

Chapter 7 Results

*"Give your evidence,"
said the King;
"and I'on't be nervous,
or I'll have you executed on the spot."
This did not seem to encourage the witness at all.*

(The Complete Works of Lewis Carroll, 1987, Chapter 11)

7.1 Descriptive Data

Data were analysed using both qualitative and quantitative processes. Initially, the raw data, that is, the actual word association responses were organised into Primary Frequency Breakdowns for each of the ten fruits and vegetables. This type of analysis provided a summary of the salience of product characteristics, such as colour, shape, and so on, in order of frequency of response rate, as perceived by consumers. Data were also ordered according to category breakdown, and the Category Frequency Breakdowns accompany the Primary Frequency Breakdown. These frequency breakdowns are located in Appendix 9. As an example, the frequency breakdown of word association responses for the 'apples' stimuli contained a total of 953 responses. The most common response was the word 'red'; there were 59 iterations of this response. The second most common response was 'apple(s)', at 47 iterations, and the third most common response was 'crunchy', at 45 iterations. As Appendix 9 illustrates, there was a large variety of responses obtained.

Recall that each respondent was provided with the space for ten separate word associations for each stimulus object (the ten fruits and ten vegetables). On initial data screening, each of these responses was checked to ensure that each response was able to be understood. Only very obvious spelling mistakes were corrected. For example, the word 'appel' was changed to 'apple'. However, if there was any question as to whether the response was deliberately misspelt, such as the response 'pair' to the stimulus object 'pear', the response was left in its initial state.

Generally speaking, if the respondent separated several responses with the 'return' key, each of these responses was considered to be a single response. For

example, if one respondent punctuated the words 'red', 'apple', 'crunchy', and 'granny smith' with the return key, each of these responses was counted as one response. However, if the respondent typed a long response which contained several themes but the return key was used only at the end of the sentence, the entire sentence was counted as one response. This system was followed because it was deemed important to maintain purity of responses as much as possible. That is, if the researcher had artificially separated one long response into several smaller responses, it could not be guaranteed that the artificially derived responses corresponded exactly to the ideas of the respondent. It was considered better to leave the responses in their initial state as much as was possible.

Data across all respondents were collapsed into one dataset for the purposes of data analysis. That is, the responses of single respondents were not analysed; each of the data analyses were conducted on group data. The total number of separate word association responses for all of the ten fruits and ten vegetables was 16 167. As stated above, each response pertaining to each of the ten fruits and ten vegetables is listed in Appendix 9 in a frequency breakdown for each fruit and vegetable.

Following this, the raw data were independently categorised by the author and three independent judges (who were unaware of the purposes of the study). A categorisation system based upon the model developed by Monk (1983a) was adopted. An overview of this system will now be presented.

As stated in Chapter 6, a method of data ordering and analysis was needed to organise the large amount of qualitative data provided by the word association responses. Monk (1983a) suggests that free response data of this kind can be codified in a manner that allows tests of significance to be carried out. This is known as a 'networking' procedure, and starts with the development of a categorisation system.

The network for the fruit and vegetable data was developed using Bliss et al.'s (1983) systemic network analysis. Bliss et al. (1983) describe a sophisticated network language which, when followed and used in conjunction with the BARBARA program developed for analysing networks, allows for all data collected in the study to be analysed together, and for particular variables to be linked together for analytical purposes. For example, some data analyses require the pulling together of discrete pieces of information from several

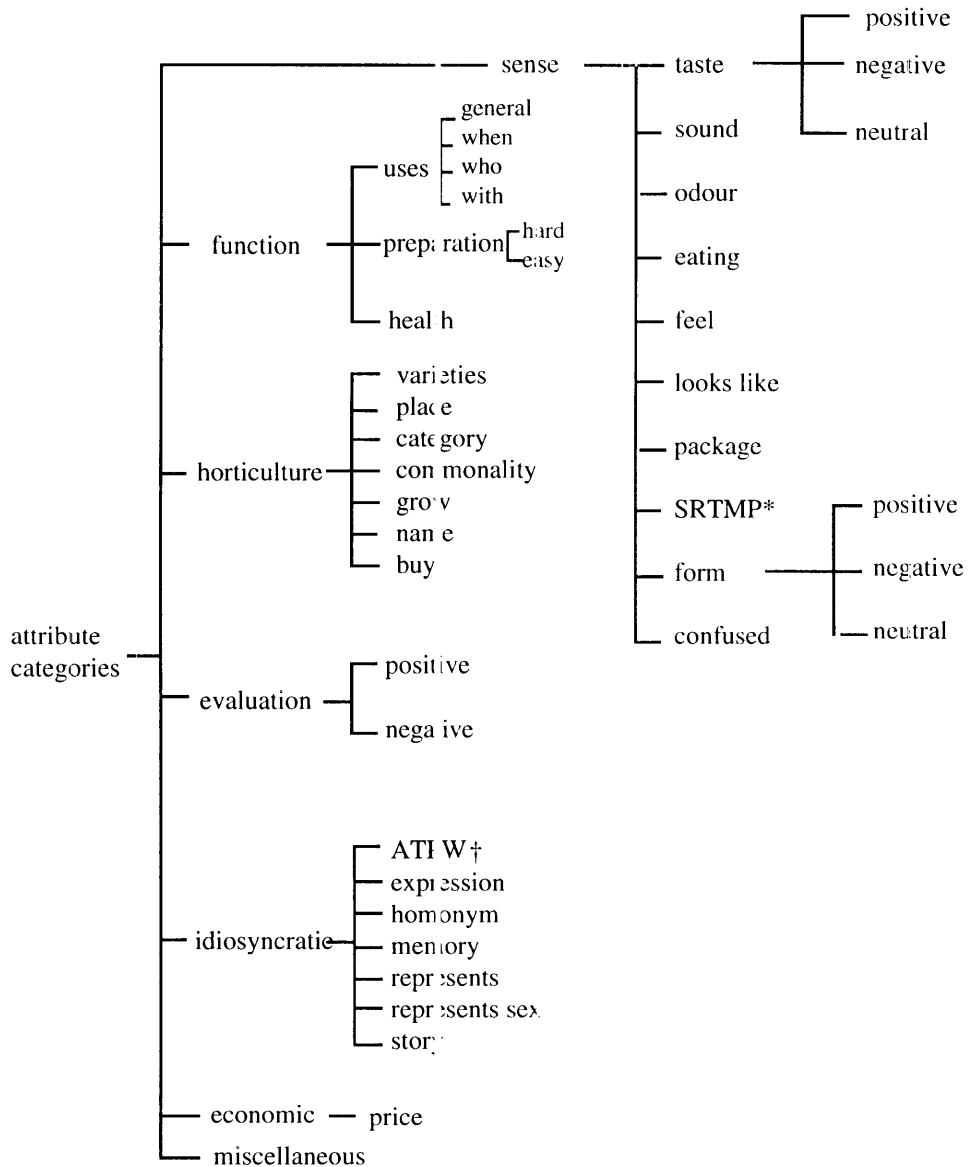
variables. The term 'bracket', abbreviated to 'BRA', is used to indicate that data from each dataset encompassed by the 'BRA' need to be chosen for a given analysis. Similarly, the term 'recursion', which is represented as a circular arrow, allows one to move through a network several times, rather than just once.

In the early stages of the present research, it was determined that the BARBARA program could not be used for data analysis. The program was not compatible with the computers available to the author, and attempts to locate a similar program were unsuccessful. An alternative was to use an existing computer program for analysing qualitative data, and to input the data into this program in a manner which would allow for as many analyses to be undertaken as possible. This procedure was followed, however it necessitated inputting the data into the program in a very simplistic and straightforward manner. In this instance, each successive word association was labelled a distinct variable, that is, each respondent's first response for the apple stimulus was labelled 'response 1 - apple', the second response was labelled 'response 2 - apple', and so on. The same procedure was followed for each of the ten fruits and ten vegetables studied. Demographic information, self-monitoring scores, favourability ratings and other information were also labelled as separate variables. This provided the author with the opportunity to pluck from the data any variable of interest and to analyse it alongside any other variable. However, the inability to use the BARBARA program meant that use of BRA's, recursion, and so on, was not possible. It was beyond the expertise of the author to program the computer in this manner. For this reason, the abovementioned simplistic data entry system was used, and the networks appearing throughout the present thesis are a modified, simplistic form of the kind used by Bliss et al. (1983).

The word association responses were subjected to an intensive iterative analysis, a process which illuminated a set of categories that could encompass most of the data. A 'miscellaneous' category, which contained all responses not fitting into any of the other categories contained less than 1% of the data, illustrating that the categorisation system was almost completely inclusive. An inter-rater consistency level of 95% was reached among the four coders. That is, 95% of the categorisations of word association responses were agreed upon by all raters. When there was any level of disagreement, the majority ruled. That is, if two raters chose one category as being most fitting while the third rater chose another category, the category agreed upon by the majority was adopted.

Instructions to coders, and a comprehensive list of the categories (and definitions of such) used for this purpose are located in Appendix 10.

Figure 7.1 shows the categories that were developed to describe the word association responses obtained in the present study.



* specific reference to mode of presentation
 † association to previous word

Figure 7.1: Systemic Network Structure

7.1.1 Network Categories

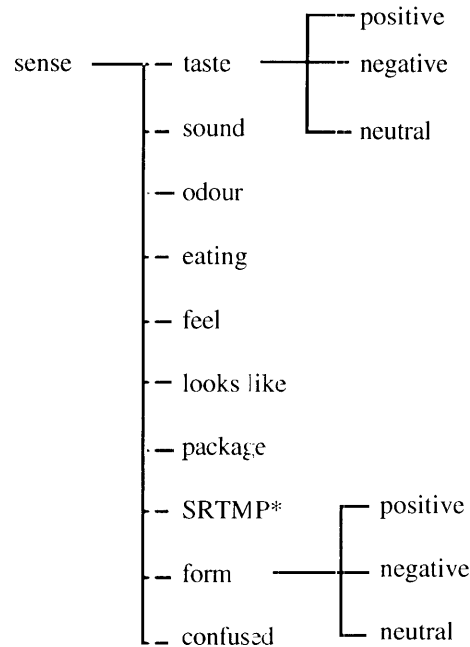
Before discussing the meaning of the five global categories that were developed, a word on specificity of responses is warranted. As one moves from the global to the terminal categories in the network, the description of responses becomes more specific. So, for example, the global category *sense* indicates that the response referred to something consumers physically sense about an object: its taste, or odour, or colour, and so on. However, following the tree to a particular terminal category, say form - positive, discriminates between responses at a finer level; this indicates that the response deals with the physical form of the object, and that it was positive in nature. For example, a response such as 'good colouring' would be categorised as a positive form response, as the respondent was making a positive comment about the appearance of the object.

Data were analysed at the level of terminal categories for the purposes of providing individual network summaries for each of the ten fruits and ten vegetables. This enabled the author to provide a richly detailed knowledge structure for each item. This is in contrast to all other analyses conducted on the data, including the analysis of demographic trends, the stimulus modality, and self-monitoring analyses, wherein global categories were focussed upon, and terminal categories were used as an adjunct to provide a detailed picture of individual effects. That is, when investigating specific effects (Sections 7.5, 7.6 and 7.7), numbers of responses in each global category were tabulated, whereas, when presenting the data in the form of systemic networks (Section 7.2), numbers of responses in each terminal category were tabulated.

Category 1: Sense (or Appearance)

Reading through the responses, words relating to the appearance of the object were extremely common. Given the discussion in Chapter 3 relating to the uniqueness of fruits and vegetables, and the corresponding attention that should be paid to appearances when evaluating these products, this finding was not unexpected. However, due to the various sensory modalities used in evaluating the quality of fresh fruits and vegetables (such as feel and smell), it was decided to extend the category from one dealing with appearance to one dealing with all information impinging on the various senses when a respondent viewed the product. Consequently, the global category *sense* was

adopted, which was then subdivided into responses dealing with specific sensory modes. A visual representation of this portion of the network is illustrated in Figure 7.2.



* specific reference to mode of presentation

Figure 7.2: *Sub-component of Network Analysis - Sense*

As can be seen, the global category *sense* was subdivided into those responses dealing with specific sensory stimuli, such as 'taste', 'sound', 'odour', 'eating', 'feel', 'form', 'specific reference to mode of presentation', 'looks like', and 'confused'. Perusal of the data in these categories illustrated the need for still further sub-categories. For example, when describing the taste of a product, respondents' comments were either positive, negative or neutral. To this end, several of these categories were subsequently subdivided into categories dealing with positive, negative or neutral responses. What follows is a specific description of each of the terminal categories within the global category *sense*. (Bolded words in brackets are the shorthand, or abbreviation of the terminal categories adopted by coders - see Table 7.1).

Table 7.1: *Descriptors of 'Sense' Terminal Categories*

SENSE - VISUAL - FORM - looks like (looks like). Responses indicating that the product looks like something else. [For example, actual responses categorised here include (to the apple stimuli) 'balls' and 'smooth river rocks'].

- positive (**form +ve**). A response that evaluates the form or appearance of the product in a positive manner. [For example, actual responses categorised here include (to the apple stimuli) 'good colouring' and 'nice pair'].

- negative (**form -ve**). Same as above, except that the words describing the appearance of the product are negative. [For example, actual responses categorised here include (to the apple stimuli) 'black spots' and 'bruises'].

- neutral (**form**). Words that refer to the appearance of the product, but cannot be viewed as being either positive or negative. [For example, actual responses categorised here include (to the apple stimuli) 'red' and 'shiny'].

- ODOUR (**odour**). Responses that refer to the odour of the product. [For example, actual responses categorised here include (to the apple stimuli) 'fragrance' and 'rotting fruit smell'].

- TASTE - positive (**taste +ve**). Responses that refer to the taste of the product in a positive manner. [For example, actual responses categorised here include (to the apple stimuli) 'yummy' and 'tasty'].

- negative (**taste -ve**). Negative taste responses. [For example, actual responses categorised here include (to the apple stimuli) 'Granny Smith today lacks flavour' and 'bitter skin from too many chemicals'].

- neutral (**taste**). Taste responses that are neither positive or negative. [For example, actual responses categorised here include (to the apple stimuli) 'sweet' and 'taste'].

- SOUND (**sound**). The sound that is made when eating the product. [For example, actual responses categorised here include (to the apple stimuli) 'crunch' and 'snap'].

- TEXTURE - feel (**feel**). Words that describe how the product feels when it is touched, or handled. [For example, actual responses categorised here include (to the pineapple stimuli) 'spiky' and 'prickly'].

- TEXTURE - eating (**eating**). Words that describe how the product feels when it is being eaten. That is, the sensation of the product in the mouth. [For example, actual responses categorised here include (to the strawberry stimuli) 'mushy' and 'saliva'].

CONFUSED (confused). The individual cannot properly identify the product. That is, individual is not sure which fruit it is. [For example, actual responses categorised here include (to the lemon stimuli) 'orange' or 'grapefruit'].

SPECIFIC REFERENCE TO MODE OF PRESENTATION (SRTMP). A reference to the way that the product has been presented. [For example, actual responses categorised here include (to the lemon stimuli) 'light effect' or 'grey'].

PACKAGE (package). References to the manner in which the product is packaged. [For example, actual responses categorised here include (to the strawberry stimuli) 'punnet(s)'].

Category 2: Function (or Uses)

Many responses related to uses of fresh fruits and vegetables. To this end, a *function* category was developed. Analysis of the responses within this global category suggested the existence of several sub-categories. Figure 7.3 visually represents this portion of the network. As illustrated in Figure 7.3, responses indicated that fresh fruits and vegetables were functional in several senses. Sub-categories dealing with potential uses, ease of preparation and health were consequently identified. When inspecting the responses in the 'use' category, which all reflected ways of actually using the product, it was found that several sub-categories were emerging. To this end, the 'use' category was subdivided into four sub-categories: 'uses-general', 'uses-when', 'uses-who', and 'uses-with'. Responses in the preparation category dealt with the relative ease of preparation, and were therefore subdivided into 'preparation - hard', and 'preparation-easy'. Specific definitions of the various *function* categories follows in Table 7.2.

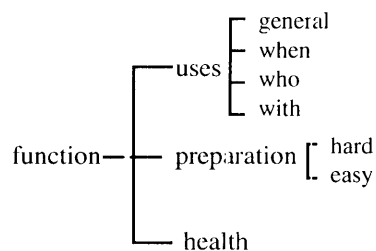


Figure 7.3: *Sub-component of Network Analysis - Function*

Table 7.2: *Descriptors for 'Uses' Terminal Categories*

<p>FUNCTION - USES - general (uses-gen). Responses that refer to the way in which the product can be used. [For example, actual responses categorised here include (to the lemon stimuli) 'lemonade' 'salad dressing' and 'taste enhancer'].</p> <ul style="list-style-type: none"> - who (uses-who). Responses indicating that certain groups of people use this product. [For example, actual responses categorised here include (to the watermelon stimuli) 'kids' and 'children']. - when (uses-when). Responses indicating that the product is used, or consumed at a specific time (time of year, time of day, etc.). [For example, actual responses categorised here include (to the watermelon stimuli) 'summer' or 'Christmas']. - with (uses-with). Responses indicating that the product can be eaten with some other product. [For example, actual responses categorised here include (to the strawberry stimuli) 'cream' and 'champagne']. - HEALTH (health). Responses that associate the product with physical health (either positive or negative). [For example, actual responses categorised here include (to the carrot stimuli) 'eyes' and 'vitamin A']. - PREPARATION - hard (prep-hard). Responses indicating that the product is considered to be difficult to prepare. [For example, actual responses categorised here include (to the pumpkin stimuli) 'have cut hard pumpkins with an axe' and 'accidents with knives']. - easy (prep-easy). Responses indicating that the product is considered to be easy to prepare. [For example, actual responses categorised here include (to the carrot stimuli) 'easy to peel' and 'quick'].

Category 3: Horticulture

Another global category which emerged contained responses dealing with *horticultural* information. For example, some comments referred to the varieties of fruit or vegetables, and others related to the place or manner in which various fresh fruits and vegetables are grown (termed 'variety', 'place', and 'grow', respectively). Other horticultural categories that emerged were as follows: 'category', 'commonality', 'name', and 'buy'. Responses in the horticultural categories clearly related to factual, or semantic information. Figure 7.4 visually represents this portion of the network. A description of *horticultural* categories follows, in Table 7.3. Note that the categories entitled 'identify' and 'origin' were not included in the category network (figure 7.4), as they were considered superfluous (subsequent to categorising the word association responses) as descriptive categories.

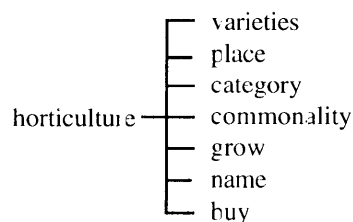


Figure 7.4: *Sub-component of Network Analysis - Horticulture*

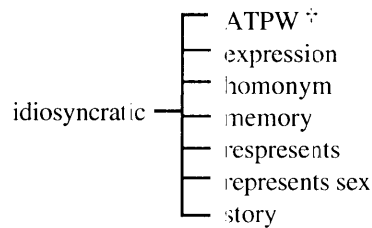
Table 7.3: *Descriptors for 'Horticulture' Terminal Categories*

<p>IDENTIFY - name (name). The product is named. [For example, actual responses categorised here include (to the apple stimuli) 'apple'].</p> <p>- category (category). The product is placed in a category. [For example, actual responses categorised here include (to the carrot stimuli) 'vegetable'].</p> <p>ORIGIN - place (place). Where grown. [For example, actual responses categorised here include (to the banana stimuli) 'Coffs Harbour' or 'Queensland'].</p> <p>- grow (grow). How grown. [For example, actual responses categorised here include (to the banana stimuli) 'plantation' or 'bunch' or 'injection to ripen quickly'].</p> <p>- varieties (varieties). Identifying the product in terms of a specific variety (Batlow, Delicious, etc.) or brand. [For example, actual responses categorised here include (to the apple stimuli) 'Granny Smith' or 'Delicious'].</p> <p>BUYING VENUE (buy). References to where the product is purchased. [For example, actual responses categorised here include (to the banana stimuli) 'Big Banana' or 'locally bought', or 'Safeway'].</p> <p>COMMONALITY (commonality). References made regarding the commonness, or familiarity of the product. [For example, actual responses categorised here include (to the strawberry stimuli) 'rare dessert', 'too few', or 'familiar'].</p>
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Category 4: Idiosyncratic (or Experiential)

Yet another global category was identified from the iterative analysis process. This category was labelled *idiosyncratic*, and contained responses dealing with memories and responses which tended to be personally meaningful to respondents. Figure 7.5 visually represents this portion of the network. For example, one sub-category which suggested itself from the data was labelled 'represents', and dealt with responses relating to what the product represents to the respondent. Another sub-category in this vein was termed 'represents - sex', and dealt with responses of a sexual nature. Other subcategories within the global category of 'idiosyncratic' responses were as follows: 'association to

previous word', 'story', 'expression', 'homonym', and 'memory'. A description of *idiosyncratic* categories follows, in Table 7.4.



† association to previous word

Figure 7.5: *Sub-component of Network Analysis - Idiosyncratic*

Table 7.4: *Descriptors for 'Idiosyncratic' Terminal Categories*

<p>STORY (story). A response that places the product in the context of a story, fairy tale, myth, etc. [For example, actual responses categorised here include (to the apple stimuli) 'Adam and Eve', 'Snow White' or 'Newton'].</p> <p>EXPRESSION (expression). An expression, or saying that is associated with the product. [For example, actual responses categorised here include (to the banana stimuli) 'banana lounge' or 'mellow yellow'].</p> <p>MEMORY (memory). A response indicating that the individual has a memory of the product in a specific context. [For example, actual responses categorised here include (to the broccoli stimuli) 'President Bush', or 'Dad' or 'childhood memory of overboiled broccoli'].</p> <p>HOMONYM (homonym). Words that sound the same (but are not necessarily spelt the same) but mean different things. [For example, actual responses categorised here include (to the pear stimuli) 'pair'].</p> <p>REPRESENTS - general (represents). A response that suggests that the product in question represents something. [For example, actual responses categorised here include (to the strawberry stimuli) 'decadent' or 'fragile' or 'romance'].</p> <p>- sex (sex). Responses indicating that the product is viewed in an erotic, or sexual manner. [For example, actual responses categorised here include (to the banana stimuli) 'condom', 'penis' or 'phallic symbol'].</p>
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Category 5: Evaluation

The next global category that suggested itself from the data related to *evaluations* of the products. This category was subdivided into 'positive' and 'negative' evaluations. Descriptions of these categories follows, in Table 7.5.

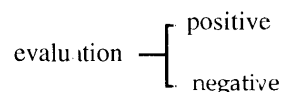


Figure 7.6: *Sub-component of Network Analysis - Evaluation*

Table 7.5: *Descriptors for 'Evaluation' Terminal Categories*

EVALUATION - positive (eval+ve). The product is evaluated in a positive way. [For example, actual responses categorised here include (to the strawberry stimuli) 'favourite fruit' or 'the best'].

- negative (eval--ve) Same as for a positive evaluation, except that the responses are a negative evaluation of the product. [For example, actual responses categorised here include (to the broccoli stimuli) 'boring', or 'not so versatile'].

A *price* (called evaluation) category was introduced, largely because of the focus in marketing literature on the role of price in the purchase decision. Any responses that relate to the price of the fruit or vegetable were placed into this category. (For example, actual responses categorised here include (to the strawberry stimuli) 'can be expensive' and don't buy often - expensive')).

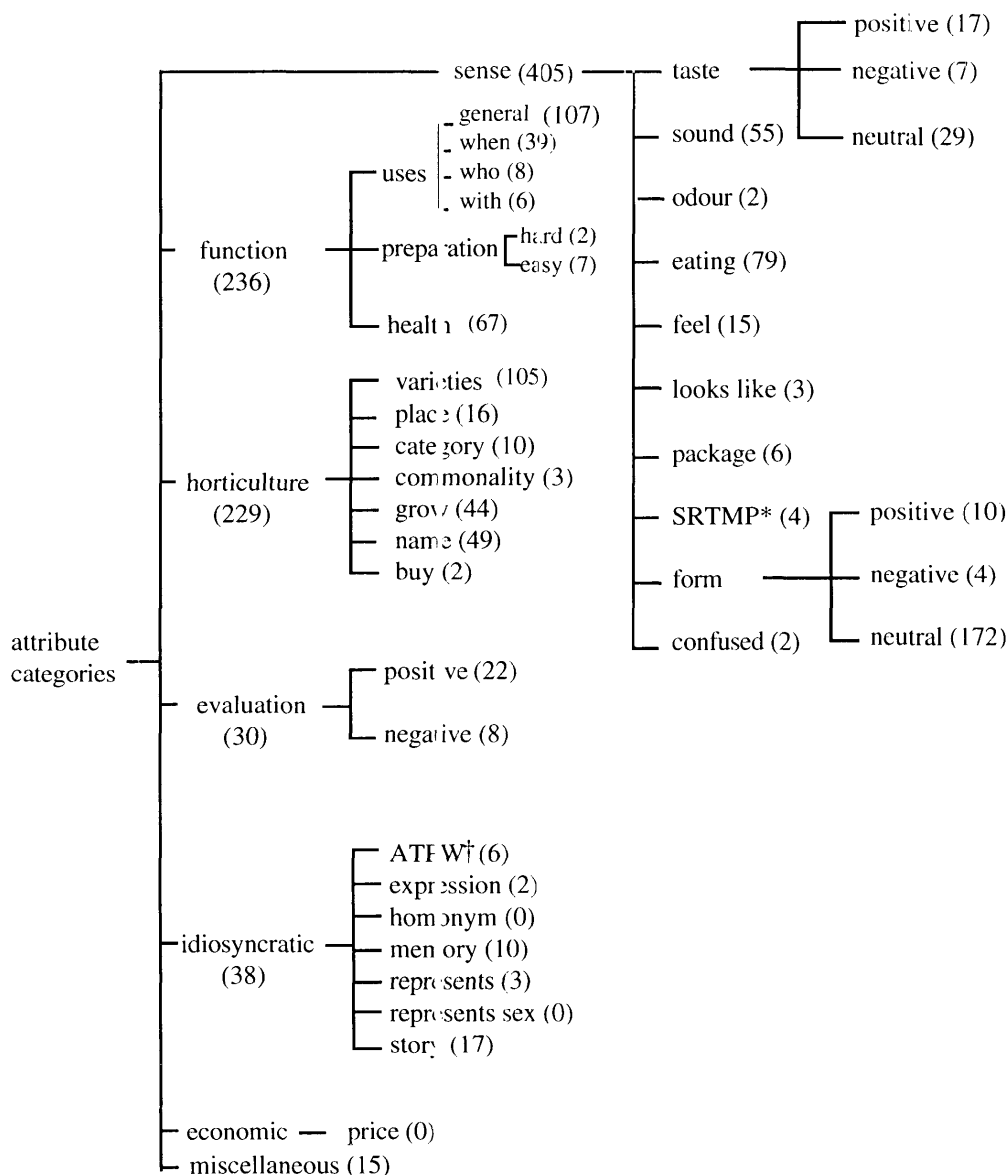
A *miscellaneous* category was also introduced to deal with responses that were uncategorisable. This category was used for any words that could not be placed in any of the other categories. (For example, actual responses categorised here include (to the broccoli stimuli) 'gold nugget', 'flake' and 'lost').

