0.134</td>
<td>1.96</td>
<td>0.052</td>
</tr>
<tr>
<td>Novelty</td>
<td>-2.75</td>
<td>1.115</td>
<td>-0.174</td>
<td>-2.47</td>
<td>0.014</td>
</tr>
<tr>
<td>Convenience</td>
<td>3.73</td>
<td>0.986</td>
<td>0.231</td>
<td>3.78</td>
<td>0.0001</td>
</tr>
<tr>
<td>Woman's task</td>
<td>-2.94</td>
<td>0.948</td>
<td>-0.182</td>
<td>-3.10</td>
<td>0.002</td>
</tr>
<tr>
<td>Conformity</td>
<td>2.06</td>
<td>0.951</td>
<td>0.128</td>
<td>2.17</td>
<td>0.031</td>
</tr>
<tr>
<td>Looking for new ways</td>
<td>-3.03</td>
<td>1.057</td>
<td>-0.192</td>
<td>-2.86</td>
<td>0.005</td>
</tr>
<tr>
<td><em>R</em> = 0.52, <em>r</em>² = 0.27, Adjusted <em>r</em>² = 0.25, <em>F</em>(6,214) = 13.25, <em>p</em> &lt; 0.0001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Intake of salad vegetables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Looking for new ways</td>
<td>-0.016</td>
<td>0.004</td>
<td>-0.266</td>
<td>-4.27</td>
<td>0.0001</td>
</tr>
<tr>
<td>Convenience</td>
<td>0.013</td>
<td>0.004</td>
<td>0.214</td>
<td>3.25</td>
<td>0.001</td>
</tr>
<tr>
<td>Quality</td>
<td>0.013</td>
<td>0.004</td>
<td>0.221</td>
<td>3.43</td>
<td>0.001</td>
</tr>
<tr>
<td>Attitudes to advertising</td>
<td>0.083</td>
<td>0.004</td>
<td>0.137</td>
<td>2.15</td>
<td>0.032</td>
</tr>
<tr>
<td><em>R</em> = 0.40, <em>r</em>² = 0.16, Adjusted <em>r</em>² = 0.15, <em>F</em>(4,218) = 10.42, <em>p</em> &lt; 0.0001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Intake of green/boiled vegetables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Novelty</td>
<td>0.084</td>
<td>0.018</td>
<td>0.294</td>
<td>5.12</td>
<td>0.0001</td>
</tr>
<tr>
<td>Social event</td>
<td>0.066</td>
<td>0.018</td>
<td>0.242</td>
<td>4.12</td>
<td>0.0001</td>
</tr>
<tr>
<td>Convenience</td>
<td>-0.056</td>
<td>0.017</td>
<td>-0.199</td>
<td>-3.32</td>
<td>0.001</td>
</tr>
<tr>
<td>Importance of product info</td>
<td>0.056</td>
<td>0.017</td>
<td>0.205</td>
<td>3.33</td>
<td>0.001</td>
</tr>
<tr>
<td>Planning</td>
<td>-0.038</td>
<td>0.018</td>
<td>-0.120</td>
<td>-2.01</td>
<td>0.045</td>
</tr>
<tr>
<td><em>R</em> = 0.52, <em>r</em>² = 0.27, Adjusted <em>r</em>² = 0.26, <em>F</em>(5,215) = 16.22, <em>p</em> &lt; 0.0001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Only significant factors are shown, *p* < 0.05
Table III: Summary of stepwise multiple regression analysis with total vegetable consumption, consumption of salad and boiled as dependent variables and factors from Grunert’s five components and values as independent variables

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Health Department of Western Australia (1992), *Repeat Baseline Survey: Fruit "n" Veg with Every Meal Campaign 1990*, Health Department of Western Australia, Health Promotion Services Branch, Perth, .