Figures 7.27 and 7.28, which show the numbers of responses in each of the categories for fruits and vegetables, respectively, indicate that several categories were much larger (in terms of number of responses contained therein) than others (numbers in brackets underneath global categories (sense - function - idiosyncratic - evaluation - horticulture) are total numbers of responses in each of these five categories). For example, the categories *uses*, and *form* contained the overwhelming majority of responses. Depending upon the particular fruit

or vegetable studied, the relative numbers of responses in each of the other categories differed, sometimes remarkably. Figures 7.7 – 7.26 show the individual networks for each of the ten fruits and ten vegetables; each is followed by a summary of responses which provides a profile of each fruit and vegetable, with regard to dominant themes which emerged.

7.2 Networks For Each Fruit and Vegetable

7.2.1 Apples



* specific reference to mode of presentation
 † association to previous word

Figure 7.7: Network Analysis - Apples

Note on Sample Sizes: note that total numbers of word association responses in Network Analyses (descriptive data) are larger than total numbers in other analyses, such as those undertaken to examine demographic differences in responses, self-monitoring effects, and mode of presentation effects. This is because data were removed for these latter analyses to ensure equal numbers of subjects in each cell. That is, a total of 337 respondents' word association responses were used for this first analysis; the Semantic Networks for each of the ten fruits and ten vegetables. However, data analyses relating to differences in word association responses as an effect of mode of stimulus presentation took the form of Contingency Tables and required equal numbers of respondents in all cells, whereas, in fact, there were between 46 and 50 respondents in each of the seven cells. It was therefore decided to cull (randomly) several cases from each of the mode of presentation conditions to give them each a total of 46 respondents (giving a total of 322 respondents for these latter analyses). The culled sample (n=322) was then used for other Contingency Table Analyses on the self-monitoring data, and the data related to age and sex differences in responses.

Network Description

The salient features of the frequency breakdown of word association responses dealing with apples can best be seen by an inspection of Figure 7.7: Network Analysis - Apples (numbers of responses in each terminal category are listed in brackets). Words describing some aspect of the form, or appearance of apples comprised the most frequent response (186, or 20% of total apple words), followed by function, or use words (160, or 17%) (calculations differ slightly from those produced by computer programs due to rounding error). Of the total form words, neutral words predominated (92.5%), with considerably fewer positively-toned words (5.4%), and very few negative words (2.3%). Of the neutral words, words relating to the colour of apples predominated, accounting for 55% of the total. Of the function words, general function words comprised the most frequent response (66.8%), followed by uses-when (24.3%), uses-who (5%) and uses-with (3.8%). Regarding general usage words, no particular response predominated (the most frequent response, 'pie', or 'apple pie', accounting for only 19.6% of the total. Rather, there was an assortment of relatively evenly distributed responses (pie, juice, snack, salad, etc.). Words dealing with varieties of apples comprised the third most frequent set of responses (11%). 'Eating' and 'health' words comprised the next two most frequent sets of responses (8.2% and 7%, respectively, of the total words generated for apples). Other response categories each made up 5% or less of the overall responses, signifying that words in these categories were not predominantly associated with the product. The interested reader is directed to Appendix 9 to peruse the word associations contained within these latter categories.

Overall View of Apples

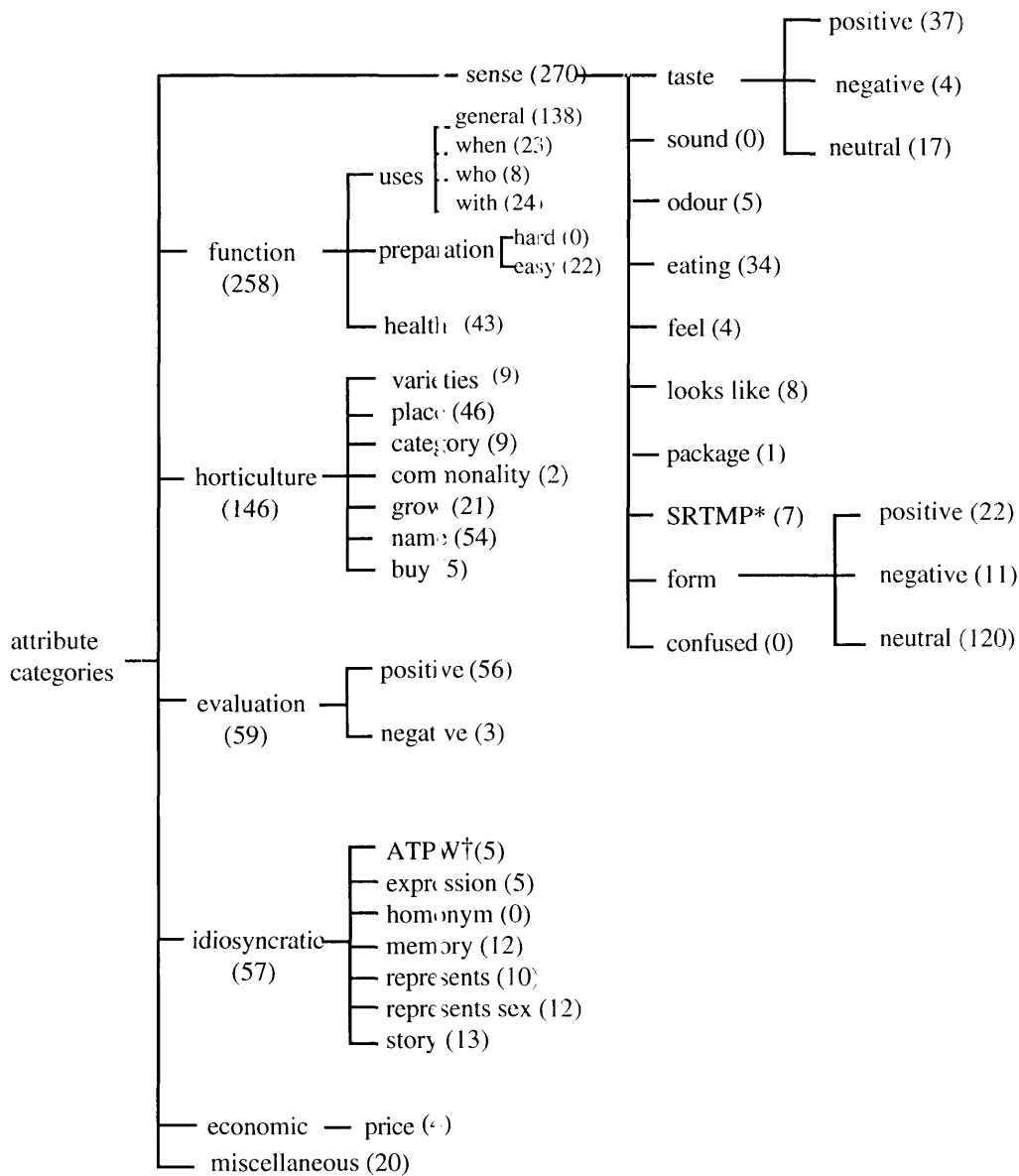
Overall, apples received a *favourability rating of 73.82/100, which indicates that most people interviewed considered apples in a very positive light.

Positive responses derived from the word association test included 'yummy', 'tasty', 'filling', 'every day', 'appealing' and 'convenient snack'.

It is also the case that the many uses of apples were evident in the minds of the sample. As stated, words relating to the uses of apples comprised the second most frequent overall response (17% of overall apple responses). The most obvious area of concern in terms of consumer perceptions of apples relates to the fact that they are sometimes 'fibre', are boring, and sometimes taste bitter (although it must be remembered that there were very few negative associations towards apples (less than 2% of overall responses).

*Note that favourability ratings were calculated by averaging the ratings of the entire sample, for each fruit and vegetable. The mean rating was used.

7.2.2 Bananas



* specific reference to mode of presentation
 † association to previous word

Figure 7.8: Network Analysis - Bananas

Network Description

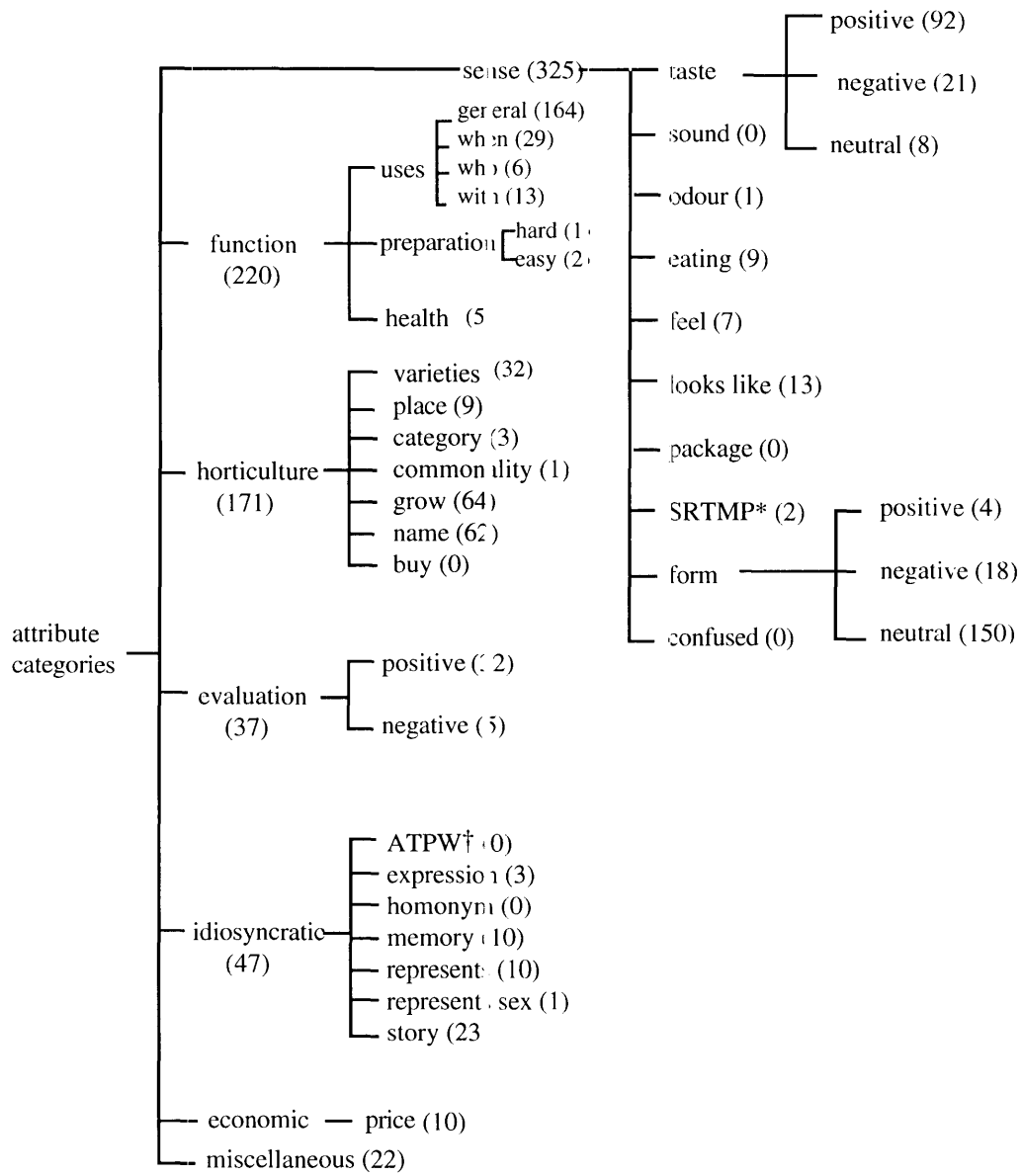
Inspection of Figure 7.8; Network Analysis - Bananas reveals that words describing the various uses, or functions of the product comprised the most frequent response (23.7% of total banana words). Of the total function words, general uses predominated (71.5% of function words), followed by uses - with (12.4%), uses - when (11.9%), and uses - who (4.2%). Examples of responses in these categories include the words 'monkey(s)', 'sandwich(es)', 'fruit salad', 'smoothy(ies)', and 'banana cake'. The next most frequent category of responses described some feature of the appearance of bananas (18.8% of total banana words). Of these words, neutrally-toned words predominated (78.4% of total appearance or form words), followed by significantly fewer positive form words (14.4%), and approximately half as many negatively-toned words (7.2%). Examples of words relating to the appearance of bananas include 'yellow', 'skin', 'shape', 'ripe', 'firm' and 'curved'. Words that tended to generally evaluate bananas (either positively or negatively) comprised 6.9% of overall responses. Positive evaluations overwhelmingly predominated (94.9%), with only three negative evaluations occurring (5.1%). Examples of positive evaluations include 'filling', 'favourite', 'convenient', 'I eat every day', 'can't live without', and 'can't eat too many'. Words alluding to the places where bananas are grown were the next most common responses (5.7% of total banana words). Words in this category referred primarily to the fact that bananas are grown in warm climates. Some examples include 'Coffs Harbour', 'Queensland', 'tropical', 'coast', and 'tropical fruit'. Finally, words describing the health properties of bananas were reasonably well represented (5.3% of total banana responses). Some examples include 'potassium', 'healthy', 'energy', 'zinc', 'fattening', 'fatty', and 'sustenance'.

Overall View of Bananas

Overall, bananas received a favourability rating of 76.59/100, which indicates that most people interviewed considered bananas in a very positive light. Positive responses derived from the word association test included 'good condition', 'lack of blemish', 'nice when fresh', 'healthy', 'great smell', 'nice days and Coffs Harbour', 'good food', 'easy to eat', 'eat every day', 'eat them all the time', and 'fantastic'. It is also the case that the extremely versatile nature of bananas was evident in the minds of the sample. As stated, words relating to the uses of bananas comprised the most frequent overall response (23.7% of

overall banana responses). General evaluations of bananas, responses relating to their place of growth and health-related issues also featured prominently. The most obvious area of concern in terms of consumer perceptions of bananas related to the fact that they are easily bruised and quick to become overripe (although it must be remembered that there are very few negative associations towards bananas (2.2% of overall responses)).

7.2.3 Grapes



* specific reference to mode of presentation
 † association to previous word

Figure 7.9: Network Analysis - Grapes

Network Description

Inspection of Figure 7.9: Network Analysis - Grapes reveals that words describing the various uses, or functions of the product comprised the most frequent response (25.5% of total grape words). Of the total function words, general uses predominated (77.4% of function words), followed by uses - when (13.7%), uses - with (6.1%), and uses - who (2.8%). Examples of responses in these categories include the words 'wine', 'juice', 'sultanas', 'summer' and 'cheese'. The next most frequent category of responses described some feature of the appearance of grapes (20.7% of total grape words). Of these words, neutrally-toned words predominated (87.2% of total appearance or form words), followed by significantly fewer negative form words (10.5%), and significantly fewer positively-toned words (2.3%). Examples of words relating to the appearance of grapes include 'seeds', 'green', 'purple', 'black', 'round' and 'looks good'. The next most frequent category of responses described some feature of the taste of grapes (17% of overall grape responses). Of these responses, positive taste words overwhelmingly predominated (76%), followed by significantly fewer negative taste words (17.4%), and still fewer neutrally-toned taste words (6.6%). Examples of words in this category include 'sweet', 'juicy', 'tasty', 'yummy' and 'sour'. Responses dealing with the manner in which grapes are grown were reasonably well represented (7.7% of overall grape responses). Some examples of responses in this category include 'bunch(es)', 'vine(s)', 'birds' and 'vineyards'. Seven and one half percent of overall grape responses recalled the name of 'grapes'. That is, while viewing the grape stimuli, 7.5% of the sample responded 'grape(s)'. Other response categories accounted for less than 5% of total grape responses, and will not be elaborated upon here, with one exception (dealing with the 3.85% of responses that comprised positive evaluations), which is discussed below.

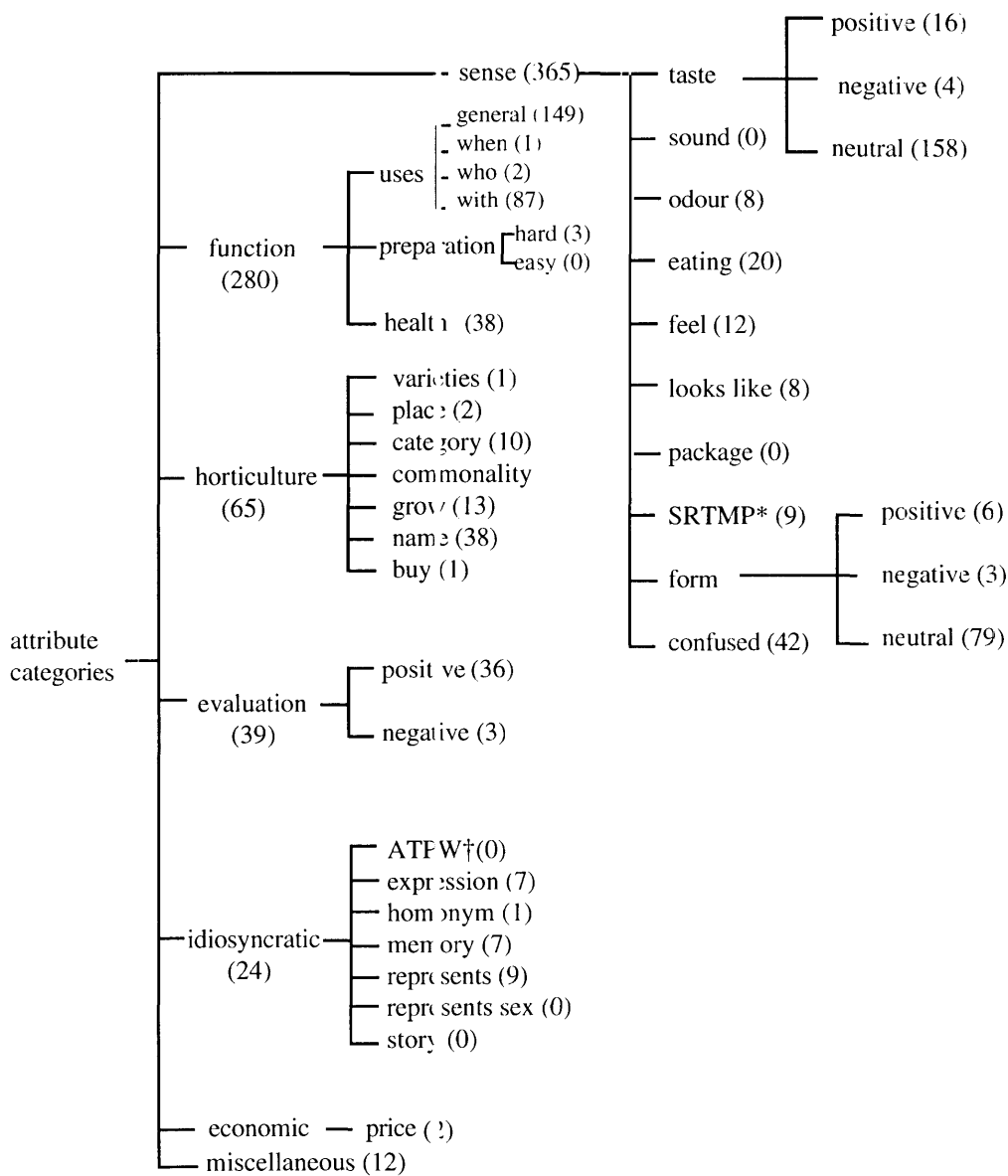
Overall View of Grapes

In summary, it is apparent that general uses and uses on particular occasions (for example, summer, February, snack) are important associations in consumers' minds. Also relevant is the positive taste of grapes, and the fact that they grow on vines and in bunches. Finally, although only 3.85% of overall grape responses contained positive evaluations, the nature of these responses is telling. For example, consumers evaluated grapes by stating that they were 'good', 'refreshing', 'my favourite fruit', 'eat them with everything', 'grape time

is best part of year' and 'love grapes'. These responses, in combination with the overwhelming number of responses in the use, or function categories indicate that grapes are a very popular and versatile fruit.

A favourability rating of 76.6% was given to this product, indicating that, of all the fruits, grapes were rated third highest in terms of favourability. This finding seems to suggest that consumers consider grapes in a very positive light.

7.2.4 Lemons



* specific reference to mode of presentation

† association to previous word

Figure 7.10: Network Analysis - Lemons

Network Description

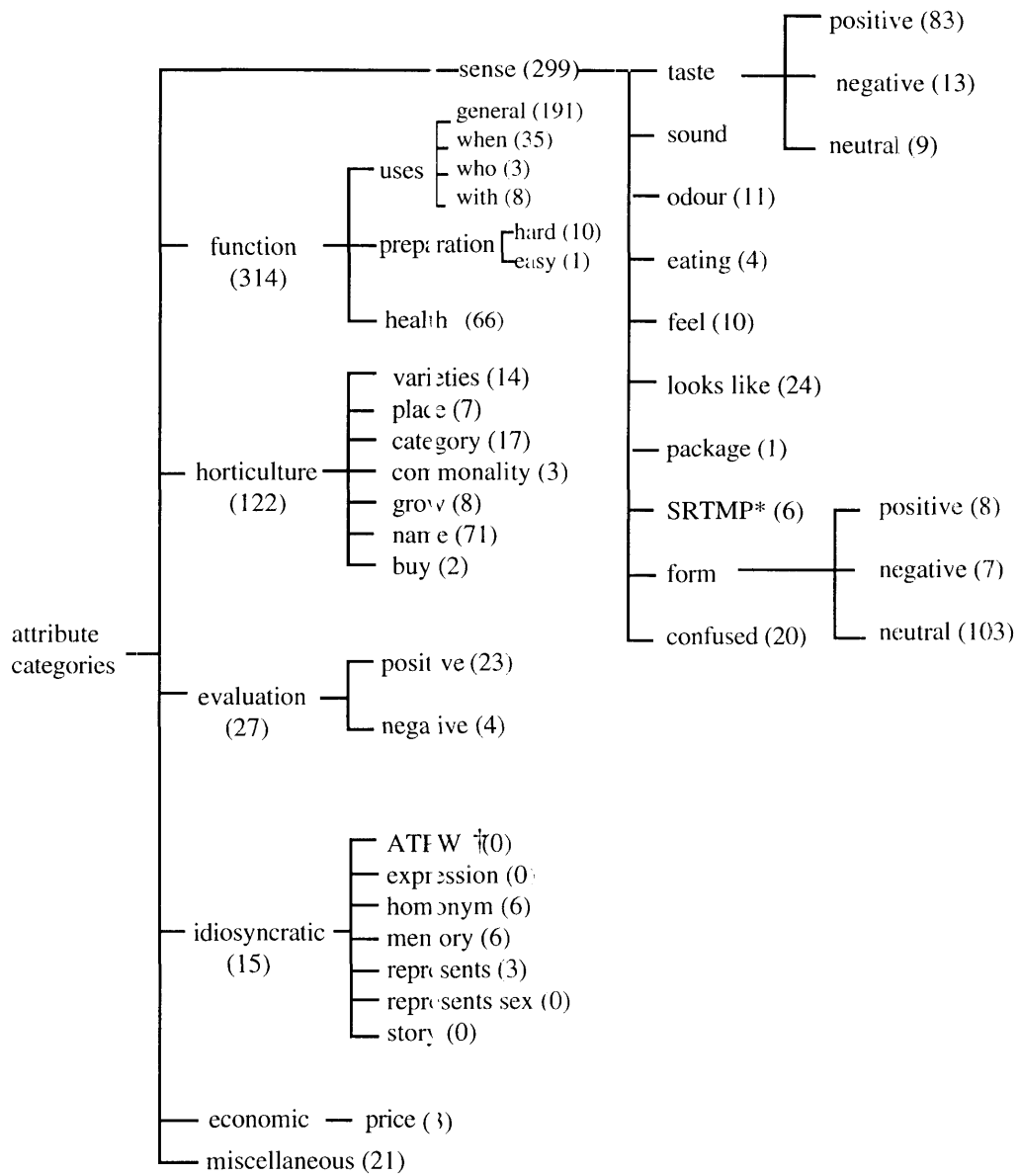
Inspection of Figure 7.10: Network Analysis - Lemons reveals that words describing the various uses, or functions of the product comprised the most frequent response (30.4% of total lemon words). Of the total function words, general uses predominated (62.3% of function words), followed by uses - with (36.4%), uses - who (<1%), and uses - when (<1%). Examples of responses in these categories include the words 'juice', 'drink', 'peel', 'fish', 'fish and chips' and 'gin'. Responses associated with the taste of lemons comprised the second most frequent category of responses (22.6%). Again, neutrally-toned taste words predominated (for example, 'sour', 'bitter', 'tart') (88.8%), followed by words describing some positive aspect of the taste of lemons (for example, 'nice', 'tasty') (9%). Negatively-toned words comprised only 2.3% of the overall taste words. Examples of negative responses include 'they do not taste very good' and 'yukky'. The next most frequent category of responses described some feature of the appearance of lemons (11.2% of total lemon words). Of these words, neutrally-toned words predominated (90% of total appearance or form words), followed by significantly fewer positive form words (6.8%), and fewer still negatively-toned words (3.4%). Examples of words in these categories include 'yellow', 'fresh', 'attractive' and 'bright'. Finally, words that described some difficulty in correctly identifying the images as lemons comprised 5.3% of overall responses. Words such as 'orange', 'orange?', 'lemon?' and 'I think it's a grapefruit' were typical.

Overall View of Lemons

In summary, it can be concluded that lemons have a quite unique profile. Their unusual taste, and extreme versatility are features that seem to be evident in consumers' minds. The responses toward lemons were overwhelmingly positive or neutral, indicating that lemons are not viewed negatively by consumers. This is despite the low overall favourability rating given to lemons (56.4/100) which was the lowest rating given. This apparent discrepancy is explicable in terms of the nature of the favourability rating. Consumers were asked to rate the favourability of each fruit and vegetable on a scale anchored at one end by the phrase 'dislike intensely' and 'like immensely' at the other end. Thus consumers might have imagined themselves consuming a lemon in much the same way as they would an orange or an apple, and perceived the experience to be somewhat negative by comparison. The responses to lemons in

the word association test might indicate, however, that consumers considered lemons in a favourable light because, in this instance, they were thinking of lemons in a more typical context. that is, as being very useful as flavouring agents in meals (such as flavour enhancers and garnishes, etc.), rather than as a fruit that is consumed whole.

7.2.5 Oranges



* specific reference to mode of presentation

† association to previous word

Figure 7.11: Network Analysis - Oranges

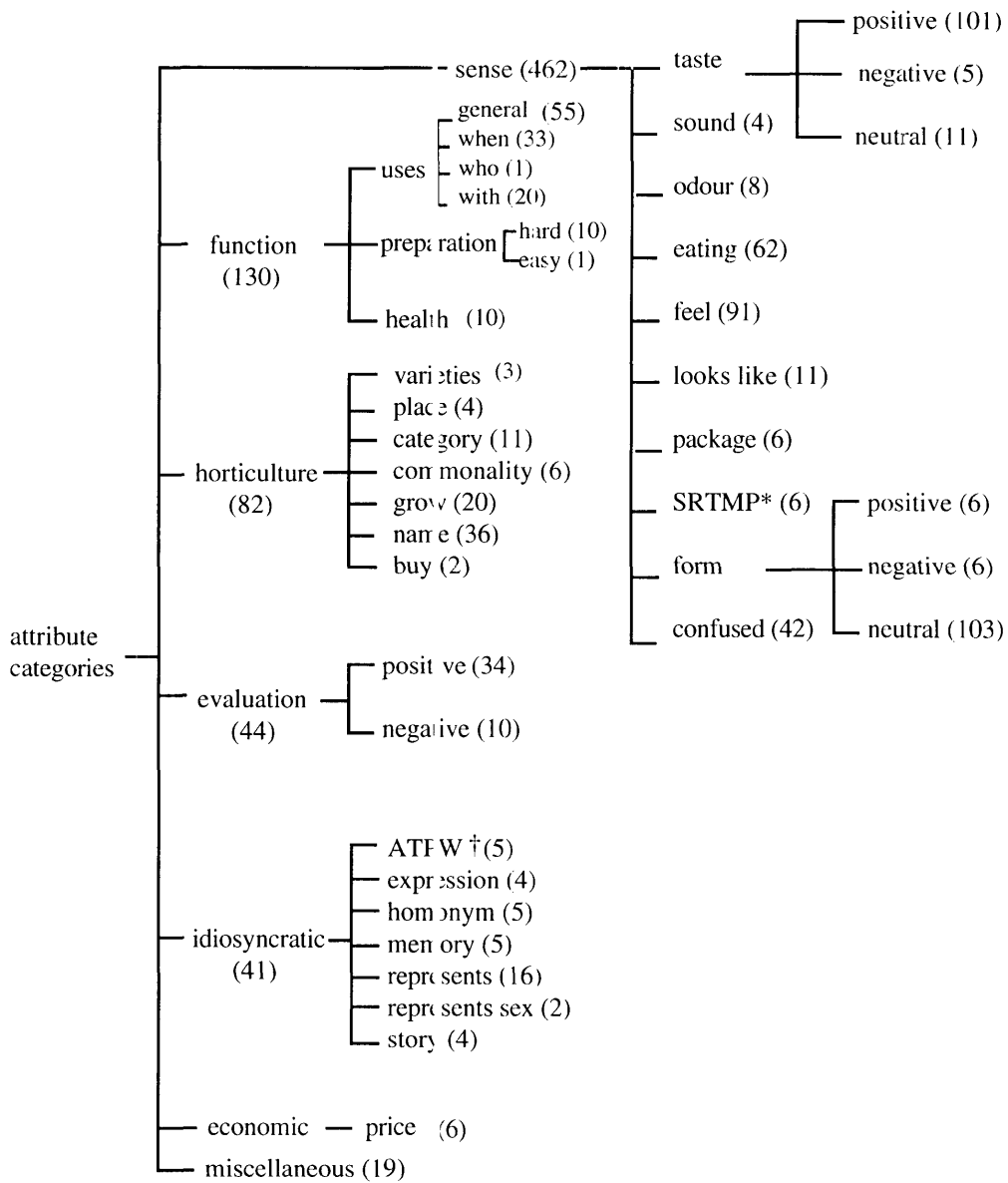
Network Description

Inspection of Figure 7.11: Network Analysis - Oranges reveals that words describing the various uses, or functions of the product comprised the most frequent response (29.6% of total orange words). Of the total function words, general uses predominated (80.6% of function words), followed by uses - when (14.8%), uses - with (3.4%), and uses - who (<1%). Examples of responses in these categories include the words 'juice', 'peel', 'drink', 'rind', 'breakfast', 'Vodka' and 'kids'. The next most frequent category of responses described some feature of the appearance of oranges (14.7% of total orange words). Of these words, neutrally-toned words predominated (87.3% of total appearance or form words), followed by significantly fewer positive form words (6.8%), and approximately the same number of negatively-toned words (5.9%). Examples of words relating to the appearance of oranges include 'round', 'skin', 'fresh', 'seeds', 'bright' and 'looks good'. The next most frequent category of responses described some feature of the taste of oranges (13.1% of overall orange responses). Of these responses, positive taste words overwhelmingly predominated (79.1%), followed by significantly fewer negative taste words (12.4%), and still fewer neutrally-toned taste words (8.6%). Examples of words in this category include 'juicy', 'sweet', 'tasty', 'sour' and 'bitter skin'. The name category accounted for 8.9% of overall orange responses. Finally, health-related responses accounted for 8.2% of overall responses, indicating that consumers are well aware of the health-properties of this fruit. Some examples of responses in this category include 'vitamin C', 'health(y)', 'vitamins', 'cold(s)' and 'sport'. Other response categories accounted for less than 5% of total orange responses, and will not be elaborated upon here.

Overall View of Oranges

In summary, it is apparent that general uses and uses on particular occasions (for example, summer, Christmas, school) are important associations in consumers' minds. Also relevant is the positive taste of oranges. Finally, the appearance of this product clearly occupies a place in consumers' mental schema of oranges. A favourability rating of 70.2% was given to this product, indicating that consumers are reasonably favourably disposed toward oranges.

7.2.6 Peaches



* specific reference to mode of presentation

† association to previous word

Figure 7.12: Network Analysis - Peaches

Network Description

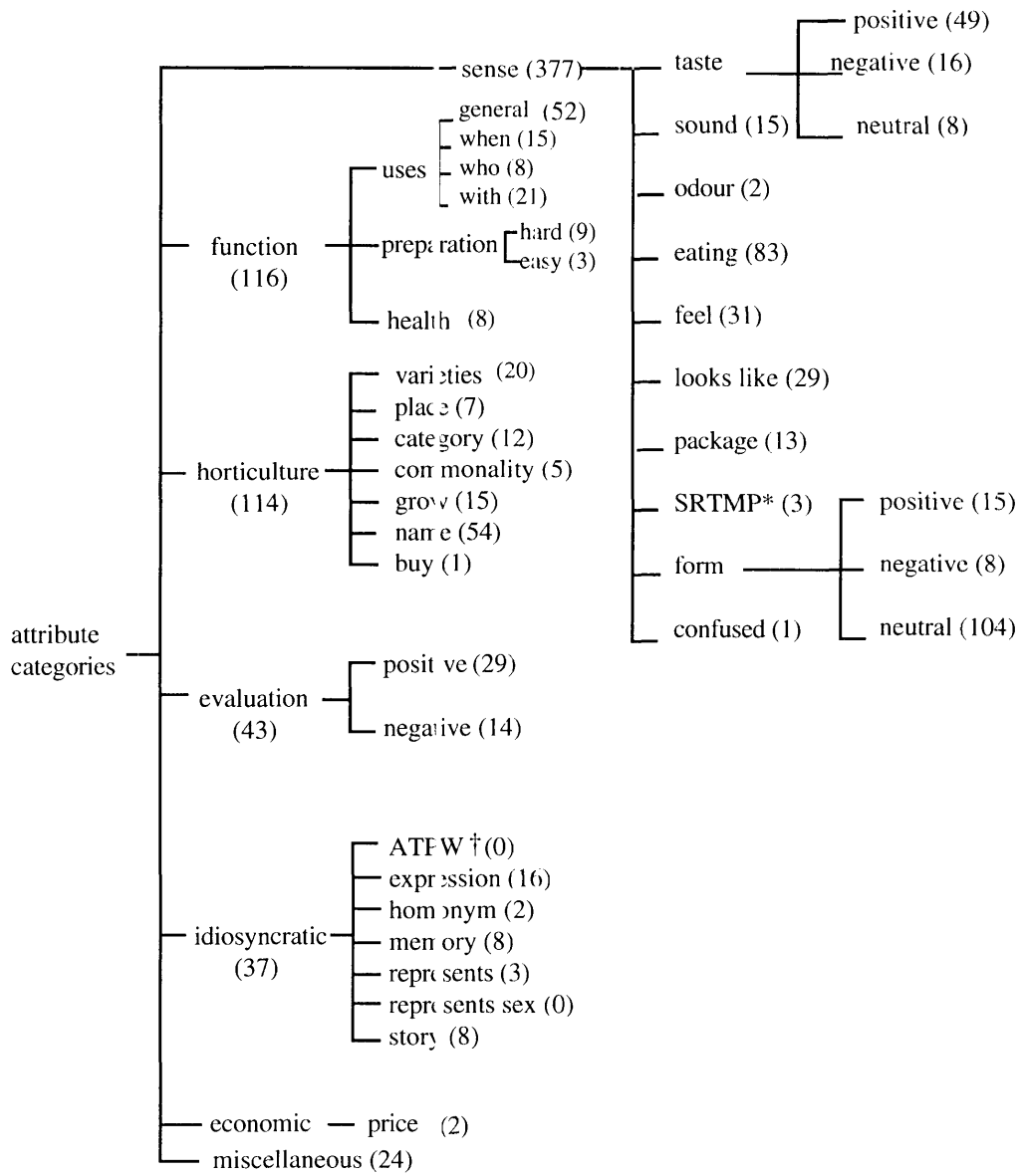
Inspection of Figure 7.12: Network Analysis - Peaches reveals that words describing aspects of the taste of the product comprised the most frequent response (14.92% of total peach words). Of the total taste words, positive words predominated (86.3% of taste words), followed by neutral taste words (9.4%), with significantly fewer negative taste words (4.3%). Examples of responses in these categories include the words 'sweet', 'delicious', 'tasty', 'yum', 'flavour' and 'sour'. The next most frequent category of responses described some feature of the appearance of peaches (14.67% of total peach words). Of these words, neutrally-toned words predominated (89.6% of total appearance or form words), followed by significantly fewer negative and positive form words (5.2%). Examples of words relating to the appearance of peaches include 'round', 'seed', 'fresh', 'ripe', 'attractive', 'good colour' and 'bruise(s)'. Words describing the feel of peaches comprised the next most frequent category of responses (11.6%). Examples of words in this category include 'furry', 'soft', 'fuzzy' and 'smooth'. Words dealing with the eating experience accounted for 7.9% of overall responses. Examples include 'juicy', 'mouth water(ing)' and 'crisp'. Words demonstrating difficulty in correctly identifying peaches accounted for 5.4% of responses. Examples include 'apple', 'peach?', 'pear' and 'what is it?'. Finally, responses that evaluated peaches, either in a positive (77.3%) or negative (22.7%) manner accounted for a total of 5.6% of overall responses. Some examples include 'refreshing', 'juicy and nice', 'almost perfect', 'easy to eat and digest', 'stains', 'boring' and 'hate the skin'. Other response categories accounted for less than 5% of total peach responses, and will not be elaborated upon here.

Overall View of Peaches

In summary, it is apparent that the positive taste of peaches, their appearance, and their unique feel are important associations in consumers' minds. Also relevant is the eating experience, and the fact that peaches are versatile in terms of their various usages. Interestingly, consumers had some difficulty in identifying this product. These responses, however, were provided by subjects in the conditions wherein colour, and the name of the product were not featured (black and white photos and line drawings). It is not surprising that consumers would become confused regarding the identification of peaches, as they do resemble apples, other stone fruits and oranges in shape.

A favourability rating of 80.7% was given to this product, indicating that, of all the fruits, peaches were rated highest in terms of favourability. This finding, in conjunction with the very positive responses obtained in the word association study lends weight to the contention that consumers consider peaches in a very positive light.

7.2.7 Pears



* specific reference to mode of presentation

† association to previous word

Figure 7.13: Network Analysis - Pears

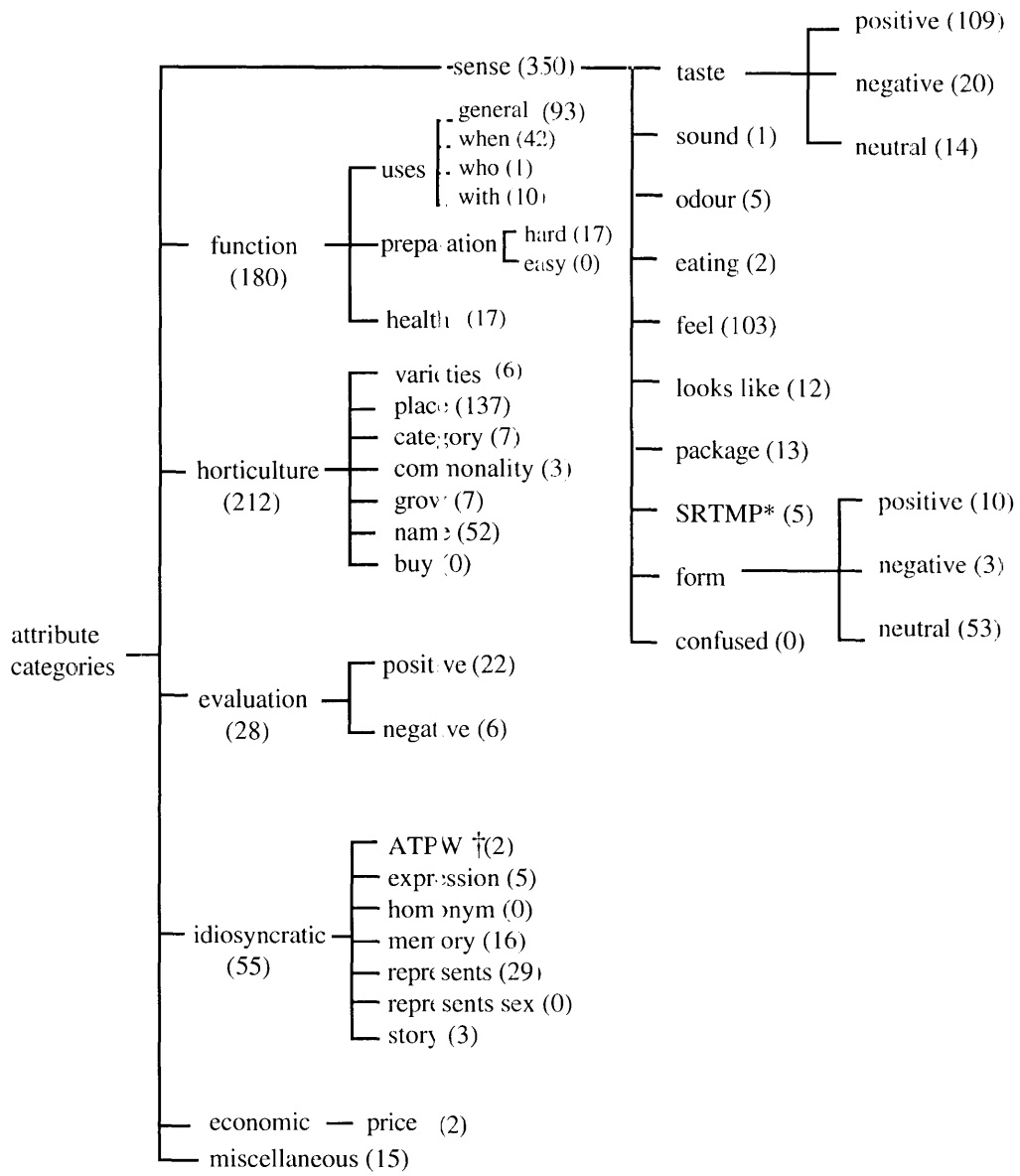
Network Description

Inspection of Figure 7.13: Network Analysis - Pears reveals that the most frequent category of responses described some feature of the appearance of pears (17.8% of total pear words). Of these words, neutrally-toned words predominated (81.9 of total appearance or form words), followed by significantly fewer positive form words (11.8%), and significantly fewer negatively-toned words (6.3%). Examples of words relating to the appearance of pears include 'green', 'yellow', 'round', 'ripe', 'golden' and 'bruised'. Words describing the various uses, or functions of the product comprised the next most frequent response (13.5% of total pear words). Of the total function words, general uses predominated (54.2% of function words), followed by uses - with (21.9%), uses - when (15.6%), and uses - who (8.3%). Examples of responses in these categories include the words 'juice', 'fruit salad', 'snack', 'crumble', 'ice cream', 'summer' and 'children'. The next most frequent category of responses described some feature of the experience of eating pears (11.6% of overall pear responses). Examples include 'juicy', 'soft', 'crunchy' and 'squishy'. Aspects of the taste of pears were well represented. Of these responses, positive taste words predominated (67.1%), followed by significantly fewer negative taste words (21.9%), and still fewer neutrally-toned taste words (11%). Examples of words in this category include 'sweet', 'tasty', 'delicious', 'yuck', 'bland' and 'flavour'. 7.6% of overall pear responses recalled the name of 'pears'. Responses that tended to evaluate pears, either positively or negatively, accounted for a total of 6% of overall responses. Of these, 67.4% were positive evaluations, while only 32.6% of responses were negatively toned. Examples of positive evaluations include 'I like pears', 'another great favourite when just ripe', 'beautiful when dipped in chocolate', and 'eat a lot of them'. Some negatively-toned responses were 'boring', 'duh', 'disappointing' and 'easily bruised'. Other response categories accounted for less than 5% of total pear responses, and will not be elaborated upon here.

Overall View of Pears

In summary, it is apparent that the unique appearance of pears is of interest to consumers, as well as general uses and uses on particular occasions (for example, summer, autumn, and dessert). Also relevant is the positive taste of pears, and the unique eating experience associated with this product. A favourability rating of 66.4% was given to this product, indicating that pears are the least liked of the ten fruits used in the study, apart from lemons.

7.2.8 Pineapple



* specific reference to mode of presentation

† association to previous word

Figure 7.14: Network Analysis - Pineapple

Network Description

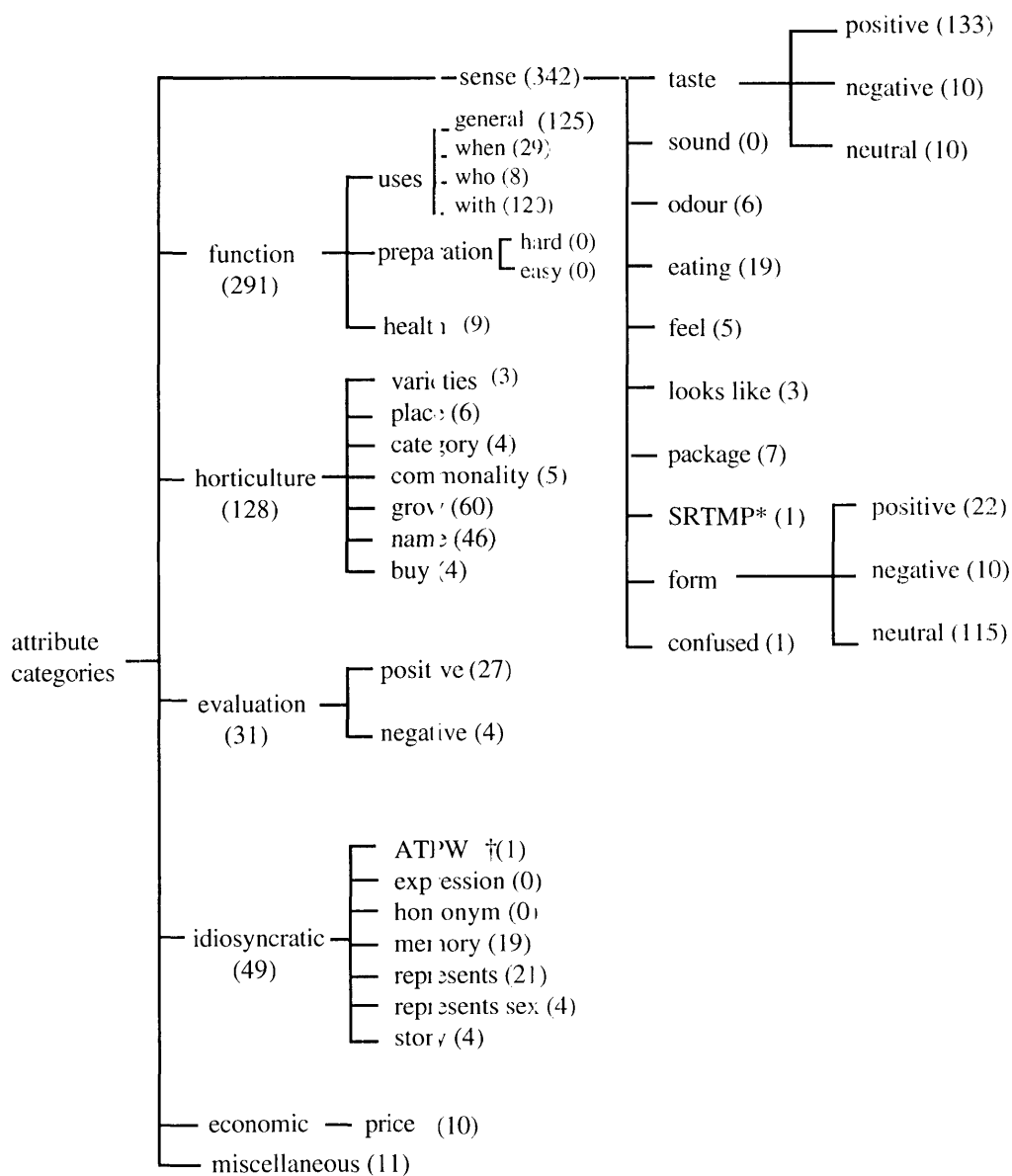
Inspection of Figure 7.14: Network Analysis - Pineapple reveals that words describing the various uses, or functions of the product comprised the most frequent response (17.3% of total pineapple words). Of the total function words, general uses predominated (63.7% of function words), followed by uses - when (28.8%), uses - with (6.9%), and uses - who (<1%). Examples of responses in these categories include the words 'juice', 'fruit salad', 'summer' and 'ham'. The next most frequent category of responses described some feature of the taste of pineapples (17% of overall pineapple responses). Of these responses, positive taste words overwhelmingly predominated (76.2%), followed by significantly fewer negative taste words (14%), and still fewer neutrally-toned taste words (9.8%). Examples of words in this category include 'sweet', 'juicy', 'sour' and 'taste'. Responses dealing with the locations in which pineapples are grown were well represented (16.3% of overall pineapple responses). Because this category of responses was the third most frequent, this indicates that pineapples are overwhelmingly associated with tropical climates and holidayish locations. Some examples of responses in this category include 'Queensland' (31.4% of place responses and 5.1% of total pineapple responses), 'tropical' and 'tropics' (27% of place responses and 4.4% of overall pineapple responses), 'Hawaii', 'Sunshine Coast' and 'coast'. Another prominent category of responses described some aspect of the feel of pineapples (12.2% of overall pineapple responses). Examples of words in this category include 'spiky', 'prickly', 'rough', 'sharp' and 'spikes'. It is obvious that negatively-toned features of the tactile stimulation of pineapples are important to consumers. The next most frequent category of responses described some feature of the appearance of pineapples (7.8% of total pineapple words). Of these words, neutrally-toned words predominated (80.3 of total appearance or form words), followed by significantly fewer positive form words (15.2%), and significantly fewer negatively-toned words (4.6%). Examples of words relating to the appearance of pineapples include 'yellow', 'fresh', 'green' and 'ripe'. 6.2% of overall pineapple responses recalled the name of 'pineapples'. Other response categories accounted for less than 5% of total pineapple responses, and will not be elaborated upon here, with one exception. Words alluding to health-related issues, although comprising only 2% of overall pineapple responses, were interesting and quite informative. There were very few responses signalling knowledge of positive health properties of pineapples. Rather, responses dealt with the negative health consequences of eating pineapples, such as 'acid(ic)', 'heartburn', 'make your teeth sore', 'mouth ulcers', etc. This result differs from

that obtained for every other fruit and vegetable. In these latter instances, if health-related matters were mentioned, positive responses predominated, with neutrally-toned health responses following in frequency. Negatively-toned health responses were negligible, except when dealing with pineapples.

Overall View of Pineapples

In summary, it is apparent that general uses and uses on particular occasions (for example, summer, barbecues, holidays) are important associations in consumers' minds. Also relevant is the positive taste of pineapples, the fact that they represent tropical and holiday climates, and that they have an unusual tactile quality. Finally, the unique appearance clearly occupies a place in consumers' mental schema of pineapples. A favourability rating of 69% was given to this product, which was the same rating given for watermelon. These two fruits were therefore rated seventh most favourable, out of a total of ten fruits. The most obvious area of concern in terms of consumer perceptions of pineapples relates to the fact that they are perceived to have undesirable health consequences and, secondly, that the tactile nature of pineapples makes them difficult to handle. These handling-property difficulties would be relevant when purchasing the product as well as when preparing the product for consumption.

7.2.9 Strawberries



* specific reference to mode of presentation
 † association to previous word

Figure 7.15: Network Analysis - Strawberries

Network Description

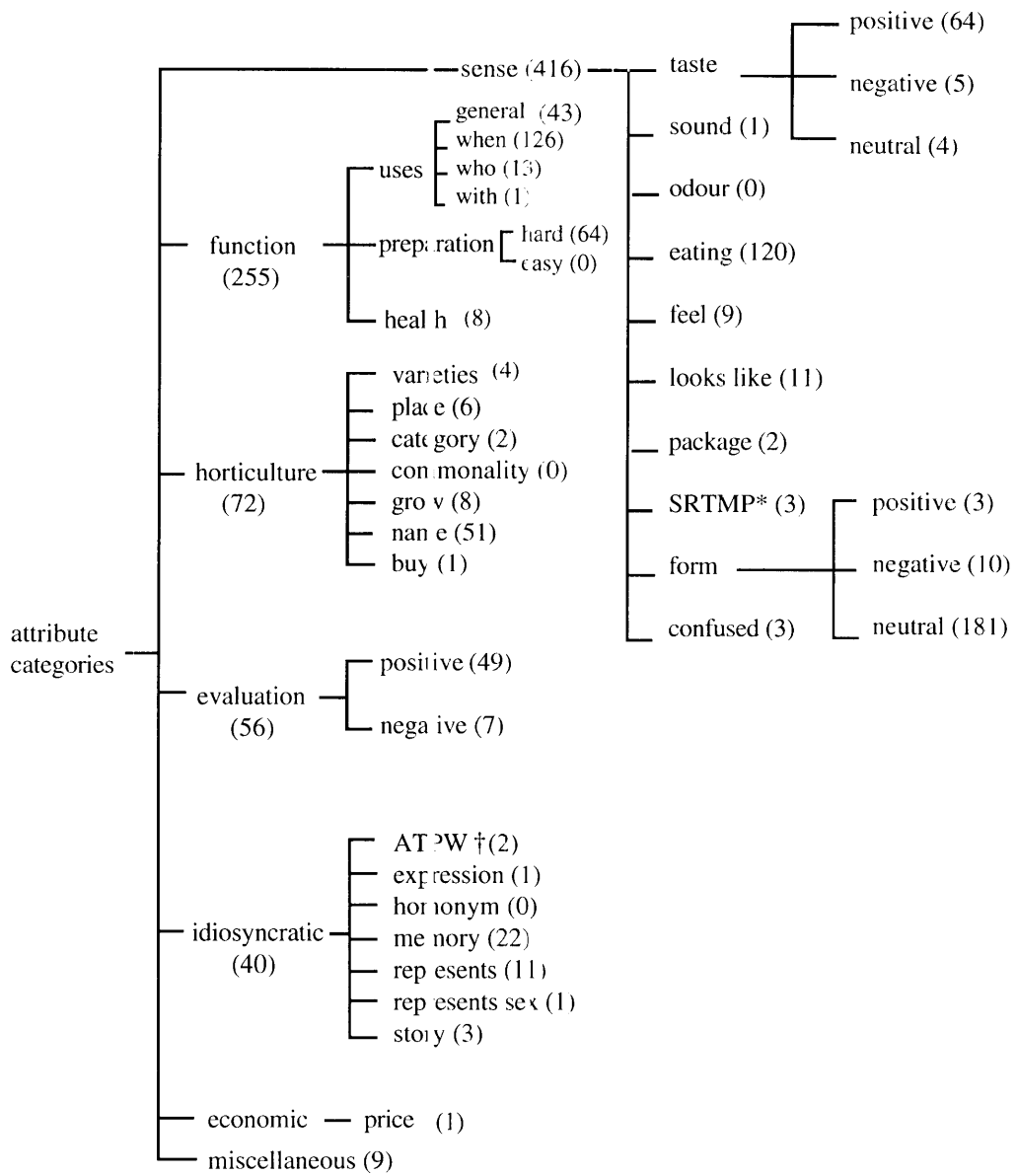
Inspection of Figure 7.15: Network Analysis - Strawberries reveals that the most frequent category of responses described some feature of the various uses, or functions of the product (32.7% of total strawberry words). Of the total function words, general uses predominated (44.3% of function words), followed by uses - with (42.6%), uses - when (10.3%), and uses - who (2.8%). The word 'icecream' alone accounted for 23.2% of overall responses in the general usage category. Other responses were relatively evenly distributed throughout. General examples of responses in the use categories include the words 'dessert', 'jam', 'pavlova', 'fruit salad', 'milkshake', 'cream', 'champagne', 'summer', 'Christmas' and 'children'. The second most frequent category of responses included words describing the taste of strawberries (17.7% of total strawberry words). Of these words, positively-toned words predominated (86.9% of total taste words), followed by significantly fewer negative taste words (6.5%), and the same number of neutral taste words (6.5%). The word 'sweet' was the most common response, accounting for 30.8% of responses in the neutral appearance category. General examples of words relating to the appearance of strawberries include 'delicious', 'yum(my)', 'nice', 'tasty' and 'luscious'. The third highest category of responses included various aspects of the appearance of strawberries (17.1% of overall strawberries responses). Neutral form words accounted for 78.2% of overall appearance responses, followed by form - positive (15%), and form - negative (6.8%). 53.9% of responses in the neutral form category were accounted for by the word 'red'. Some general examples of responses in the appearance categories are 'fresh', 'shiny', 'shape', 'ripe', 'beautiful', 'lush', 'perfect', 'mould' and 'easily bruised'. Reference to aspects of the growth of strawberries were also predominant (7% of overall strawberry responses). Such words as 'garden', 'patch', 'picking', 'leaves', 'bush' and 'fields' were common. Responses that named strawberries accounted for 5.3% of overall responses. Other categories of responses each accounted for less than 5% of overall responses, and will not be elaborated upon here.

Overall View of Strawberries

An overall favourability rating of 30.4/100 was given to strawberries, making them the second most popular of the ten fruits studied, succeeded only by peaches. In summary, strawberries were considered to be extremely versatile, and to have a very positive taste. Their unusual form was also interesting for

consumers. Aspects of growth were also mentioned frequently, giving the impression that strawberries might commonly be grown in home gardens. For example, the responses 'home grown', 'grew them once', 'home pick and eat all you like' were illustrative in this sense. Consumers appeared to be quite knowledgeable regarding matters of growth. Overall, strawberries are very highly favoured, being perceived to have a very nice taste, and to be a very versatile product.

7.2.10 Watermelon



* specific reference to mode of presentation

† association to previous word

Figure 7.16: Network Analysis - Watermelon

Network Description

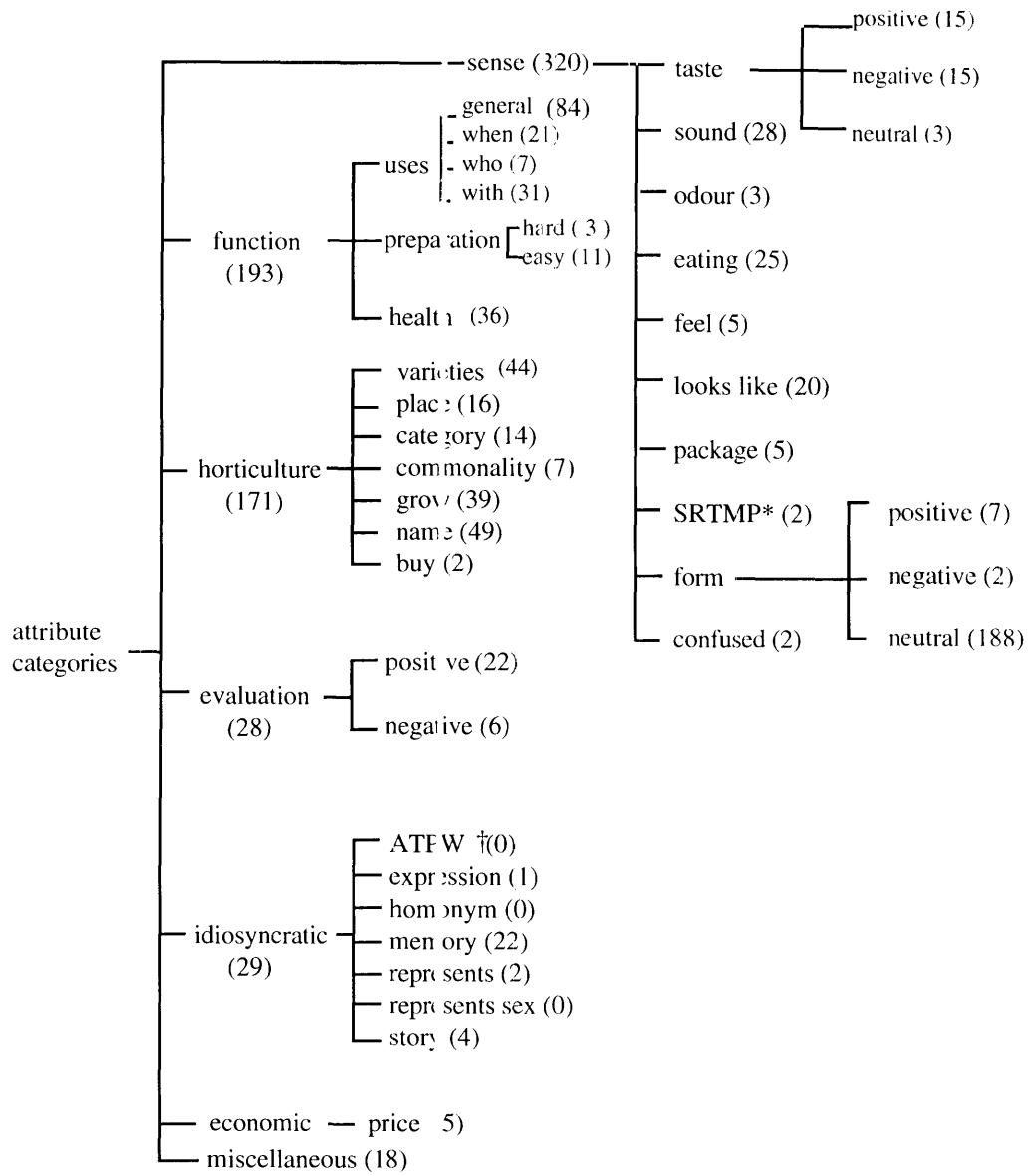
Inspection of Figure 7.16: Network Analysis - Watermelon reveals that the most frequent category of responses included words describing the appearance of watermelons (22.9% of total watermelon words). Of these words, neutrally-toned words predominated (93.3% of total appearance or form words), followed by significantly fewer negative form words (1.2%), and very few positively-toned words (<1%). Examples of words relating to the appearance of watermelons include 'seeds', 'red', 'pink', 'pips', 'green', 'dry' and 'beautiful'. The next most frequent category of responses described some feature of the various uses, or functions of the product (21.6% of total watermelon words). Of the total function words, uses on specific occasions predominated (68.9% of function words), followed by general uses (23.5%), uses - who (7.1%), and uses - with (<1%). Examples of responses in these categories include the words 'summer', 'Christmas', 'hot days', 'juice', 'fruit salad', 'kids' and 'children'. It is interesting to note that the third highest category of responses included various aspects of the eating experience (14.1% of overall watermelon responses). The texture, or feel of watermelons as they are being consumed is considered to be an important attribute of this product. Some examples of responses are 'juicy', 'cool', 'water(y)', 'wet' and 'crisp'. References to the taste of this product (either positive or negative) accounted for 8.6% of overall responses. Of this figure, 87.7% of responses described a positive aspect of the taste experience, 6.8% of responses were negative, and 5.5% were neutral in tone. Examples of taste words include 'sweet', 'yummy', 'delicious', 'bland' and 'taste'. Words dealing with the difficulty in preparing watermelons for consumption comprised the fourth most frequent category of responses (7.5%). Examples in this category are 'mess(y)', 'sticky' and 'dripping'. Responses that named watermelons accounted for 6% of overall responses. That is, 6% of respondents responded with the word 'watermelon' while they viewed the watermelon stimuli. Finally, evaluations of watermelons represented 6.6% of overall responses (87.5% were positive evaluations, while 12.5% were negatively-toned). Some examples of evaluations are 'refreshing', 'thirst quenching', 'a good food', 'good eating', 'good stuff', 'difficult to get a sweet one' and 'overrated'.

Overall View of Watermelon

An overall favourability rating of 68.9/100 was given to watermelons. In summary, watermelons obtained an interesting profile in terms of the things

that come to mind when consumers view this product. Firstly, the appearance and functions of watermelons were equally important to consumers (only 1% differentiated these categories). This was followed by responses relating to the eating experience (almost half as many responses as the first two categories), followed by the difficulty in preparing and consuming watermelons (again, approximately half as many responses in this category as the eating category). Finally, responses relating to the positive taste of watermelons were well represented (the same number of responses were obtained in the preparation - hard, and positive evaluation categories). So, overall, it can be stated that watermelons can be considered to be versatile, are associated with uses on particular occasions, and constitute an unusual eating experience. They are also thought to be problematic in terms of preparation and consumption, but are overwhelmingly positive in terms of taste.

7.2.11 Beans



* specific reference to mode of presentation
 † association to previous word

Figure 7.17: Network Analysis - Beans

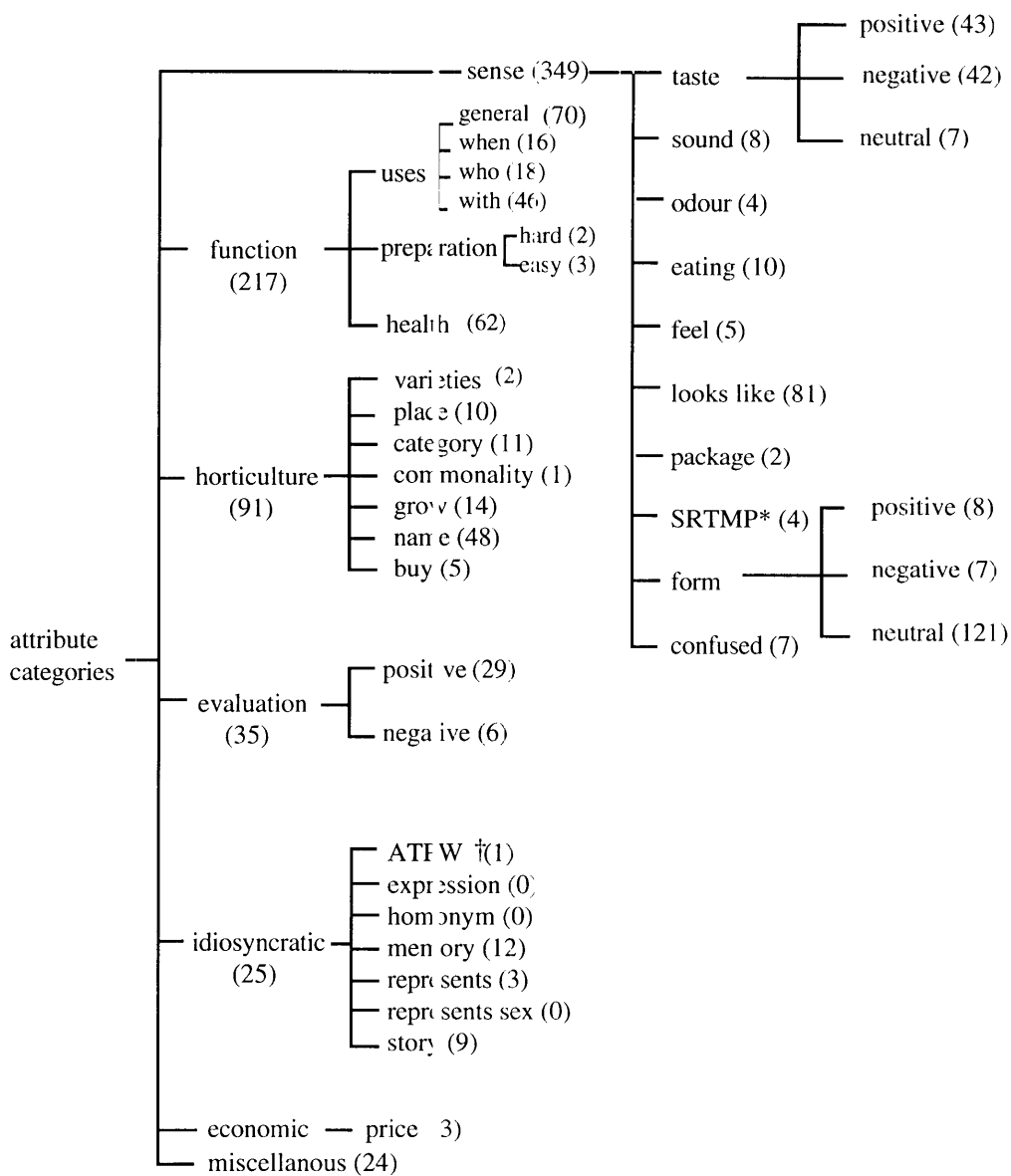
Network Description

The salient features of the categorisation network produced for beans can best be seen by inspecting Figure 7.17: Network Analysis - Beans. Words describing some aspect of the form, or appearance of beans comprised the most frequent response (25.8% of total beans words). Of the total form words, neutral words predominated (95.4%), with considerably less positively-toned words (3.6%), and still fewer negative words (1%). Examples of appearance words include 'green', 'string', 'fresh', 'long', 'looks good' and 'dry'. Function, or use words comprised the next most frequent category of responses (18.7% of overall responses). Of the function words, general function words comprised the most frequent response (58.7%), followed by uses-with (21.7%), uses-when (14.7%) and uses-who (4.9%). Regarding general usage words, no particular response predominated. Rather, there was an assortment of relatively evenly distributed responses (steam(ed), stir fry, boil(ed), etc.). Examples of words in these categories include 'salad', 'baked', 'steamed', 'butter', 'peas', 'dinner', 'summer' and 'French cooking'. Words naming the product ('bean(s)') comprised the next most frequent category of responses (6.4% of overall responses). Responses identifying the different varieties of beans accounted for 5.8% of overall responses. Examples of words in this category include 'stringless' 'French (beans)' 'kidney', 'runner', 'broad' and 'climbers'. Words dealing with various aspects of the growth of beans accounted for 5.1% of overall responses. Words such as 'vine', 'bush', 'easy to grow', 'fence' and 'earth' appeared in this category. Other response categories each made up 5% or less of the overall responses, signifying that words in these categories were not generally associated with the product.

Overall View of Beans

Beans received an overall favourability rating of 65.9%, placing them sixth (out of ten vegetables) in terms of likeability. In summary, it can be stated that, while approximately half of the taste words were positive and half negative, indicating that consumers were divided in their ideas regarding this aspect of beans, words pertaining to overall uses of beans were frequent (18.7% of overall words), indicating that the extreme versatility of beans might be favourably viewed by consumers. Other themes commonly associated with beans include their many varieties and aspects of their growth.

7.2.12 Broccoli



* specific reference to mode of presentation
 † association to previous word

Figure 7.18: Network Analysis - Broccoli

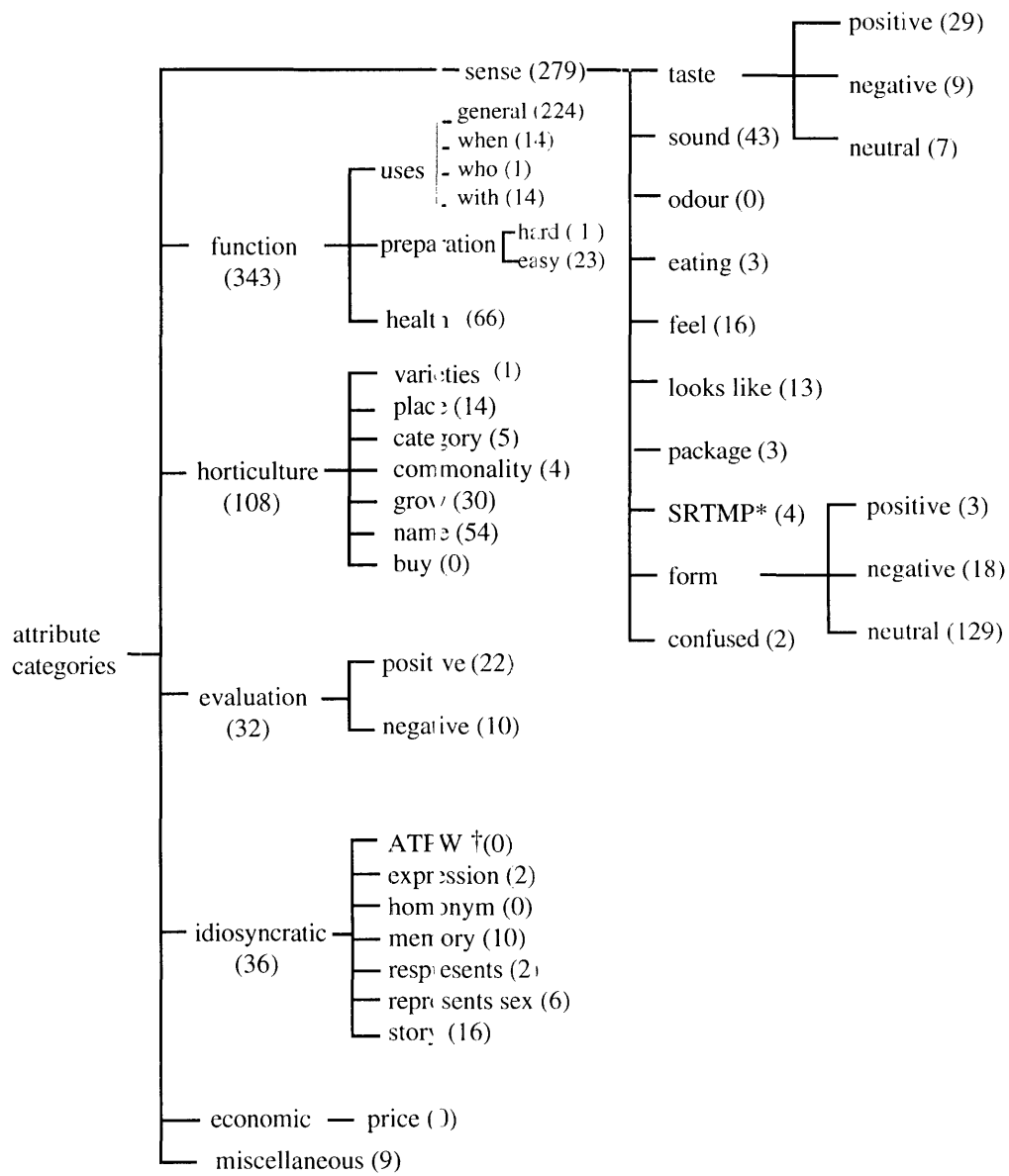
Network Description

The salient features of the categorisation network for broccoli responses can best be seen by an inspection of Figure 7.18: Network Analysis - Broccoli. Words describing some aspect of the function of broccoli comprised the most frequent response (20%). Of the function words, general function words comprised the most frequent response (47%), followed by uses-with (30.7%), uses-who (12%) and uses-when (11.7%). Regarding general usage words, no particular response predominated. Rather, there was an assortment of relatively evenly distributed responses (steamed, stir fry, boil(ed), etc.). Words describing some aspect of the form, or appearance of broccoli comprised the next most frequent response (18.3% of total broccoli words). Of the total form words, neutral words predominated (89%), with considerably less positively-toned words (5.9%), and approximately the same number of negative words (5.1%). Of the neutral words, words relating to the colour of broccoli predominated, accounting for 72.7% of the total. The 'looks like' category, which was comprised of words noting the similarities between the shape of the picture and some other object, such as 'trees', 'flower', 'a martian needing a haircut and viewed from above' and 'looks like a dog's body', accounted for 10.9% of overall broccoli words. This is the only fruit or vegetable in which this category accounted for more than 5% of overall responses, indicating that the appearance of broccoli is capable of capturing high imagery responses. Some examples of responses in this category include 'tree(s)', 'forest', 'bush', 'flower', 'jungle', 'hair', 'rain forest' and 'volcano'. Words describing some aspect of the healthiness of broccoli comprised the fourth most frequent set of responses (8.3%). Some examples of words in this category include 'health(y)', 'vitamins', 'iron' and 'good for you'. The fifth most frequent category was the one in which consumers simply named the product (6.5%). Finally, responses dealing with the taste of broccoli comprised 12.4% of overall responses. Of these, positively- and negatively-toned responses both accounted for approximately the same percentage of responses (46.7 and 45.7%, respectively). Neutrally-toned taste words accounted for only 7.6 of the overall taste responses. Some examples of positive words include 'tasty', 'yum(my)', 'delicious' and 'nice'. Some negative taste words were 'yuck', 'tasteless', 'disgusting' and 'don't like'. These strongly-worded mixed responses highlight the fact that consumers either love or hate broccoli. Other response categories each made up 5% or less of the overall responses, signifying that words in these categories were not generally associated with the product.

Overall View of Broccoli

Broccoli received an overall favourability rating of 62.8%, placing it at the bottom end of this scale along with cauliflower (which received a favourability rating of 62.2%). In summary, it can be stated that, while approximately half of the taste words were positive and half negative, indicating that consumers are divided in their ideas regarding this aspect of the product, the high number of health-related words lends support to the claim that broccoli is eaten for reasons other than the taste. Consumers consider broccoli to be an extremely healthy product, and its interesting shape may also be partially responsible for the positive responses received for this vegetable. Words relating to the form, or appearance of the product accounted for 29.2% of overall responses (if the 'appearance' and 'looks like' categories are merged). Finally, overall uses of the product were frequently mentioned, indicating that, along with the healthiness and peculiar shape of broccoli, its extreme versatility may contribute to consumers' positive view of this product.

7.2.13 Carrots



* specific reference to mode of presentation

† association to previous word

Figure 7.19: Network Analysis - Carrots

Network Description

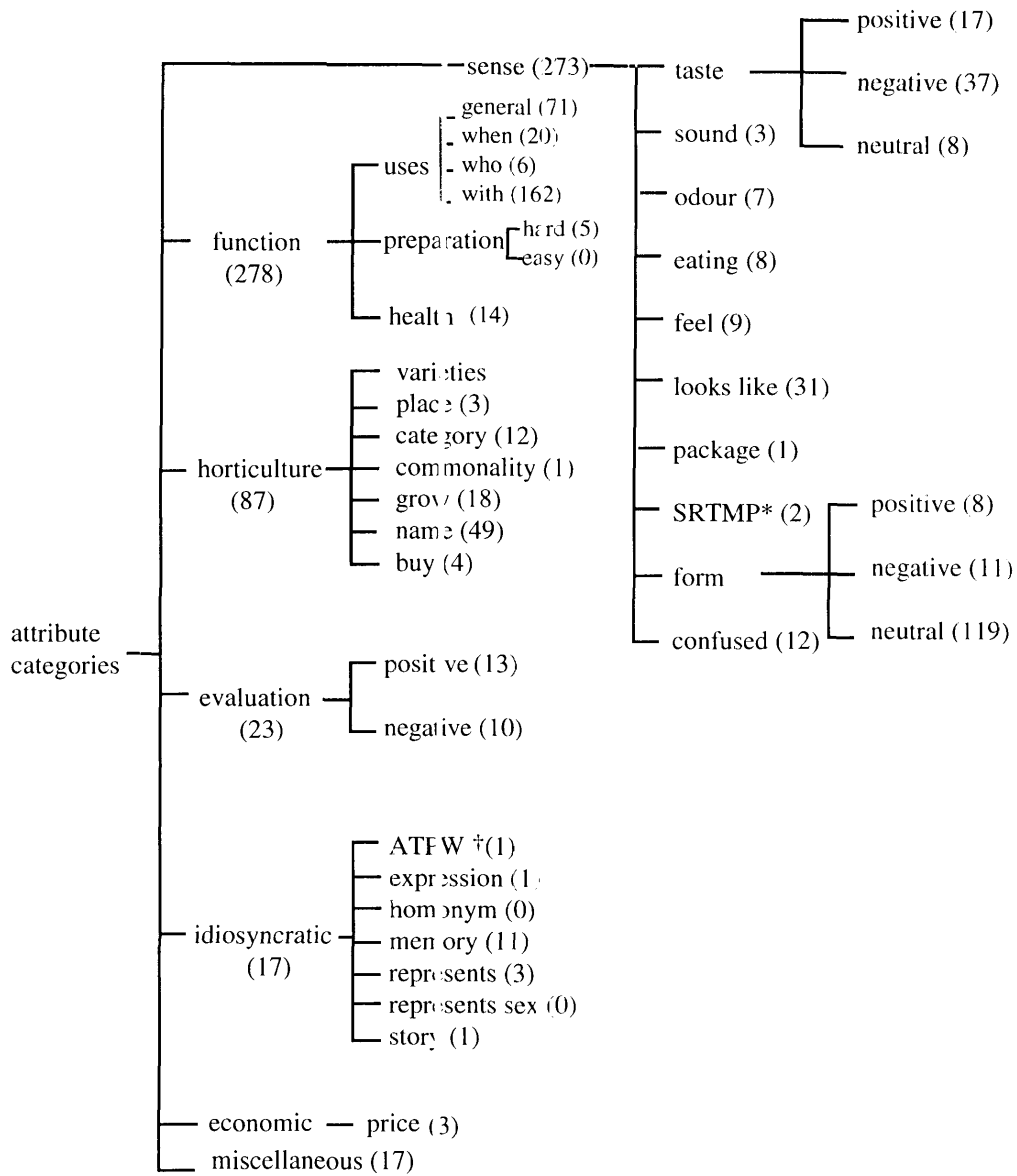
The conspicuous features of the categorisation network for carrot responses can best be seen by an inspection of Figure 7.19: Network Analysis - Carrots.

Function, or use words comprised the most frequent category of responses (31.4% of overall responses). Of the function words, general function words comprised the most frequent response (88.5%), followed by uses - when and uses-with (5.5%) and uses-who (<1%). Some examples of words in these categories include 'rabbit(s)', 'salad', 'cake', 'dinner', 'cheese' and 'dressing'. Words describing some aspect of the form or appearance of carrots comprised the second most frequent response (18.6% of total carrot words). Of the total form words, neutral words predominated (86%), with considerably less negatively-toned words (12%), and still fewer positive words (2%). Examples of appearance(s) words include 'orange', 'long', 'fresh', 'raw', 'limp', 'colourful' and 'good shape'. Words relating to the healthiness of carrots were well represented (8.2% of overall carrot responses). Examples include 'eyes', 'vitamin A', 'healthy', 'carotene' and 'eyesight'. Words naming the product ('carrot(s)') comprised the next most frequent category of responses (6.7% of overall responses). Finally, responses dealing with the sound that carrots make when being eaten comprised 5.3% of overall responses. Examples include 'crunch(y)' and 'crisp(y)'. Other response categories each made up 5% or less of the overall responses, signifying that words in these categories were not generally associated with the product.

Overall View of Carrots

Carrots received an overall favourability rating of 67.8%, placing them fourth (out of ten vegetables) in terms of likeability. In summary, it can be stated that carrots are perceived to be an extremely useful product. Their general appearance or form is also important to consumers. Interestingly, the health-related aspects of consuming carrots are also evident in consumers' minds, indicating that consumers consider the notion that carrots are healthy to be an important consideration. Finally, raw carrots are perceived to have a unique (crunchy) sound associated with consumption.

7.2.14 Cauliflower



* specific reference to mode of presentation
 † association to previous word

Figure 7.20: Network Analysis - Cauliflower

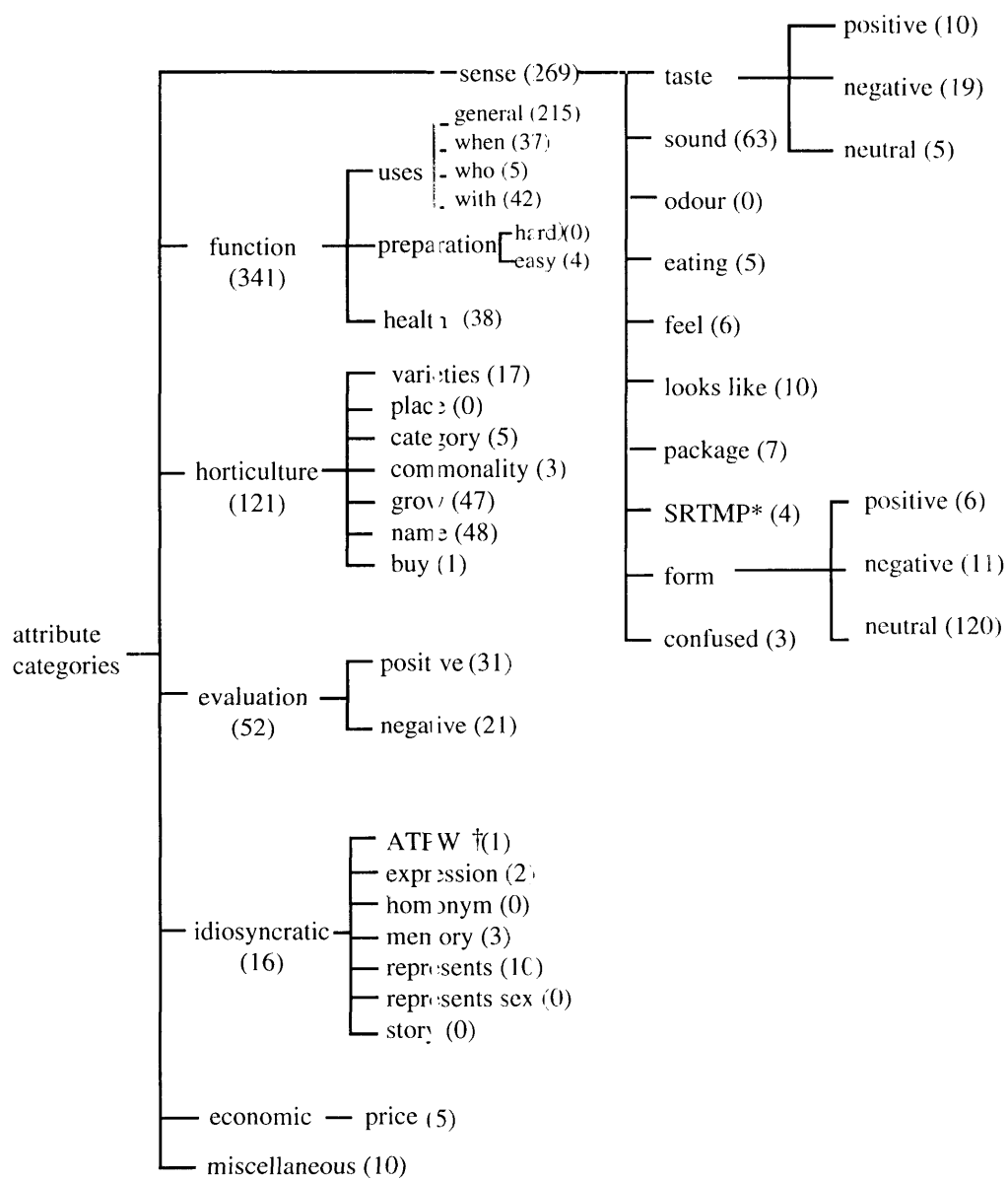
Network Description

The salient features of the categorization network for cauliflower can best be seen by an inspection of Figure 7.2): Network Analysis - Cauliflower. Words describing some aspect of the uses or function of cauliflower comprised the most frequent category of responses (37.1% of overall responses). Uses - with comprised the most frequent response (62.5%), followed by uses - general (27.4%), uses-when (7.7%) and uses-who (2.3%). Regarding words dealing with the notion of cauliflower being consumed with something else (uses - with), most responses referred to the fact that cauliflower with sauces (white or cheese) is popular (85.9% of uses - with words). Examples of words in the other use categories include 'boiled', 'soup', 'steam(ed)', 'salad', 'winter', 'dinner' and 'Chinese food'. Words alluding to some aspect of the form or appearance of cauliflower comprised the second most frequent response (19.8% of total cauliflower words). Of the total form words, neutral words predominated (86.2%), with considerably less negatively-toned words (8%), and still fewer positive words (5.8%). Examples of words in these categories include 'white', 'fresh', 'flower', 'raw', 'mould', 'beautiful', 'nice fresh one' and 'nicely dressed'. Words naming the product ('cauliflower(s)') comprised 7% of overall responses. Finally, responses dealing with the taste of cauliflower comprised 8.9% of overall responses. Of these, negatively-toned responses accounted for 59.7% of responses. This was followed by positively-toned taste words (27.4%) and neutrally-toned taste words (1.3%). Examples of words in these categories include 'yuk', 'tasteless', 'yuck', 'awful', 'yum(my)', 'delicious' and 'bland'. Other response categories each made up 5% or less of the overall responses, signifying that words in these categories were not generally associated with the product.

Overall View of Cauliflower

In summary, it can be stated that cauliflower is considered to be a product that is most commonly eaten in conjunction with something else. Most notably, cauliflower with various sauces were very common responses. The form of cauliflower is also evident in consumers minds. Finally, cauliflower is generally considered to be an unpleasant tasting vegetable (59.7% of taste words were negative in tone). Cauliflower received a favourability rating of 62.2/100, making it the least favourable vegetable amongst the ten considered.

7.2.15 Lettuce



* specific reference to mode of presentation

† association to previous word

Figure 7.21: Network Analysis - Lettuce

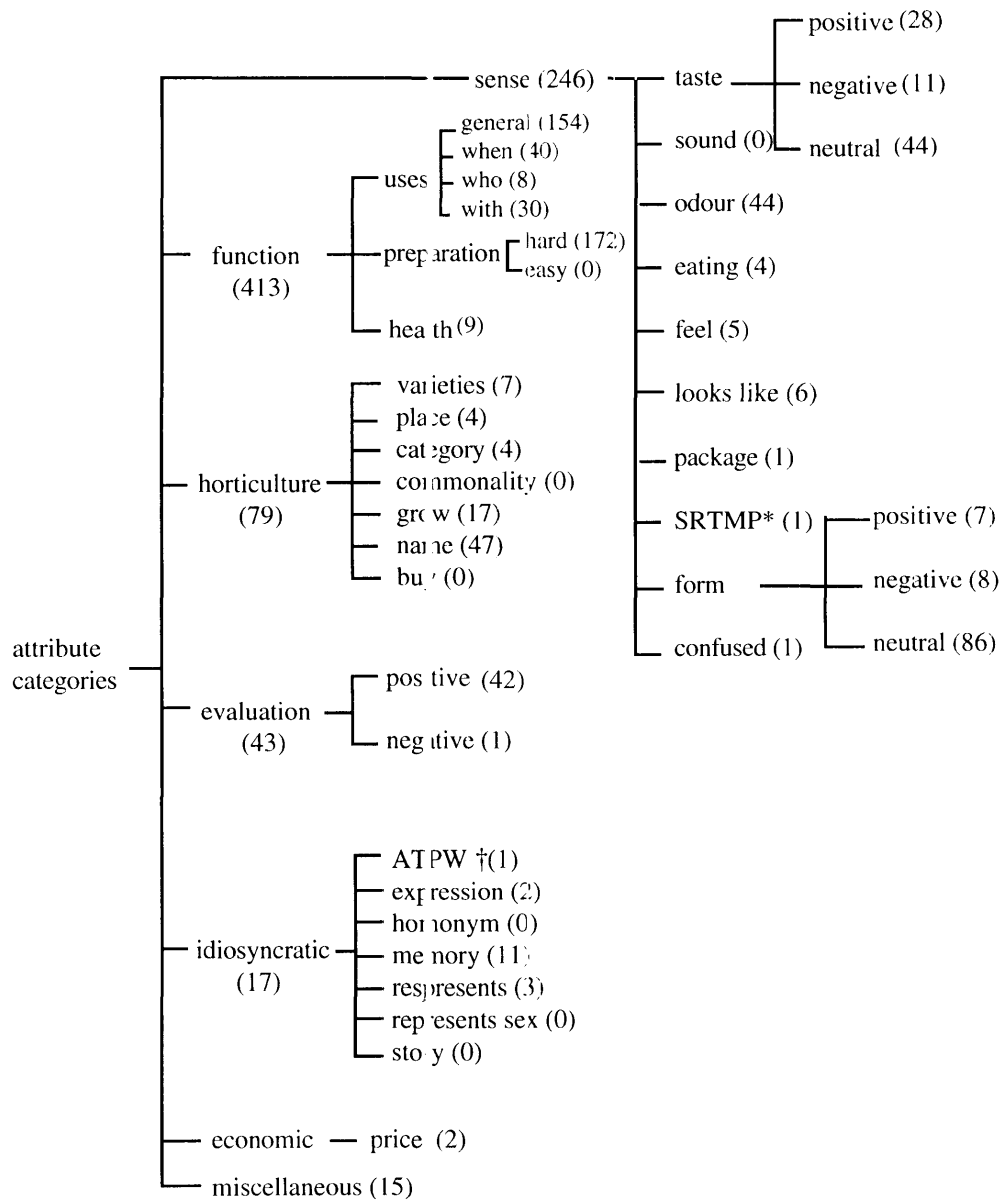
Network Description

Inspection of Figure 7.21: Network Analysis - Lettuce reveals that words describing the various uses, or functions of the product comprised the most frequent response (36.7% of total lettuce words). Of the total function words, general uses predominated (71.9% of function words), followed by uses - with (14%), uses - when (12.4%), and uses - who (1.7%). Examples of responses in these categories include the words 'salad(s)', 'sandwich(es)', 'rabbit(s)', 'tomato', 'dressing', 'summer', 'barbecue(s)', 'Chinese friends' and 'western food'. The next most frequent category of responses described some feature of the appearance of lettuce (16.8 of total lettuce words). Of these words, neutrally-toned words predominated (87.6% of total appearance or form words), followed by significantly fewer negative form words (8%), and approximately half as many positively-toned words (4.4%). Examples of words in these categories include 'green', 'fresh', 'head', 'leaf(ves)', 'light', 'colourful' and 'nice fresh one'. Responses associated with the sound that lettuce makes when being consumed comprised the third most frequent category of responses (7.7%). Examples of these words include 'crisp(y)' and 'crunch(y)'. Words that tended to generally evaluate lettuce (either positively or negatively) comprised 6.4% of overall responses. Positive evaluations predominated (59.6%), with fewer negative evaluations occurring (40.4%). Examples of responses in these categories include 'filling', 'refreshing', 'versatile', 'boring' and 'non filling'. Responses naming the product (for example, 'lettuce' and 'a lettuce') accounted for 5.9% of responses. Finally, words describing some aspect of the growth of lettuce accounted for 5.8% of responses. Some examples include 'snails', 'garden', 'slugs', 'bugs', 'grubs', 'vegie garden' and 'prefer home-grown'.

Overall View of Lettuce

In summary, it is immediately apparent that lettuces are associated with many and varied uses. Also, their form or appearance interests consumers. Interestingly, the sound that lettuce make when being eaten, and matters related to their growth are also evident in consumers' minds. Lettuce received a favourability rating of 66.2/100, making them the fifth most popular vegetable canvassed. This generally tallies with the responses dealing with evaluations and taste of lettuce, which were neither overwhelmingly positive nor negative.

7.2.16 Onions



* specific reference to mode of presentation

† association to previous word

Figure 7.22: Network Analysis - Onions

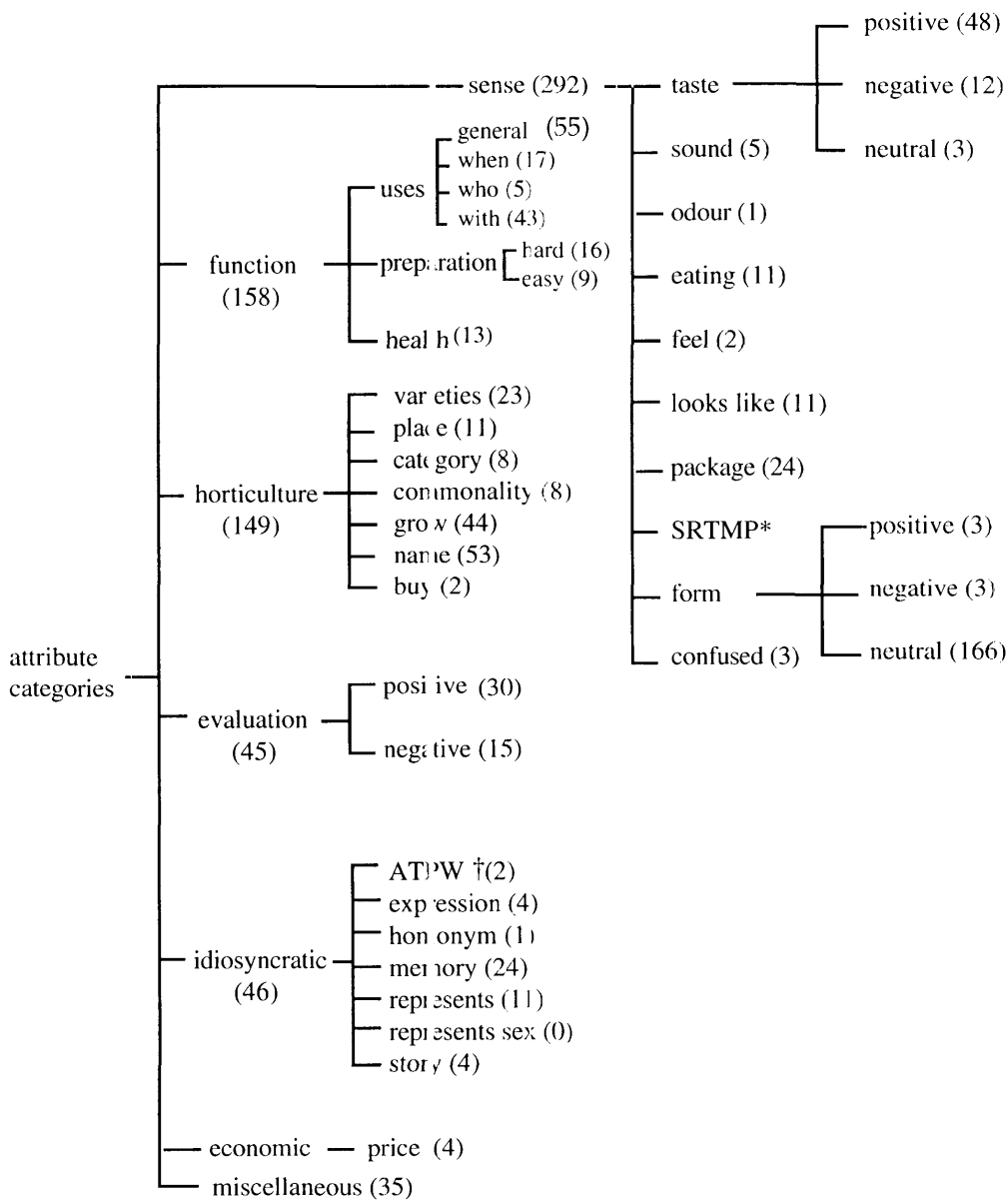
Network Description

Inspection of Figure 7.22: Network Analysis - Onions reveals that words describing the various uses, or functions of the product comprised the most frequent response (28.5% of total onion words). Of the total function words, general uses predominated (66.4% of function words), followed by uses - when (17.3%), uses - with (12.9%), and uses - who (3.4%). Examples of responses in these categories include the words 'fried', 'hamburgers', 'casseroles', 'barbecues', 'steak', and 'Italian'. Words alluding to the difficulty in preparation of this product were the next most common responses (21.1% of total onion words). Words in this category referred primarily to the fact that onions cause the eyes to water and sting. Some examples include 'tears', 'cry', 'watery eyes', 'sting', and 'sore eyes'. The next most frequent category of responses described some feature of the appearance of onions (12.4% of total onion words). Of these words, neutrally-toned words predominated (85.1% of total appearance or form words), followed by significantly fewer negative form words (7.8%), and approximately the same number of positively-toned words (6.8%). Responses associated with the taste of onions comprised the fourth most frequent category of responses (10.1%). Again, neutrally-toned taste words predominated (53%), followed by words describing some positive aspect of the taste of onions (33.7%). Negatively-toned words comprised only 13.2% of the overall taste words. Finally, words that tended to generally evaluate onions (either positively or negatively) comprised 5.3% of overall responses. Positive evaluations overwhelmingly predominated (97.7%), with only one negative evaluation occurring (2.3%).

Overall View of Onions

Onions received a favourability rating of 66.6%. In summary, it is immediately apparent that onions are associated with positive evaluations in the minds of our sample. Positive responses included 'couldn't live without onions', 'essential for cooking', 'fundamental', 'good healthy vege', 'great', 'versatile', 'flavoursome', 'great tasting', and 'great for casseroles'. The most obvious area of concern in terms of consumer perceptions of onions relates to the notion that onions are difficult to prepare, primarily due to their tendency to cause consumers' eyes to water and sting.

7.2.17 Peas



* specific reference to mode of presentation
 † association to previous word

Figure 7.23: Network Analysis - Peas

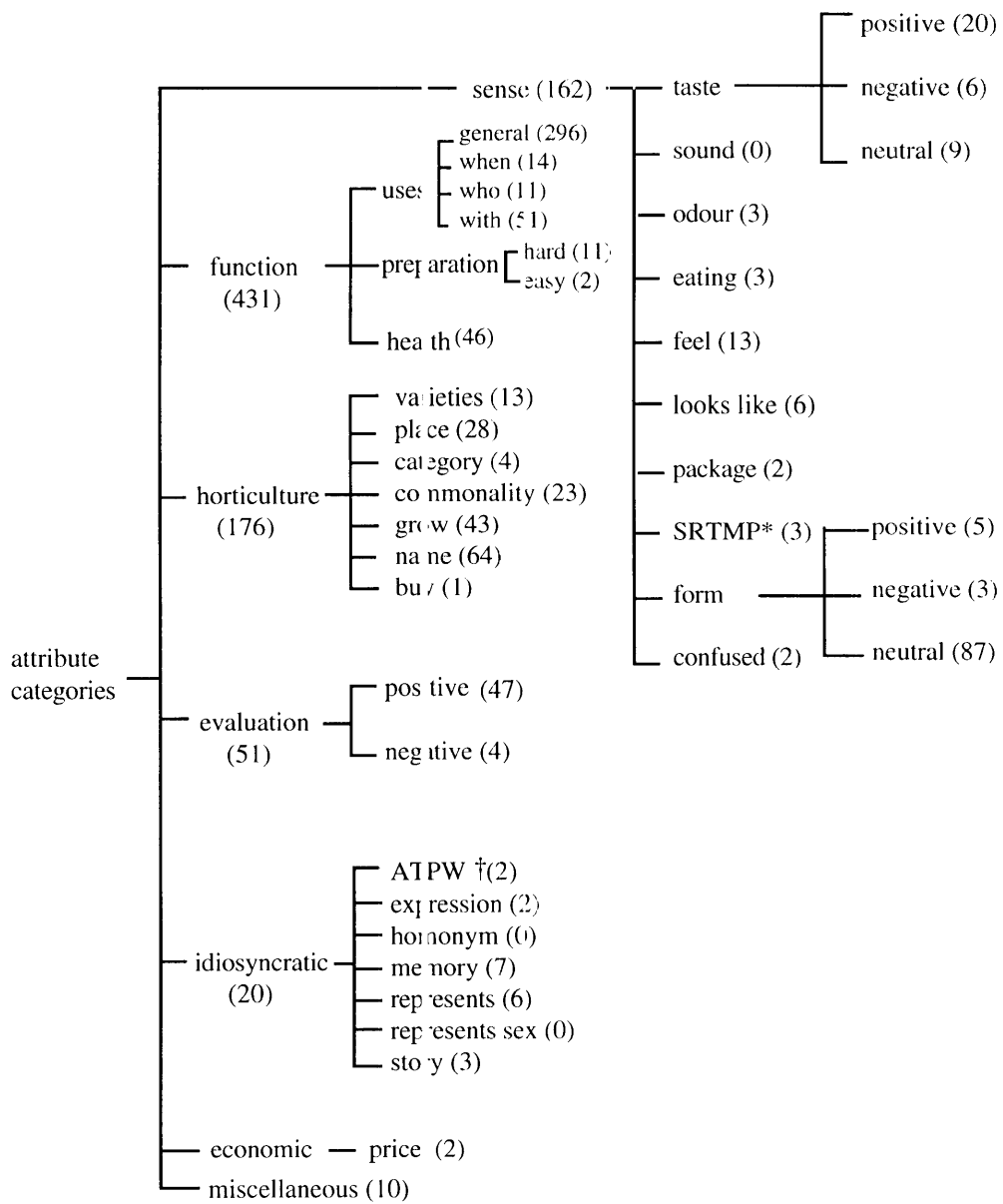
Network Description

Inspection of Figure 7.23: Network Analysis - Peas reveals that words alluding to some aspect of the form, or appearance of peas comprised the most frequent response (23.6% of total peas words). Of the total form words, neutral words predominated (96.5%), with considerably less negatively- and positively toned words (1.7 each %). Examples of words in these categories include 'green', 'fresh', 'pod(s)', 'green is nice' and 'poor specimen'. Words describing some aspect of the uses, or function of peas comprised the next most frequent category of responses (16.5% of overall responses). Uses - general comprised the most frequent response (45.8%), followed by uses - with (35.8%), uses - when (14.2%) and uses - who (4.2%). Examples of words in this category include 'soup', 'stir fry', 'beans', 'mint', 'dinner', 'summer', 'Chinese dish' and 'Chinese food'. Words naming the product ('peas(s)') comprised 7.3% of overall responses. Responses dealing with the taste of peas comprised 8.6% of overall responses. Of these, positively-toned responses accounted for 76.2% of responses. This was followed by negatively-toned taste words (19%) and neutrally-toned taste words (4.8%). Examples of words in these categories include 'sweet', 'tasty', 'yum(my)', 'yuk' and 'sharp taste'. Positive and negative evaluations together accounted for 6.2% of overall responses (66.7% were positive, whilst 33.3% were negatively toned). Examples include 'decorative', 'delicious raw', 'essential', 'fun to chase around the plate', 'boring', 'difficult to eat' and 'no guarantee of flavour'. Responses dealing with some aspect of the growth of peas comprised 6% of overall responses. Examples include 'grubs', 'home grown', 'picking', 'vines', 'bush(es)', 'easy to grow', 'garden produce' and 'organically grown?'. Other response categories each made up 5% or less of the overall responses, signifying that words in these categories were generally not associated with the product.

Overall View of Peas

In summary, it is apparent that peas are considered to be useful in a variety of dishes, with function words accounting for 16.5% of overall responses. However, given a favourability rating of 68.99, which makes peas the third most favourable out of a total of ten vegetables (the lowest scoring vegetable was cauliflower at 62/100, and potatoes scored highest at 80/100, showing that peas rate closer to the lower end of the scale than the higher), coupled with the equal positive and negative evaluations of peas, it can be assumed that peas are liked to only a moderate degree by this sample of respondents.

7.2.18 Potatoes



* specific reference to mode of presentation

† association to previous word

Figure 7.24: Network Analysis - Potatoes

Network Description

Inspection of Figure 7.24: Network Analysis - Potatoes reveals that words describing the various uses, or functions of the product, comprised the most frequent response (43.7% of total potato words). Of the total function words, general uses predominated (79.6% of function words), followed by uses - with (13.7%), uses - when (3.8%), and uses - who (3%). Examples of responses in these categories include the words 'chips', 'mashed', 'baked', 'sour cream', 'butter', 'dinner', 'Irish' and 'student staple'. The next most frequent category of responses described some feature of the appearance of potatoes (11.2% of total potato words). Of these words, neutrally-toned words predominated (91.6% of total appearance or form words), followed by significantly fewer positive form words (5.3%), and approximately half as many negatively-toned words (3.2%). Examples of words relating to the appearance of potatoes include 'brushed', 'knobbly', 'large' and 'skin'. Words naming the product (including potato(es), spuds, Murphys, etc.) comprised the next most frequent category of responses (7.5% of overall potato words). Words that tended to generally evaluate potatoes (either positively or negatively) comprised 6% of overall responses. Positive evaluations overwhelmingly predominated (92.3%), with only four negative evaluations occurring (7.8%). Examples of positive evaluations include 'versatile', 'filling', 'good', 'good old potato', 'favourite' and 'essential'. Words describing the healthiness of potatoes were reasonably well represented (5.4% of total potato responses). Some examples include 'carbohydrates', 'nutritious', 'fattening' and 'fibre'. Finally, words that alluded to the production (growth) of potatoes comprised 5.1% of overall potato responses. Some examples include 'ground', 'grown underground', 'hill them or go green' and 'digging'. Other response categories represented less than 5% of overall potato words, and are not discussed further here.

Overall View of Potatoes

In summary, an interesting and rather unique pattern emerged regarding the themes that are generally associated with potatoes. Firstly, it is immediately apparent that potatoes are very positively evaluated by the majority of the sample. Overall, potatoes received a very high favourability rating of 79.48/100, making it the most favourable of the ten vegetables investigated. This finding indicates that most people interviewed considered potatoes in an extremely positive light. Positive responses derived from the word association test

included 'yum', 'delicious', 'great veggie', 'great accompaniment', 'not a meal without a potato' and 'eat daily'. Secondly, almost half of the overall potato responses were categorised as dealing with some aspect of the uses, or various functions of the product (43.7%). This indicates quite strongly that the functions of potatoes are evident in consumer's minds when they view a potato.

Obviously, potatoes are considered to be a very versatile product.

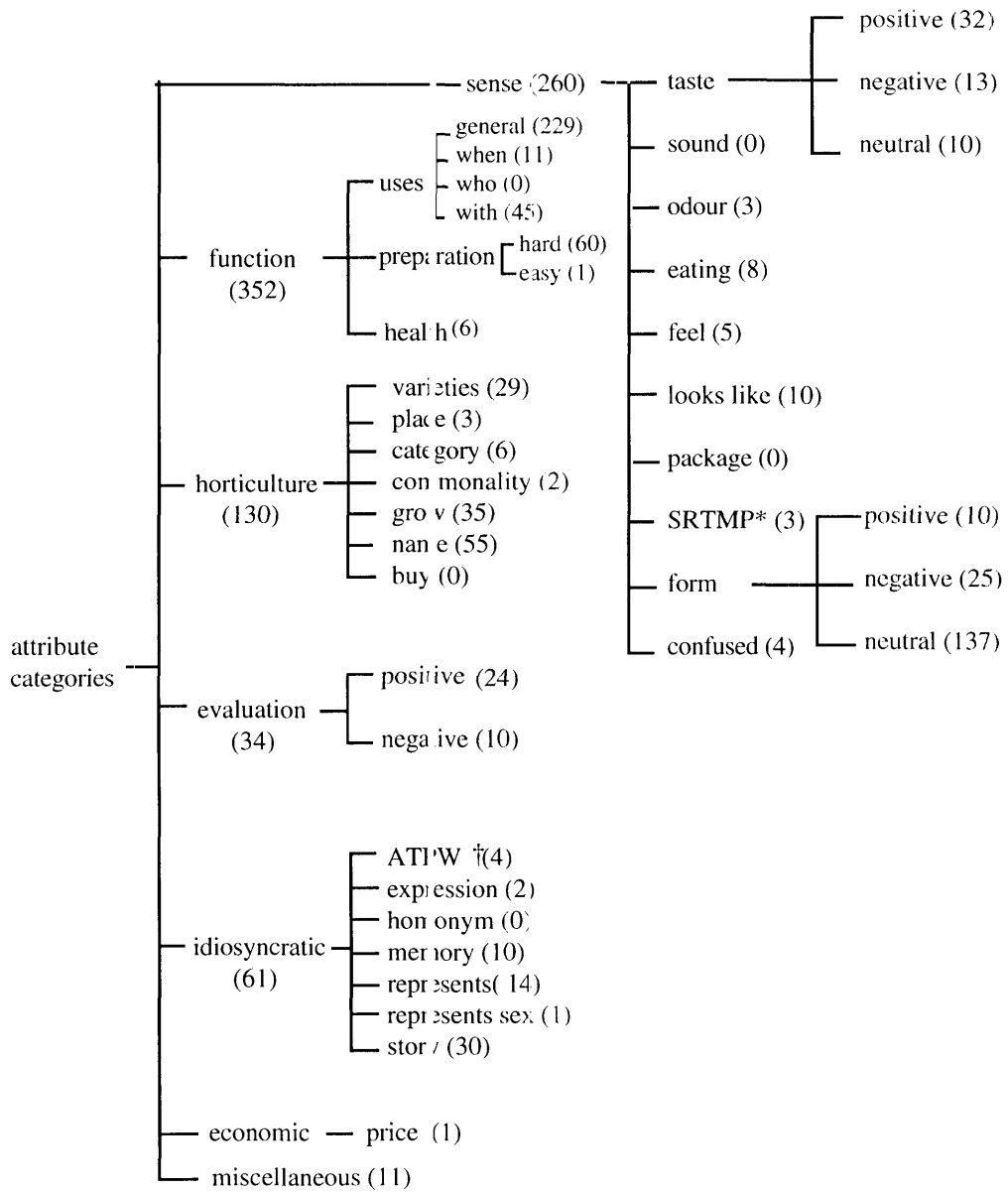
The considerably fewer associations describing some aspect of the form, or appearance of potatoes (only 11.2% of overall responses) can be interpreted as meaning that the appearance of the potato is of much less importance to consumers. Responses in the form, or appearance category tended to point to the fact that our potato photo showed an unbrushed potato (with some dirt evident, much as the unwashed potatoes in most retail outlets look).

Consumers did not necessarily make negative comments about the presence of dirt on the potato, rather they tended to note that the potato was unwashed.

Some examples of typical comments made include 'dirty', 'mud' and 'brown'. It is interesting to note that the third highest category of responses included various words naming the product (7.5% of overall potato responses).

Examples of responses in this category included 'potato', 'spud', 'Murphys', 'tato' and 'tatties'. It is also clear that consumers are aware of the healthiness of potatoes (5.4%) and that they evaluate potatoes positively (5.52% of overall potato responses).

7.2.19 Pumpkin



* specific reference to mode of presentation

† association to previous word

Figure 7.25: Network Analysis - Pumpkin

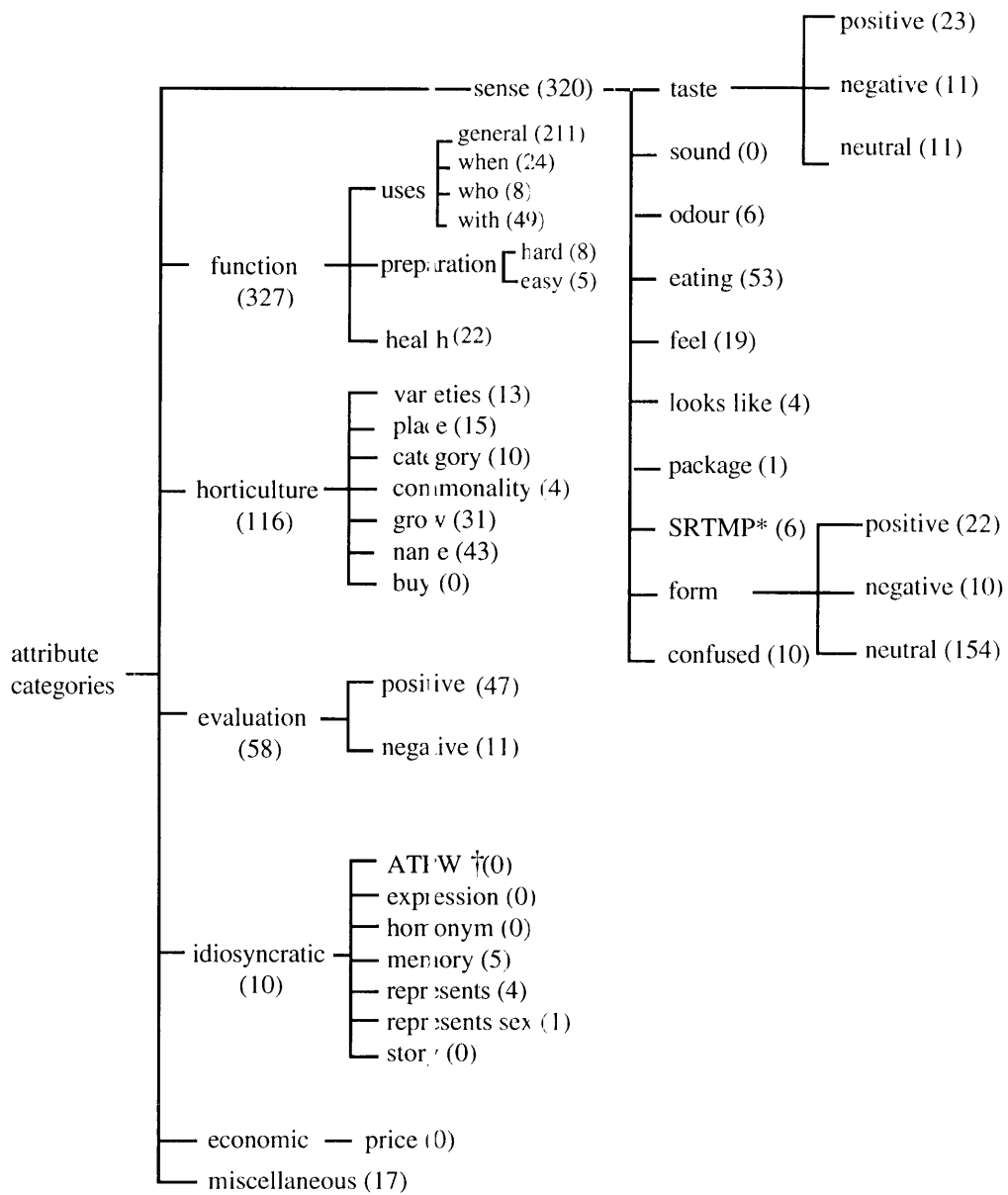
Network Description

Inspection of Figure 7.25: Network Analysis - Pumpkin reveals that words describing the various uses, or functions of the product, comprised the most frequent response (33.6% of total pumpkin words). Of the total function words, general uses predominated (80.4% of function words), followed by uses - with (15.8%), and uses - when (3.9%). Examples of responses in these categories include the words 'soup', 'baked', 'scones', 'mashed', 'roast', 'pie' and 'baked dinner(s)'. The next most frequent category of responses described some feature of the appearance of pumpkin (20.3% of total pumpkin words). Of these words, neutrally-toned words predominated (79.7% of total appearance or form words), followed by significantly fewer negative form words (14.5%), and still fewer positively-toned words (5.8%). Examples of words relating to the appearance of pumpkins include 'seeds', 'orange', 'yellow', 'dry', and 'beautiful'. Words alluding to the difficulty in preparation of this product were the next most common responses (7.2% of total pumpkin words). Words in this category referred primarily to the fact that pumpkins were hard to cut into and peel. Some examples include 'hard', 'hard to cut', 'tough', 'hard skin', 'hard to peel' and 'awkward'. Finally, 6.5% of overall pumpkin responses referred to the name of the product (pumpkin, pumpkin, e.g.).

Overall View of Pumpkins

In summary, it is apparent that general uses and uses with particular products (for example, scones, soup, baked, potato, butter, baked dinner(s) are important associations in consumers' minds. Also relevant is the shape and colour of pumpkins (evidenced by such words as 'corrugated', 'gold', 'many seeds', 'yellow', 'orange', 'large' and 'golden'. Consumers also consider pumpkins hard to prepare, and pumpkins are associated with stories, such as Halloween and Cinderella. A favourability rating of 65.8% was given to this product, making pumpkin the sixth most popular vegetable (out of a total of ten vegetables examined. Lettuce and beans also received approximately 66% favourability).

7.2.20 Tomatoes



* specific reference to mode of presentation

† association to previous word

Figure 7.26: Network Analysis - Tomatoes

Network Description

Inspection of Figure 7.26: Network Analysis - Tomatoes reveals that words describing the various uses, or functions of the product, comprised the most frequent response (34% of total tomato words). Of the total function words, general uses predominated (72.3% of function words), followed by uses - with (16.8%), uses - when (8.2%), and uses - who (2.7%). Examples of responses in these categories include the words 'salad(s)', 'soup', 'sauce', 'sandwich(es)', 'spaghetti', 'summer' and 'Italian(s)'. The next most frequent category of responses described some feature of the appearance of tomatoes (21.7% of total tomato words). Of these words, neutrally-toned words predominated (82.8% of total appearance or form words), followed by significantly fewer positive form words (11.8%), and approximately half as many negatively-toned words (5.4%). Examples of words relating to the appearance of tomatoes include 'red', 'seeds', 'round', 'ripe', 'can have a hard skin' and 'blemish(es)'. Words describing some aspect of the feel of tomatoes while being eaten comprised 6.2% of overall tomato words. Some examples of words in this category are 'juicy', 'squishy', 'mushy' and 'drippy'. Words that tended to generally evaluate tomatoes (either positively or negatively) comprised 6.8% of overall responses. Positive evaluations overwhelmingly predominated (81%), with relatively few negative evaluations occurring (19%). Examples of positive evaluations include 'versatile', 'perfect', 'beautiful', 'good to eat' and 'great in salads'. Finally, words naming the product comprised the next most frequent category of responses (5% of overall tomato words).

Overall View of Tomatoes

In summary, an interesting pattern emerged regarding the themes that are generally associated with tomatoes. Firstly, it is immediately apparent that tomatoes are very positively evaluated by the majority of the sample. Overall, tomatoes received a very high favourability rating of 74.1/100, making them the second most popular vegetable out of the ten investigated. This finding indicates that most people interviewed considered tomatoes in an extremely positive light. Positive responses derived from the word association test included 'rich in colour', 'perfection', 'every day', 'fabulous food', 'perfect' and 'fabulous food'.

Secondly, 34% of responses were categorised as dealing with some aspect of the uses, or various functions of the product. This indicates quite strongly that the functions of tomatoes are evident in consumers' minds when they view a tomato. Obviously, tomatoes are considered to be a very versatile product.

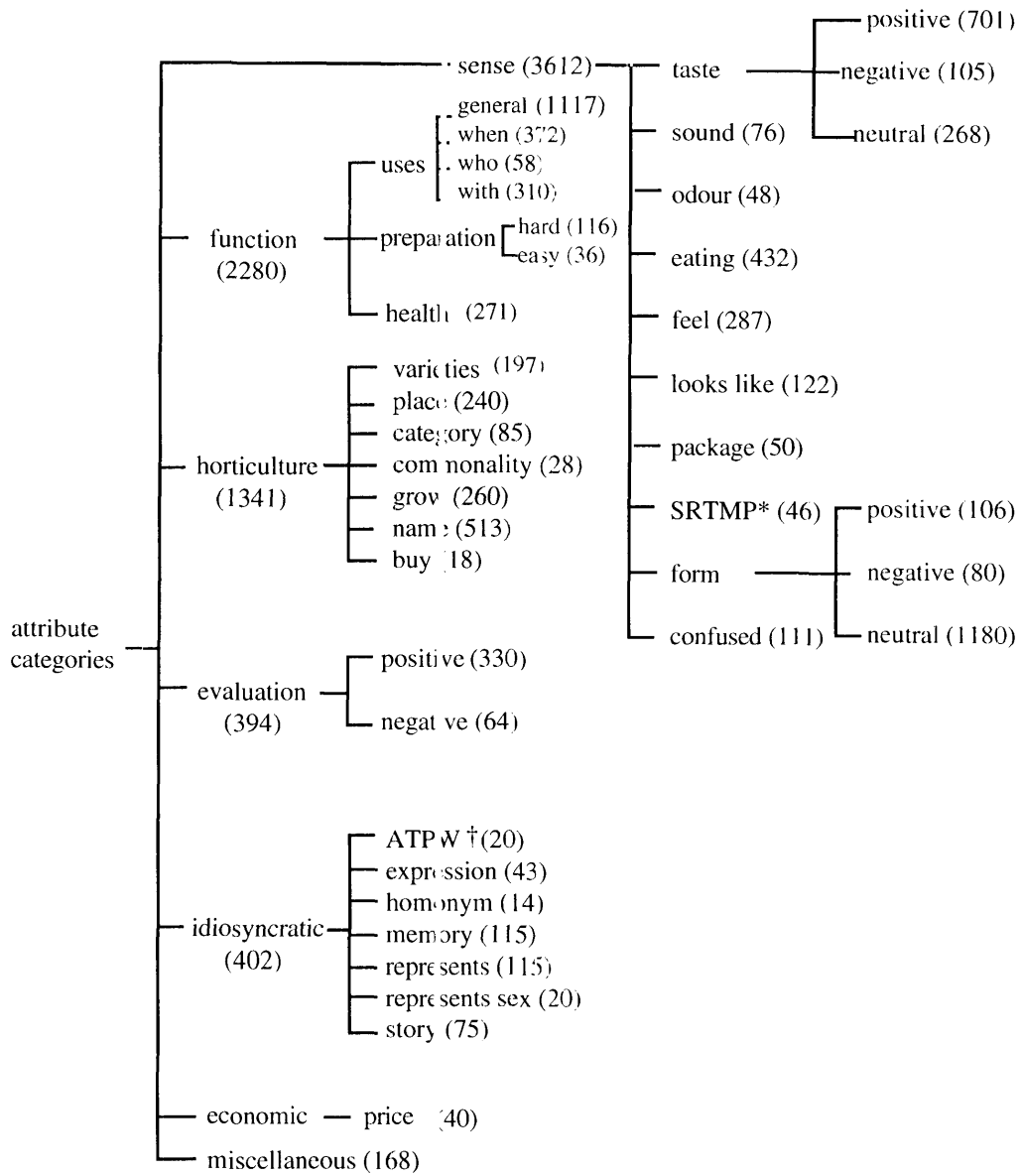
It is interesting to note that the third highest category of responses included various aspects of the eating experience. The texture, or feel of tomatoes as they are being consumed, is considered to be a salient attribute of this product.

7.3 Network Analyses for Fruits, as a Group, and Vegetables, as a Group

The responses relating to all ten fruits were collapsed into one dataset for the purposes of performing further statistical analyses on the categorisation data. The same was done for the ten vegetables used. This provided a global profile of categories of consumer perceptions of commonly consumed fruits, on the one hand, and vegetables, on the other.

A diagram of the network that developed from the responses for fruit and vegetables appears as Figures 7.27 and 7.28.

7.3.1 All Fruits



* specific reference to mode of presentation
 † association to previous word

Figure 7.27: Network Analysis - All Fruits

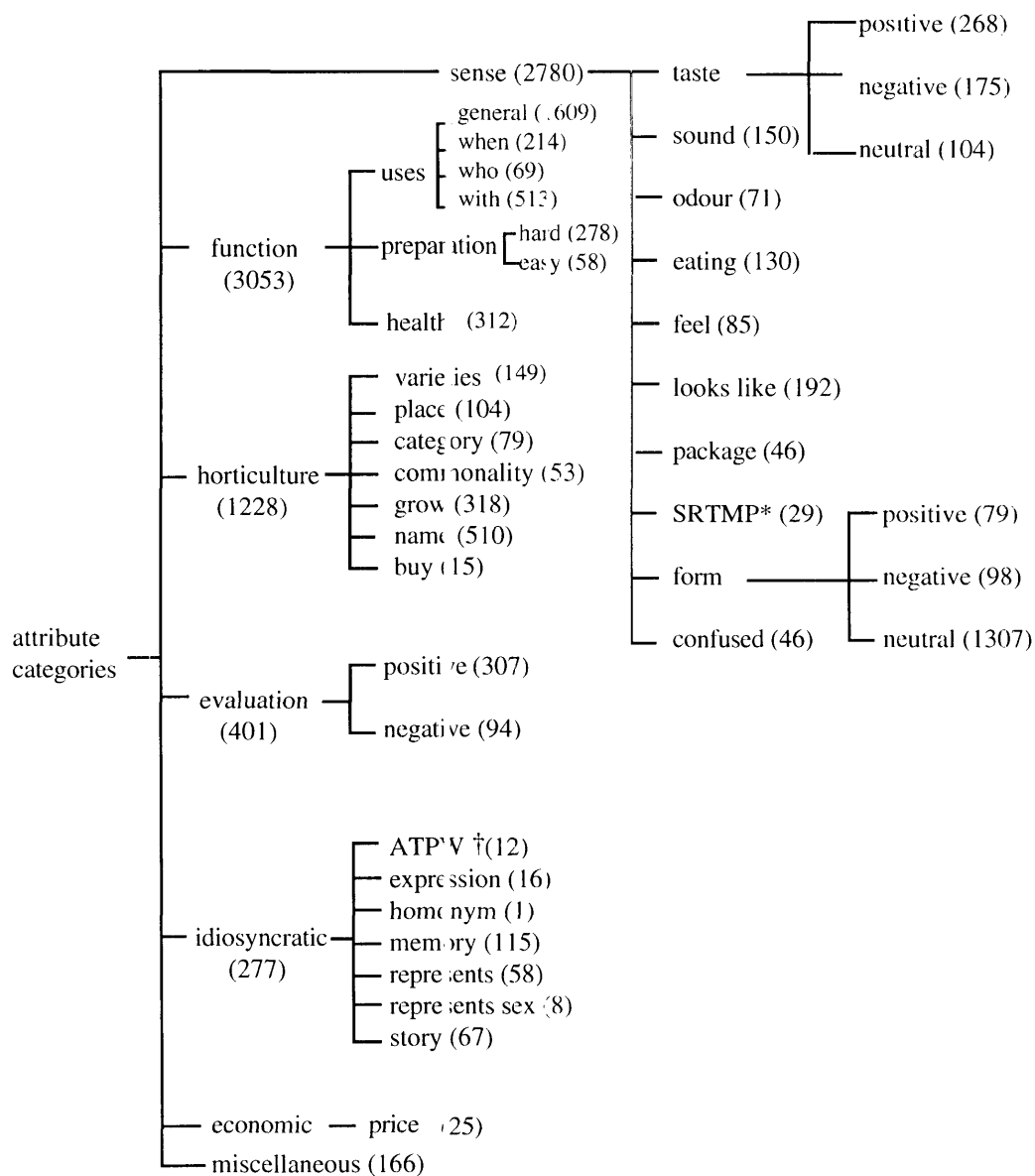
Network Description

Inspection of the All Fruit Frequency Breakdown (Figure 7.27) reveals that the most frequent category of responses included words describing the function of fruit (22.5% of total fruit words). Of the total function words, general uses predominated (60.2% of function words), followed by uses - when (20%), uses - with (16.7%), and uses - who (3.1%). The next most frequent category of responses included words describing the appearance of fruit (16.6% of total fruit words). Of these words, neutrally-toned words predominated (86.4% of total appearance or form words), followed by significantly fewer positive form words (7.8%), and fewer negatively-toned words (5.9%). It is interesting to note that the third highest category of responses related to the taste of fruit (13% of overall fruit responses), indicating that the taste of fruit is an important feature of the product. Responses naming the product accounted for 6.2% of overall responses. The next most frequency category of responses related to the eating experience (5.2% of responses). Responses that positively evaluated fruits accounted for 4% of overall responses. An average favourability rating of 71.9/100 was given to fruit.

Overall View of Fruit

In summary, the function of fruit was evident in consumers' minds when viewing various pieces of fruit, accounting for almost one-quarter of overall responses. The form, or appearance of fruit was the next most important category, accounting for approximately 16% of responses. The taste of the product was almost as important (13%). Interestingly, aspects of the eating experience and positive evaluations of fruits accounted for 5.2% and 4% of responses, respectively, highlighting the importance of these attributes to respondents. So, overall, it can be stated that fruit can be considered to be versatile, and constitutes a unique eating experience. They are also thought to be overwhelmingly positive in terms of taste.

7.3.2 All Vegetables



* specific reference to mode of presentation

† association to previous word

Figure 7.28: Network Analysis - All Vegetables

Network Summary

This can be contrasted with the pattern of responses found for the fruit word associations. Results (Figure 7.28) reveals that the most frequent category of responses included words describing the function of vegetables (30.3% of total vegetable words). This is approximately 6 percentage points above the figure for fruits, indicating that the function of vegetables is of more concern to consumers than is the function of fruit. Of the total function words, general uses predominated (66.9% of function words), followed by uses - with (21.3%), uses - when (8.9%), and uses - who (2.9%). Regarding uses of vegetables, the use of particular vegetables with other items, such as other vegetables is important, whereas we can see that, regarding fruit usages, uses on particular occasions (uses - when) is more important than uses with other products. The next most frequent category of responses included words describing the appearance of vegetables (18.7% of total vegetable words). Of these words, neutrally-toned words predominated (88.1% of total appearance or form words), followed by significantly fewer negative form words (6.6%), and slightly fewer positively-toned words (5.3%). Again, it is interesting to note that the third highest category of responses related to the taste of vegetables (6.9% of overall vegetable responses), indicating that the taste of vegetables is an important feature of the product. However, this figure was almost half that found for fruit, which indicates that taste is not as important a quality for vegetables as it is for fruit. Responses in the 'grow' category accounted for 4% of responses, indicating that consumers are well aware of issues relating to how vegetables are grown. 'Health' responses were also reasonably well represented, accounting for 3.9% of responses. Finally, the difficulty in preparation of vegetables was noted, with responses in this category accounting for 3.5% of responses. An average favourability rating for vegetables was 68%.

Overall View of Vegetables

In summary, fruits and vegetables had a superficial similarity in the patterning of categories of responses, with function being the most important category, followed by appearance, or form, then taste. However, interesting differences emerge within these categories, which provide us with interesting insights regarding consumers' knowledge structures of these products.

7.4 The salience of price in word associations produced by the respondents used in the present study

A final point of interest relates to the numbers of word association responses dealing with price. As each of the systemic networks above shows, very few word associations were produced that dealt explicitly with price. A total of 40 price-related word associations were given to fruits, and a total of 25 price-related word associations were given to vegetables. Combined, this gives a total of 65 price-related word associations out of a total of 16 167 overall word associations. This finding is relevant to contemporary marketing and economic theories, which both claim that price is an important product attribute that affects consumer preferences (see Owen, 1996, for a discussion of these views). It is likely that this finding is partially explicable in terms of the word association study not being conducted in a purchase context, where price would have more likely been cued by the context. This issue is discussed further in Chapter 8 – Discussion.

Following the above analyses which provided a general overview of the fundamental, descriptive data that was obtained, more specific data analyses were undertaken. The first analysis dealt with the mode of stimulus presentation. Please note that, in subsequent data analyses, the categories 'economic' (price) and 'miscellaneous' will not be referred to in reports of results and discussions of these, as these categories were not found to add substantially to findings. That is, in the following data analyses, discussion will be confined to the five global categories of sense; function; idiosyncratic; horticulture; and evaluation.

Chapter 7 – Results (cont'd).

7.5 Descriptive Data Analysis

Data for fruits and vegetables were analysed separately, due to the [abovestated] general notion that these two types of fresh produce are dissimilar in many respects. For example, vegetables typically require some degree of preparation and cooking, whereas fruits can usually be eaten without any preparation apart from removing the outer skin and, for some fruits, such as apples, even skin removal is unnecessary. In addition, vegetables are typically consumed for dinner, whereas fruits are generally consumed throughout the day and evening as a snack (Food Team, 1997, pers comm.). Finally, the statements of Monnot (1990) (to be described in detail below) clearly differentiate fruits and vegetables. Monnot states that fruits are associated with pleasant emotive issues, such as holidays and sun, whereas vegetables are consumed primarily for health and energy-building reasons, and are not considered to be emotive in nature. In the present results section, vegetable findings will be described first, followed by fruit findings.

Inspection of the 3-way log-linear frequency table for vegetables showed seemingly large differences between observed frequencies for age, sex, and category groups. For the vegetable findings, a loglinear analysis was completed to ascertain if any of these differences were significant.

7.5.1 Descriptive Findings for Vegetables

Three-Way Interaction

The 3-way interaction was significant (age x sex x category = partial χ^2 49.26, df = 12, $p < .001$) and perhaps the most interesting in terms of understanding the relative and combined effects of each of the variables (sex, age, category). I have visually represented this 3-way interaction separately by sex, for ease of interpretation (see Figures 7.29 and 7.30, respectively).

For both females and males, the 25-39 age group provided more responses than any other age group. However, closer inspection of the horticulture category for females shows that the 39-54 and 55+ age groups provided the same number of

responses, rather than following the global pattern of the 39-54 age group always providing more responses than the 55+ age group (a pattern seen for both females and males). It would appear that females in the 55+ age group are quite focussed on horticultural matters.

In addition, for both females and males, the function and sense categories had substantially more responses than the horticulture category which, in turn, had substantially more responses than either the evaluation and idiosyncratic

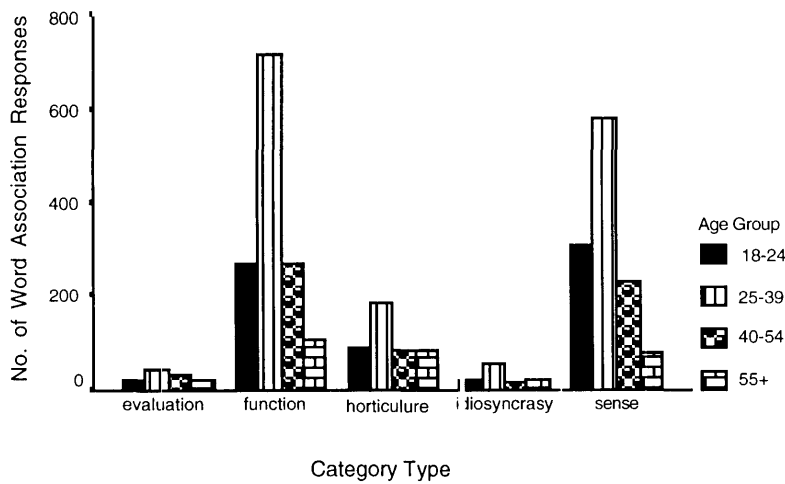


Figure 7.29: Female Responses for the 2-way Interaction

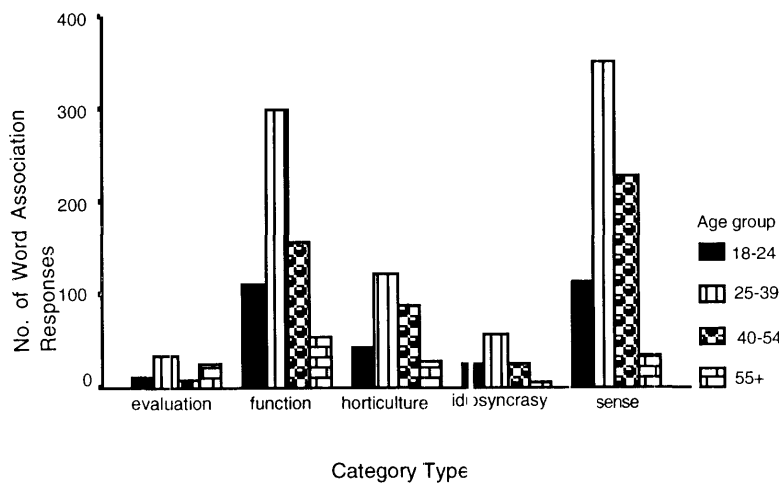


Figure 7.30: Male Responses for the 2-way Interaction

categories. However, the pattern of response frequencies for the function and sense categories showed a sex difference. That is, males had more responses in the 25-39 age group for sense as opposed to function responses, but the reverse was the case for females. That is, females' responses were more frequent in the function category relative to the sense category. It would appear that women in this particular age group are focused more on function than sensory factors. Also, closer inspection of the horticulture category shows an interesting discrepancy. An equal number of responses was given by females and males for the horticulture category. Given the larger number of females in the sample (females = 219; males = 117), one would have expected a larger number of horticultural responses for women, as opposed to men.

Two-Way Interactions:

The age x sex, category x sex and age x category two-way interactions were significant (age x sex = partial $\chi^2 59.94$, $df = 3$, $p < .001$; category x sex = partial $\chi^2 48.03$, $df = 4$, $p < .001$; category x age = partial $\chi^2 117.63$, $df = 12$, $p < .001$). Figures 7.31, 7.32, and 7.33 illustrate these two-way interactions. These findings were discussed (above) as part of the discussion on the significant 3-way interaction found, for purposes of clarity.

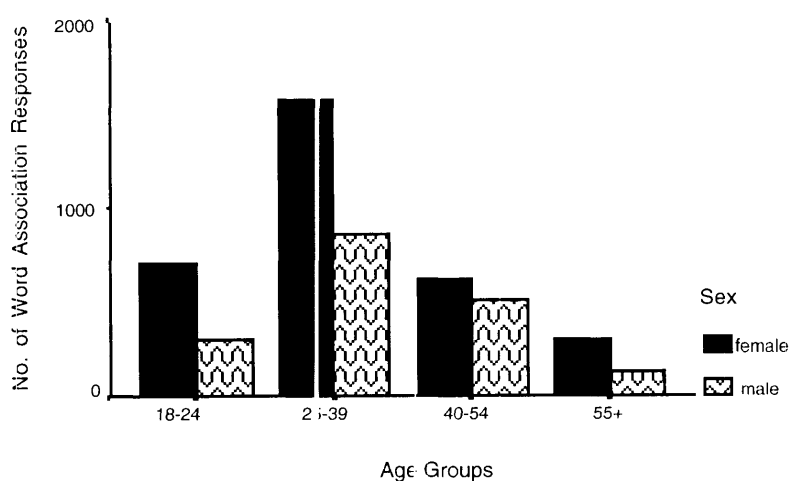


Figure 7.31: *Age x Sex Interaction*

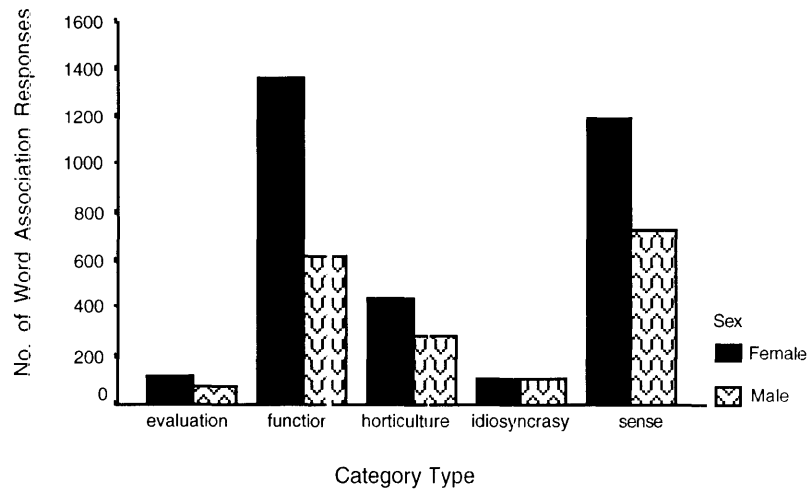


Figure 7.32: *Category x Sex Interaction*

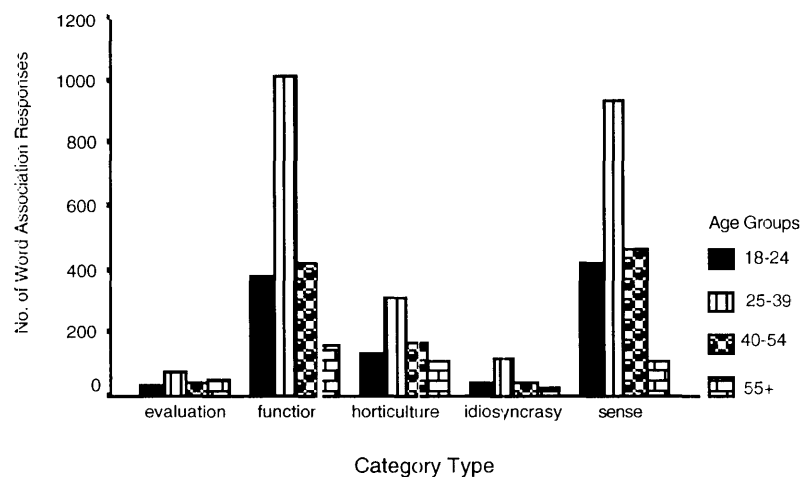


Figure 7.33: *Category x Age Interaction*

Main Effects For Age, Sex, and Category

Figures 7.34, 7.35, and 7.36 show the pattern of results for the age, sex, and category groups, respectively. Each of these main effects was significant (age = partial χ^2 1643.42, $df = 3$, $p < .001$; sex = partial χ^2 404.89, $df = 1$, $p < .001$; category = partial χ^2 3390.82, $df = 4$, $p < .001$).

As can be seen from an inspection of Figure 7.34, a similar number of responses was produced by the 18-24, and 40-54 age groups, and substantially more responses were produced by the 25-39 age group. Comparatively speaking,

very few responses were produced by the 55+ age group. In addition, as illustrated in Figure 7.35, more responses were produced by women than by men. Finally, as can be seen from Figure 7.36, more responses were given for the function and sense categories (1977 and 1933 responses, respectively)*, relative to the horticulture category (721). This category, in turn, was overrepresented, relative to the idiosyncratic and evaluation categories (217 and 193, respectively). The main effects have been incorporated into the discussion of 2-way and 3-way interactions, above.

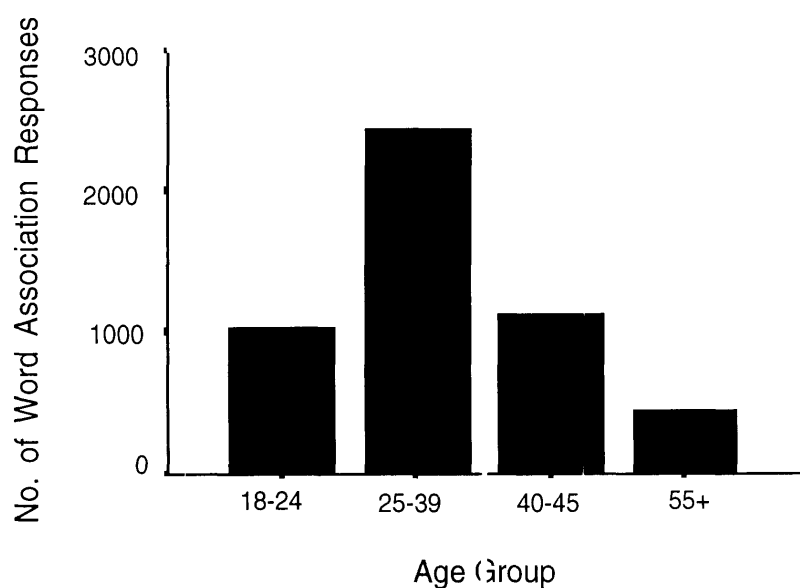


Figure 7.34: Vegetables: Main Effect - Age

* numbers in brackets on this page refer to overall numbers of word association responses in each category.

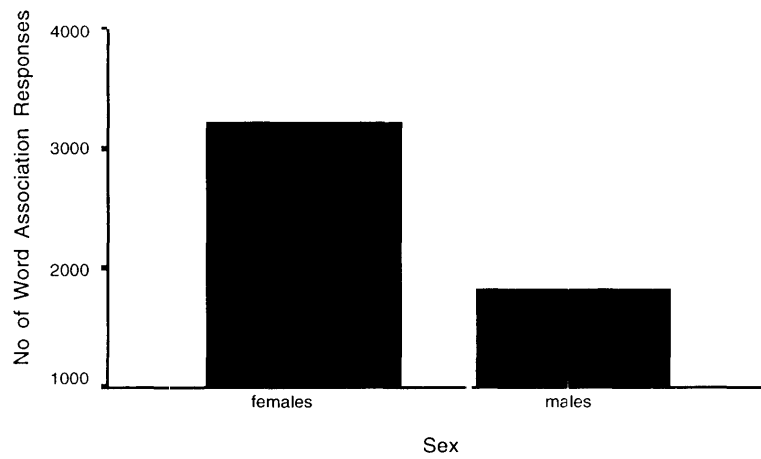


Figure 7.35: *Vegetables: Main Effect - Sex*

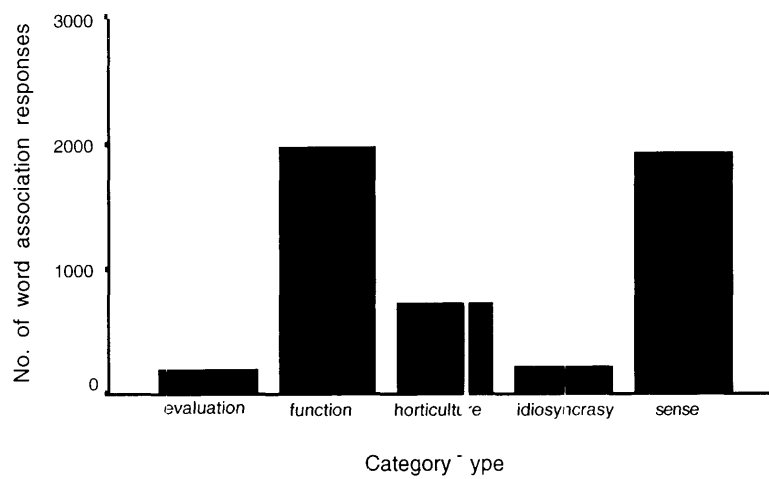


Figure 7.36: *Vegetables: Main Effect - Category*

7.5.2 Descriptive Findings for Fruit

Inspection of the 3-way log-linear frequency table for fruits showed seemingly large differences between observed frequencies for age, sex, and category groups. For the fruit findings, a log linear analysis was completed to ascertain if any of these differences were significant. Standardised residuals (sr) of ± 2 will be considered to indicate substantial divergencies from expected frequencies.

Three-Way Interaction

With respect to the three-way interaction, the age x sex x category interaction was significant (age x sex x category = partial χ^2 49.514, df = 12, p <.001). As was the case for the vegetable findings, I have visually represented this interaction separately by sex, for ease of interpretation. Figures 7.37 and 7.38 present these findings for females and males, respectively.

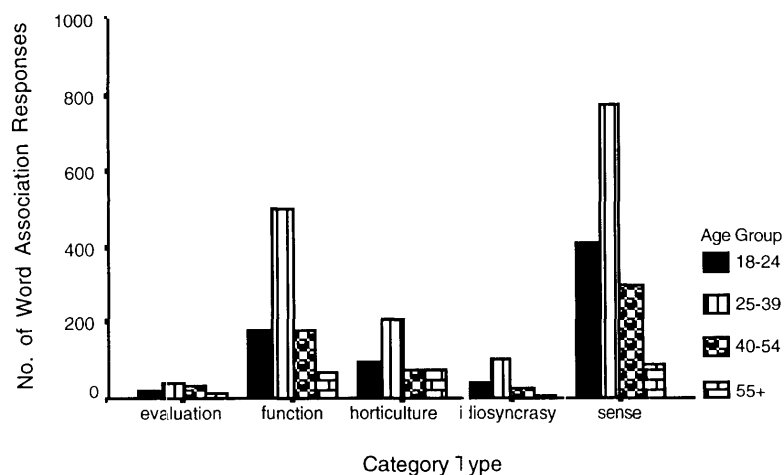


Figure 7.37: Female Responses for the 2-way Interaction

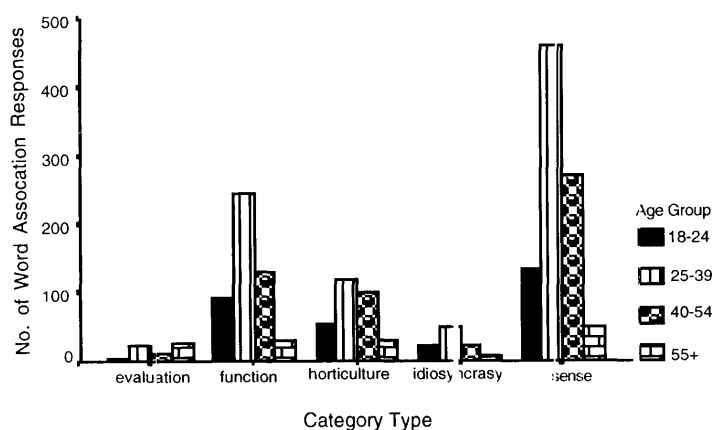


Figure 7.38: Male Responses for the 2-way Interaction

The pattern of responses for fruits was very similar in most respects to the patterning of vegetable responses. That is, responses were overrepresented in the 25-39 age group, relative to the other age groupings. In addition, with respect to the horticulture category, female responses for the 39-54 and 55+ age groups were approximately equal, rather than following the global pattern of the 39-54 age group always providing more responses than the 55+ age group. Again, it would appear that females in the 55+ age group are quite focussed on horticultural matters.

In addition, for both fruits and vegetables, it is apparent that, in a within-category sense, age x sex interactions occur. For both fruits and vegetables, more responses were provided by individuals in the 40-54 age group in the evaluation category for women than for males. That is to say, women aged 40-54 consistently provide more evaluations of fruits and vegetables than do men.

Furthermore, for both fruits and vegetables, with respect to the function category, more responses are given by the 40-54 age group, relative to the 17-24 age group for males, but females responses for each of these age groups were approximately equal.

Moreover, again for both fruits and vegetables, regarding the horticulture category, more responses were given by males in the 40-54 age group than for males in the 17-24 age group. The 17-24 age group, in turn, provided more responses than the 55+ age group. However, with respect to female responses in the horticulture category, the number of responses were for the 17-24, 25-39 and 55+ age groups were approximately equal.

Interestingly, and in contrast to the patterning of vegetable responses, a sex difference for the sense and function categories was not found. Both male and female responses showed a similar pattern in providing more responses for the sense, as opposed to the function category, rather than the number of female responses for the sense and function categories being reversed, which was the case for the vegetable responses. It would seem that, with regard to fruits, both males and females focus more on sense, as opposed to function. This finding will be discussed in a later section of Chapter 7.

Two-Way Interactions

The age x sex (partial χ^2 78.95, $df = 3$, $p < .001$), and the category x age (partial χ^2 129.506, $df = 12$, $p < .001$) interactions were both significant. This is in contrast to the category x sex interaction, which was not significant. These findings are remarkably similar to those found for vegetables, except that there was not a significant category x sex interaction seen for fruits. Figures 7.39 and 7.40 illustrate the findings for the age x sex and the category x age interactions, respectively. Again, these findings were discussed (above) as part of the discussion on the significant 3-way interaction found, for purposes of clarity.

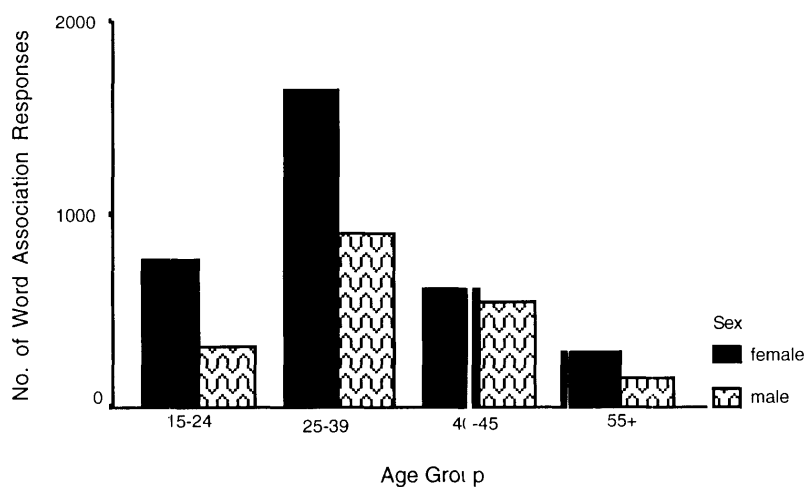


Figure 7.39: *Age x Sex Interaction*

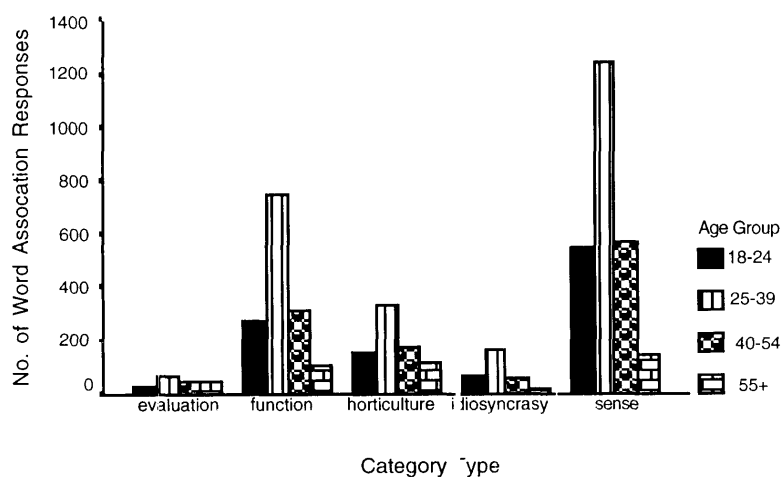


Figure 7.40: *Age x Category Interaction*

Main Effects

Significant differences were noted for each of the main effects. Figures 7.41, 7.42 and 7.43 show the pattern of results for the age, sex, and category groups, respectively. As we can see from figure 7.42, more responses were produced by women than by men (sex = partial χ^2 373.725, $df = 1$, $p < .001$). In addition, and as shown in Figure 7.41, number of responses increased from the 17-24 to 25-39 age groups, but then decreased for the 40-54 age group and fell still further for the 55+ age group. Comparatively speaking, very few responses were produced by the 55+ age group. These findings are similar to those found for vegetables. (age = partial χ^2 1774.537, $df = 3$, $p < .001$).

With respect to the pattern of category responses, more responses were given for the sense category, as opposed to the function category (2504 and 1448, respectively), relative to the horticulture responses (780). Idiosyncratic responses were relatively fewer (303) and the least represented category was the evaluation category (190). This finding was in direct contrast to that dealing with vegetables, in that, with regard to the sense and function categories, there were more function as opposed to sense responses for vegetables (1977 and 1933, respectively). It would appear that the functionality of vegetables is uppermost in individuals' minds whereas, for fruits, ideas relating to sense are more common. This interesting finding is discussed in a later section of Chapter 7.

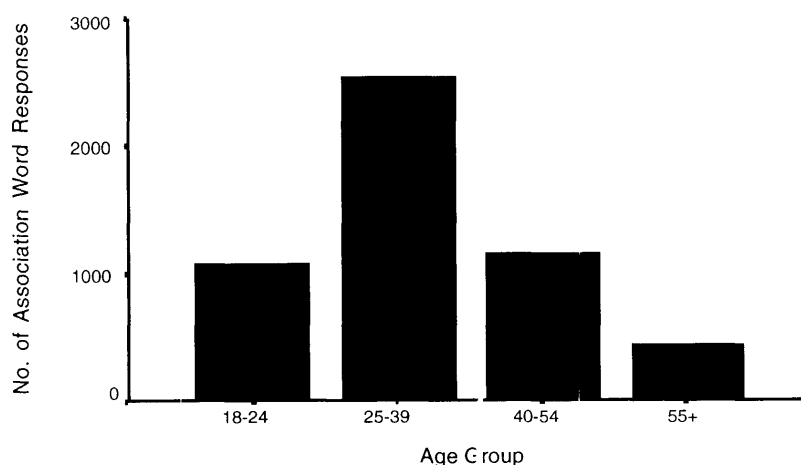


Figure 7.41: Fruit: Main Effect - Age

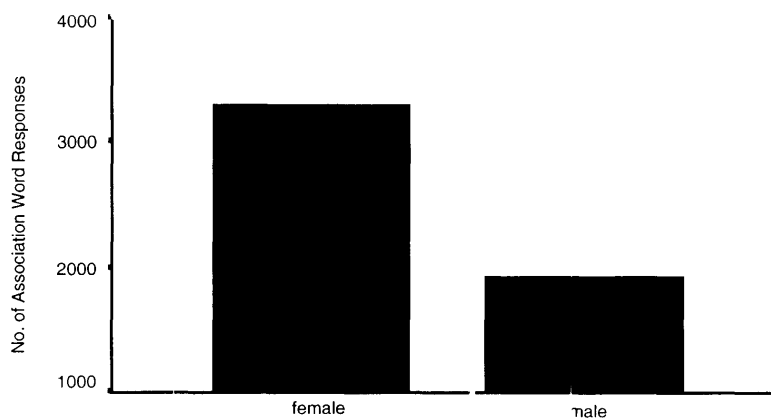


Figure 7.42: *Fruit: Main Effect - Sex*

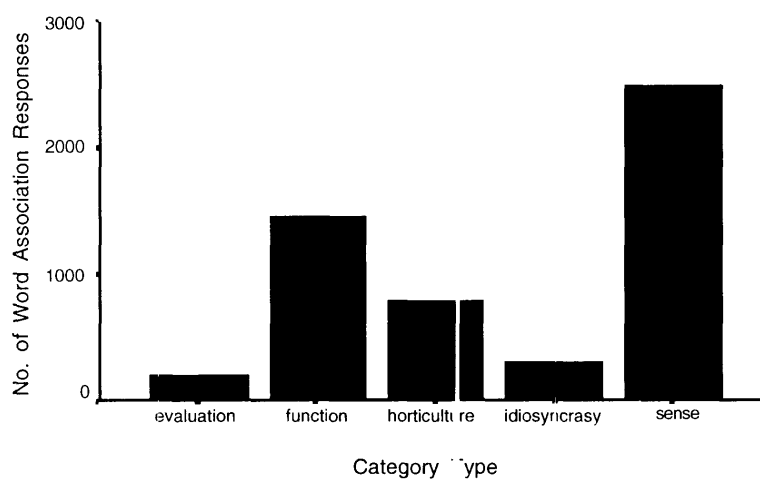


Figure 7.43: *Fruit - Main Effect - Category*

Finally, Tables 7.6 and 7.7 visually depict the favourability ratings of males and females of varying age groups for fruits and vegetables. Table 7.8 depicts the overall favourability ratings of females and males for fruits, as a group, and vegetables, as a group. It is clear that males, as a group, rated vegetables much lower than they did fruit, whereas females rated fruits and vegetables similarly. Young females rated fruits and vegetables lower than did other age groups, and older males rated fruits and vegetables lower than did other age groups. These findings are discussed in more detail in the Discussion – Chapter 8.

Table 7.6: *Mean Fruit Favourability Ratings for Females and Males of Various Age-Groups*

age groups	female	male
18-24	69.3	68
25-39	75.5	67.6
40-54	72.2	74.3
55+	73.6	64.1

Table 7.7: *Mean Vegetable Favourability Ratings for Females and Males of Various Age-Groups*

age groups	female	male
18-24	61.7	60.4
25-39	72.6	61.6
40-54	72.6	71.7
55+	73.4	52.3

Table 7.8: *Mean Fruit and Vegetable Favourability Ratings for Females and Males (for fruit, as a category, and for vegetables, as a category)*

sex	fruits	vegetables
female	72.5	73.7
male	74.5	63.7

7.5.3 Summary of Findings of Descriptive Data

What can be concluded from these analyses of the number of responses given as a function of age, sex, and category? Firstly, the significant main effects for age and sex are not unexpected, given that there were more women (65%) than men (34.7%) in the sample. However, some large differences in observed versus expected numbers of word association responses occurred for several categories (*sense, function, idiosyncratic, horticulture and evaluation*), and the interaction of these effects with age and sex effects is most instructive.

For the function category for vegetables, women provided more responses than expected (standardised residual (sr) = 2.70)* and males produced many fewer responses than expected (sr = -3.41), indicating that women focus more on function than expected, when thinking about vegetables whereas, for men, the reverse is true. When we break this result down into age groups, a clearer picture emerges. The results of the chi-square analysis indicate that it is women aged between 25-39, and 40-54 who contribute most to this discrepancy (sr = 2.34; 2.22, respectively). For men, a similar pattern emerges (sr = -3.15; -2.48, respectively).

With respect to the fruit function category, a similar but weaker trend was noticeable in that women produced more responses than expected, while men produced fewer responses than expected. The pattern of findings for fruits differed from that found with vegetables in that for the 18-24 age group, men produced more responses than expected (sr = 1.29), while women produced fewer (sr = -0.83).

The reverse effect was seen for the idiosyncratic category for vegetables, with females producing fewer responses than expected (sr = -1.63) and males producing more responses than expected (sr = 2.07). This female effect is due mainly to the 18-24, 25-39 and 40-54 age groups (sr = -2.07, -1.92, -1.85, respectively). The male effect was similar for each of these age groups (sr = 3.17, 2.59, 2.05, respectively). It can be noted that this effect was quite large. Interestingly, the reverse trend was found for the 55+ age group, with females producing slightly more responses than expected (sr = .70) and males producing fewer responses than expected (sr = -1.02).

* Tables of standardised residuals from descriptive analyses (3-way log-linear contingency tables) are located in Appendix 11.

The reverse was the case for the idiosyncratic category for fruit, with females scoring more responses than expected ($sr = 1.26$) and males producing fewer responses than expected ($sr = -1.58$). This effect is attributable primarily to the 24-39 and 40-54 age groups ($sr = 0.54$ and 0.59 for females; -0.73 , -0.63 for males). Interestingly, the youngest and oldest individuals showed the opposite trend ($sr = -0.61$, -0.62 for females; $.95$, $.83$ for males). This latter effect is small, and is only mentioned to indicate the discrepancy between the extreme age groups, on the one hand, and the middle ages, on the other.

With respect to the pattern of results in the horticultural category, for vegetables, males provided more responses than expected ($sr = 1.84$) whilst women produced fewer responses than expected ($sr = -1.46$). The 18-24, 25-39 and 40-54 age groups are primarily responsible for these findings ($sr = -0.39$; -0.91 ; -1.14 for females; 0.59 ; 1.23 ; 1.27 for males). Again, an interesting finding emerged for individuals in the 55+ age group. The opposite to the above trend was visible, with females producing more responses than expected ($sr = .82$) and males producing fewer responses than expected ($sr = -1.20$).

With respect to the pattern of results in the horticultural category, for fruits, a similar pattern to the vegetable findings was apparent, with women providing fewer responses than men ($sr = -1.92$, 2.42 , respectively). A similar age pattern occurred, with males and females in the 18-24, 25-39 and 40-54 age groups contributing mostly to the findings ($sr = -1.05$, -0.34 , -1.96 for females; 1.64 , 0.46 , 2.10 for males). It is interesting to note that it would appear that individuals in the 40-54 age group contribute most to this finding. The reverse pattern of results for the 55+ age groups was again apparent, with women producing slightly more responses than expected ($sr = 1.05$), and men producing slightly fewer responses than expected ($sr = -1.40$).

With respect to the pattern of results in the evaluation category, for vegetables, it was again noted that women provided fewer responses than expected ($sr = -0.87$), and males provided more responses than expected ($sr = 1.84$). Women in the 18-24, 25-39 and 55+ age groups contributed mostly to these findings ($sr = -0.23$; -0.81 ; -1.61) while women in the 40-54 age group showed the reverse trend ($sr = 2.25$), producing substantially more evaluation responses than expected. Males in the 18-24, 25-39 and 55+ age groups contributed mostly to this pattern ($sr = 0.36$, 1.09 , 2.37 , respectively). Again, the 40-54 age group showed a reverse pattern ($sr = -2.50$), which was substantially fewer responses

than expected. It is interesting to note that women in the 40-54 age group provided more responses than were expected ($sr = 2.25$)

With respect to the pattern of results in the evaluation category, for fruits, a similar pattern emerged, with women providing fewer responses than expected ($sr = -0.36$), and males again provided more responses than expected ($sr = 0.43$). A similar age pattern as that produced for the idiosyncratic and horticulture categories for both fruits and vegetables appeared for the evaluation responses, with women in the 18-24, 25-39 and 40-54 age groups producing more responses than expected ($sr = 0.83, 0.27, 1.73$, respectively), and women in the 55+ age group contributing solely to this finding ($sr = -2.12$). Males in the first three age groups showed the same pattern as the females in these groups, all producing fewer responses than expected ($sr = -1.29, -0.37, -1.85$, respectively) while again, men in the 55+ age group contributed solely to the finding of more evaluation responses than expected ($sr = 2.83$).

With regard to the sense category for vegetables, only slight tendencies for women and men to produce responses in the opposite direction to that expected were found. Women produced slightly fewer responses than expected ($sr = -0.88$) while men produced more responses than predicted ($sr = 1.11$). When broken down into age groups, it is apparent that women and men in the 25-39 and 40-54 age groups contribute most to this finding ($sr = -0.85, -1.53$ for females; $1.14, 1.70$ for males). The youngest and oldest subjects, both female and male, responded counter to expectations ($sr = 0.74, 0.32$ for females; $-1.13, -0.47$ for males).

This pattern of findings occurred for the sense category for fruits, however the differences were slight to non-existent. This point is included here merely to show that the same age groups ran counter to expectations for both fruits and vegetables.

What can be gleaned from this seemingly contradictory set of findings? The most important implication relates to the heterogeneity of responses. From these findings, it is clear that males and females from particular age groups do not think similarly about fruits and vegetables. If these findings are considered in conjunction with those for separate fruits and vegetables (described in the first part of Chapter 7 – Systemic Network Analyses), it can be concluded that, rather than fruits and vegetables being seen as global categories, individual fruits and vegetables are perceived by individuals as being unique.

Furthermore, males and females of various ages have distinct thoughts uppermost in their minds when thinking about these products. These findings will be discussed further in the Discussion (Chapter 8).

Chapter 7 – Results (cont'd.).

7.6 Mode of Presentation

Word association responses were analysed to determine if quantitative and qualitative differences in responses would occur as a function of mode of presentation. Recall that seven (7) different modes of presentation were utilised in the present study, as follows; unnamed black and white photo, named black and white photo, unnamed line drawing, named line drawing, unnamed colour photo, named colour photo, name (of product) only.

Each of the seven mode of presentation groups were composed of 46 respondents, each of whom provided continuous⁷ (as opposed to discrete) word associations to pictures and/or words of ten different fruits and ten different vegetables. Ordering of stimulus objects was randomly determined for each subject.

7.6.1 Quantitative Differences as a Function of Mode of Presentation

An analysis of variance was conducted on the mean number of words provided by each mode of presentation group. Results indicate that there were no significant differences in mean number of word associations generated as a function of mode of presentation. That is to say, each of the seven groups provided an average number of overall responses to the stimulus objects.

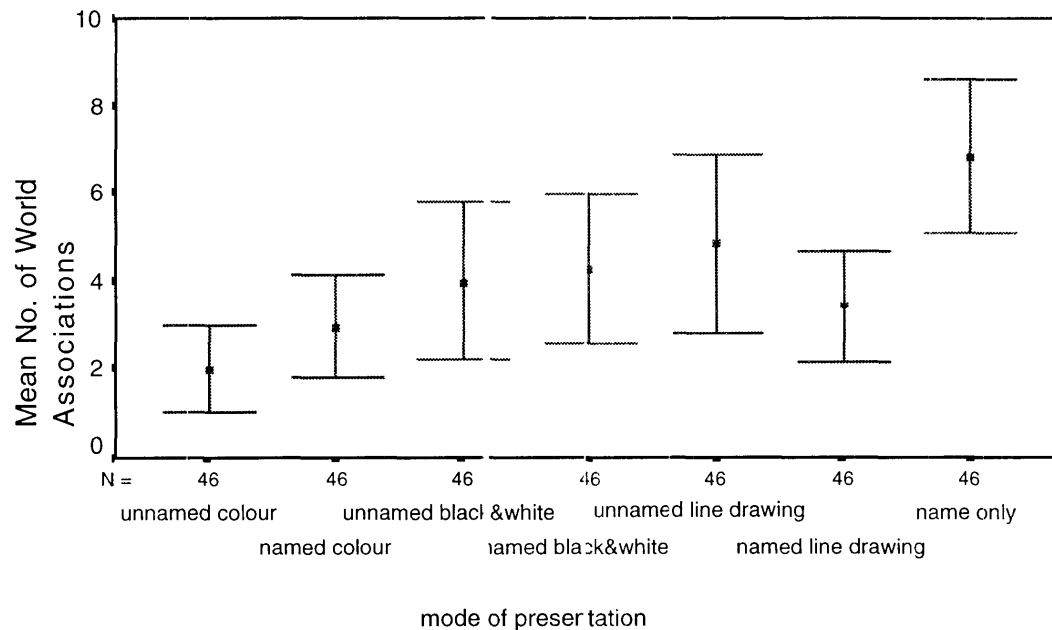
7.6.2 Qualitative Differences as a Function of Mode of Presentation

An analysis of variance was conducted on the mean number of colour-related words provided as a function of mode of presentation. All word association responses that referred to the colour of the stimulus object were counted as colour-related words. Table 7.9 shows the summary statistics for numbers of colour-related words for each of the seven mode of presentation groups. Figure 7.44 shows an error bar plot of the seven group means.

⁷ In word association studies, respondents are asked to supply one response for each stimulus word or object, which is called a discrete method or, conversely, respondents are able to supply multiple responses to each stimulus word or object, in which case the method is called continuous word associations.

Table 7.9: Group summary statistics used in the one-way ANOVA

	unnamed colour	named colour	unnamed black & white	named black & white	unnamed line drawing	named line drawing	name only
Mean	1.98	2.93	3.98	4.28	4.83	3.41	6.85
Standard Deviation	3.26	3.90	6.09	5.70	6.85	4.36	5.88

**Figure 7.44:** Error bar plot of mean frequency scores for the seven mode of presentation groups

Results from an analysis of variance on these data revealed a significant difference in mean frequency of word association responses as a function of mode of presentation, ($F=3.95$, $df = 6,321$, $p < .001$). A Tukey HSD post-hoc analysis, using a significance level of .05, was conducted on all possible pairs of mode of presentation means to identify which particular groups' means differed substantially from the rest. This analysis, which is visually illustrated in Table 7.9, revealed that the mean frequency of colour words of the group called 'name only' ($sr = 6.85$) was significantly higher than the groups named 'unnamed colour photo' ($sr = 1.98$), 'named colour photo' ($sr = 2.93$), and 'named line drawing' ($sr = 3.41$), respectively.

These results for colour-related words can be interpreted thus: respondents in the group who responded freely to the name of the stimulus object, that is, they

saw the word 'apple', followed by the word 'broccoli' etc., provided significantly more responses relating to colour than the groups seeing the named colour photo, the unnamed colour photo and the named line drawing. Given that the two modes of presentation featuring a coloured object produced the least number of colour related words ($sr = 1.98$ and 2.93 , respectively), it might be concluded that when the colour cue is present in the stimulus object, it overrides the tendency for respondents to attend to the colour of the object. That is, cognitive knowledge relating to the colour of the object seems to be made redundant by the presence of the colour cue in the stimulus object.

Table 7.10: Contingency Table relating category breakdown for all fruit and vegetable responses and mode of presentation

	named colour	named b&w	named line	name only	unnamed colour	unnamed b&w	unnamed line
evaluation	123	91	101	111	146	119	68
	122.12	96.62	101.69	119.83	98.80	113.09	106.86
	0.08	-0.57	-0.68	-0.81	4.75	0.56	-3.76
function	875	68	801	820	612	700	601
	818.12	647.30	681.26	802.84	661.90	757.67	715.90
	1.99	1.13	4.19	0.61	-1.94	-2.10	-4.29
horticulture	305	193	252	273	386	481	471
	379.86	300.55	316.31	372.77	307.33	351.79	332.40
	-3.84	-6.20	-3.32	-5.17	4.49	6.89	7.60
idiosyncratic	114	87	91	124	82	81	78
	106.19	84.02	88.42	104.20	85.91	98.34	92.92
	0.76	0.33	0.39	1.94	-0.42	-1.75	-1.55
sense	992	859	718	1036	723	850	890
	982.71	777.52	811.32	964.36	795.06	910.10	859.93
	0.30	2.92	-2.11	2.31	-2.56	-1.99	1.03

Chi-square = 350.0 with 24 df $p \leq 0.0001$

Rows are levels of all fruits and vegetable categories

Columns are levels of all conditions

Table Contents:

Count

Expected Values

Standardized Residuals

Mode of presentation data were also analysed to determine whether other qualitative differences in word association responses as a function of mode of stimulus presentation could be identified. To this end, the observed numbers of responses that fell into each of the categories (function, sense, horticulture, idiosyncratic, evaluation) for each of the seven modes of presentation were inspected to determine if these differed significantly from what would be expected. Table 7.10 presents a contingency table with rows representing the five categorical groups, and columns representing the seven mode of presentation conditions.

The chi-square value for this table was significant (partial $\chi^2 = 350$, $df = 24$, $p < .0001$). However, visual inspection of the standardised residuals for each cell in the table brings some order to this significant result. Standardised residuals (sr) of ± 2 will be considered to indicate substantial divergencies from expected frequencies.

Table 7.10 shows that, with respect to the evaluation category, overall number of responses in the unnamed colour condition were greater than expected (sr = 4.75), whereas numbers of responses in the unnamed line drawing condition were fewer than expected (sr = -3.76), indicating that respondents who viewed the unnamed colour photo tended to evaluate the stimulus object, whereas individuals who saw the unnamed line drawing did not tend to evaluate this stimulus object as much as would be expected.

With respect to the function category, three of the mode of presentation groups' cell counts differed substantially from what would be expected. Respondents in the named line drawing category provided more function-type words than would be expected (sr = 4.59), whereas respondents in the unnamed black and white and line drawing conditions provided fewer responses than expected (sr = -2.10, -4.29, respectively).

The expected and observed counts in some of the mode of presentation groups differed substantially in the sense category findings. Two groups produced more responses than would be expected (named black and white (sr = 2.92), name only (sr = 2.31), whereas two other groups, the named line drawing and unnamed colour conditions produced fewer responses than expected (sr = -2.11, -2.56, respectively).

The highest discrepancies between expected and observed counts occurred in the category dealing with horticultural matters. When fruit and vegetable responses are combined together, each of the mode of presentation groups' observed counts differed very substantially from what would be expected. The named colour, named black and white, named line drawing and name only categories produced fewer responses than expected ($sr = -3.84, -6.2, -3.62, -5.17$, respectively), whereas the unnamed colour, unnamed black and white and unnamed line drawing conditions produced more responses than expected ($sr = 4.49, 6.89, 7.60$, respectively). As can be seen from Table 7.10, these latter discrepancies are quite substantial.

When fruit responses and vegetable responses were analysed separately, the same pattern of findings was present, albeit in weaker form. Tables 7.11 and 7.12 show the contingency tables dealing with numbers of responses in the five categories for each of the seven mode of presentation groups, for fruits and vegetables, respectively.

Table 7.11: Contingency Table relating category breakdown for all fruit responses and mode of presentation

	named	named	named	name	unnamed	unnamed	unnamed
	colour	b&w	line	only	colour	b&w	line
evaluation	59	39	50	67	71	56	37
	60.65	47.21	51.59	59.99	50.40	56.02	53.13
	-0.21	-1.20	-0.22	0.90	2.90	-0.00	-2.21
function	360	289	363	338	276	291	251
	346.91	270.08	295.12	343.21	288.29	320.45	303.94
	0.703	1.15	3.55	-0.28	-0.72	-1.65	-3.04
horticulture	172	98	133	144	202	241	239
	196.66	153.10	167.30	194.56	163.43	181.66	172.30
	-1.76	-4.45	-2.35	-3.62	3.02	4.40	5.08
idiosyncratic	73	52	61	73	51	39	42
	62.73	48.83	53.36	62.06	52.13	57.94	54.96
	1.30	0.45	1.18	1.39	-0.16	-2.45	-1.75
sense	555	471	429	584	413	499	499
	552.05	429.78	465.63	546.17	458.76	509.94	483.67
	0.13	1.99	-1.37	1.62	-2.14	-0.48	0.70

Chi-square = 172.9 with 24 df $p \leq 0.0001$

Rows are levels of all fruits categories
Columns are levels of all conditions

Table Contents:

Count

Expected Values

Standardized Residuals

Table 7.12: Contingency Table relating category breakdown for all vegetable responses and mode of presentation

	named colour	named b&w	named line	name only	unnamed colour	unnamed b&w	unnamed line
evaluation	64	52	57	44	75	63	31
	61.48	49.44	50.06	59.83	48.36	57.09	53.73
	0.32	0.36	0.13	-2.05	3.83	0.78	-3.10
function	515	387	433	482	336	409	350
	471.96	379.55	384.31	459.26	371.22	438.24	412.47
	1.98	0.38	2.14	1.06	-1.83	-1.40	-3.08
horticulture	133	95	119	129	184	240	232
	183.15	147.29	149.14	178.23	144.06	170.07	160.07
	-3.71	-4.31	-2.17	-3.69	3.33	5.36	5.69
idiosyncratic	41	35	39	51	31	42	36
	43.36	34.87	35.31	42.20	34.11	40.26	37.90
	-0.36	0.02	-0.56	1.36	-0.53	0.27	-0.308
sense	437	388	329	452	310	351	391
	430.05	345.85	350.18	418.49	338.26	399.33	375.84
	0.34	2.27	-1.13	1.64	-1.54	-2.42	0.78

Chi-square = 201.7 with 24 df $p \leq 0.0001$

*Rows are levels of all vegetable categories
Columns are levels of all conditions*

Table Contents:

Count

Expected Values

Standardized Residuals

These findings are interesting, and seem to indicate that the various modes of presentation are accessing qualitatively distinct cognitive information. When we focus on the horticulture-related words, we find that the conditions featuring the name of the product (with or without the accompanying picture) produce fewer horticultural responses than expected, whereas the conditions featuring a picture of the stimulus object without a (verbal) label produce many more horticulturally-oriented responses than would typically be expected. As

can be seen from the tables featuring fruit only and vegetable only responses, this pattern is robust, with the only condition not producing a substantial difference in observed versus expected findings (that is, the standardised residual being ± 2), being the named colour photos.

The findings relating to colour-oriented words, and words dealing with different concepts (sense, function, evaluation, horticulture and idiosyncratic), demonstrate qualitative differences in responses obtained by presenting respondents with stimulus objects in particular modes, which differ with respect to dimensionality and colour. These findings are discussed further in the Discussion (Chapter 8).

Chapter 7 Results (cont'd.).

7.7 Self-Monitoring Findings

The next series of analyses undertaken related to the effects of self-monitoring on word association responses generated. Specifically, the numbers of words, of low self-monitors (LSM), on the one hand, and high self-monitors (HSM), on the other, that were placed into the five global categories (*evaluation, function, horticulture, idiosyncratic and sense*) were tabulated. These analyses afforded an opportunity to determine whether the types of word association responses generated by LSM and HSM differed in a qualitative sense.

Table 7.13: Contingency Table for Fruit Extreme Self-monitoring Scores X Category

	evaluation	function	horticulture	idiosyncratic	sense
LSM	135	537	331	63	827
(<6)	118.92	537.14	292.20	81.29	862.65
	1.47	-0.04	2.27	-2.03	-1.21
HSM	121	621	298	112	1030
(>9)	137.08	620.16	336.80	93.71	994.35
	-1.37	0.04	-2.11	1.89	1.13

Chi-square = 24.13 with 4df $p \leq 0.0001$

Contingency tables were generated for fruits and vegetables separately, to determine whether there were significant differences in numbers of word association responses in each of the five categories for the low and high self-monitoring groups. Analyses were restricted to respondents who received extreme self-monitoring scores (Snyder, 1987, p.181). Self-monitoring scorers in the 25th percentile were classified as LSM, and those self-monitoring scorers in the 75th percentile were classified as HSM. That is, those respondents scoring less than 6 out of 18 were considered to be low self-monitors (LSM), whereas respondents scoring over 9 were considered to be high self-monitors (HSM). In the sample used in the present study, there were 120 extreme low self-monitoring respondents, and 69 extreme high self-monitoring respondents.

Table 7.13 shows, for fruits, the observed versus expected frequency counts for each of the cells of the contingency table, plus standardised residuals. The chi-square value was significant (partial $\chi^2 = 24.13$, $df = 4$, $p < .0001$). Inspection of Table 7.13 shows that LSM produced more horticultural responses than expected ($sr = 2.27$), and less idiosyncratic responses than expected ($sr = -2.03$). Conversely, HSM provided less horticultural responses than expected ($sr = -2.11$) and slightly less idiosyncratic responses than expected ($sr = 1.89$). There were no substantial differences in responses in the sense and function categories for these groups, indicating that, while responses in the function and sense were by far the most common, LSM and HSM were not differentiated in their responses in these two categories.

Inspection of the terminal categories for the five global categories (refer to systemic networks for information relating to how each of the global categories was further differentiated into successively more specific categories - Figure 7.1) is necessary in order to specify precise qualitative differences in the word association responses of high and low self-monitors. Table 7.14 produces observed versus expected cell counts, plus standardised residuals, for each of the terminal categories.

Inspection of Table 7.14 shows that the terminal categories having discrepant observed versus expected frequencies are the feel category ($sr = -2.38$ LSM, 2.22 HSM), where LSM produced fewer feel-oriented words than expected, whereas HSM produced more. Additionally, the LSM produced more 'looks like' responses than would be expected ($sr = 2.30$), whereas HSM produced less ($sr = -2.14$). It can be noted that the 'feel' and 'looks like' terminal categories belong under the global category 'sense'.

With regard to the horticultural category, where the most substantial discrepancies between observed and expected cell counts were found, these discrepancies are due primarily to the terminal category 'grow', where LSM produced more responses than expected ($sr = 2.37$) and HSM produced fewer responses than expected ($sr = -2.21$); and the terminal category 'varieties', where LSM produced more responses than expected ($sr = 3.54$) and HSM produced less ($sr = -3.30$).

The other large discrepancy between expected and observed findings was found in the 'uses - who' category (which is under the umbrella of the global category 'function'), where LSM produced fewer responses than expected ($sr = -2.13$) and HSM produced fewer responses than expected ($sr = 1.98$).

One other finding that was less substantial than the above, but nearing significance, was the number of responses in the terminal category 'evaluation - positive', where LSM produced more responses than expected ($sr = 1.86$) where HSM produced fewer responses than expected ($sr = -1.74$).

Table 7.14: Contingency Table for Terminal Category Frequencies X Extreme Self-monitoring Scores

	1 (LSM)	2 (HSM)
ATPW †	5	2
	3.25	3.75
	0.97	-0.90
SRTMP*	6	13
	8.82	10.18
	-0.95	0.88
buy	2	3
	2.32	2.68
	-0.21	0.20
category	31	26
	26.47	30.53
	0.88	-0.82
commonality	11	6
	7.89	9.11
	1.11	-1.03
confused	33	32
	30.18	34.82
	0.51	-0.48
eating	90	124
	99.37	114.63
	-0.94	0.88
eval-+ve	118	96
	99.37	114.63
	1.87	-1.74
eval--ve	17	25
	19.50	22.50
	-0.57	0.53
expression	10	16
	12.07	13.93
	-0.60	0.56
feel	45	93
	64.08	73.92
	-2.38	2.22

form-+ve	25	25
	23.22	26.78
	0.37	-0.34
form--ve	29	19
	22.29	25.71
	1.42	-1.32
form-neut	240	342
	270.25	311.75
	-1.84	1.71
grow	82	54
	63.15	72.85
	2.37	-2.21
health	88	69
	72.90	84.10
	1.77	-1.65
homonym	4	2
	2.79	3.21
	-0.47	0.44
looks like	40	20
	27.86	32.14
	2.30	-2.14
memory	18	37
	25.54	29.46
	-1.491	1.39
name	77	123
	92.87	107.13
	-1.65	1.53
Idiosyncratic	33	39
	33.43	38.57
	-0.07	0.07
odour	14	11
	11.61	13.39
	0.70	-0.65

Continued next page

package	12	11
	10.68	12.32
	0.40	-0.38
place	49	52
	46.90	54.10
	0.31	-0.29
prep-easy	9	8
	7.89	9.11
	0.39	-0.36
prep-hard	28	36
	29.72	34.28
	-0.32	0.29
price	13	15
	13.00	14.99
	-0.00	0.00
represents	13	26
	18.11	20.89
	-1.20	1.12
sex	3	7
	4.64	5.36
	-0.76	0.71
sound	20	13
	15.32	17.68
	1.19	1.11
story	12	20
	14.86	17.14
	-0.74	0.69

taste	73	81
	71.51	82.49
	0.18	-0.16
taste+ve	184	213
	184.35	212.65
	-0.03	0.02
taste-ve	16	33
	22.75	26.25
	-1.42	1.32
uses-gen	253	295
	254.47	293.53
	-0.09	0.09
uses-when	84	111
	90.55	104.45
	-0.69	0.64
uses-who	5	22
	12.54	14.46
	-2.13	1.98
uses-with	70	80
	69.65	80.35
	0.04	-0.04
varieties	81	37
	54.79	63.21
	3.54	-3.30

† association to previous word
 * specific reference to mode of presentation

Chi-square = 119.9 with 38 df $p \leq 0.0001$

Rows are levels of all fruit cats
 Columns are levels of selfmon hi-lo

Table Contents:
 Count
 Expected Value
 Standardized Residuals

Table 7.15 shows, for vegetables, the observed versus expected frequency counts for each of the cells of the contingency table, plus standardized residuals. The chi-square value for these vegetable responses was not significant.

Table 7.15: Contingency Table for Vegetables Extreme Self-monitoring Scores x Category

	evaluation	function	horticultural	idiosyncratic	sense
1	130	734	271	53	632
(LSM)	117.91	719.03	265.42	55.95	661.69
	1.1133	0.56	0.34	-0.39	-1.154
2	125	821	303	68	799
(HSM)	137.09	835.97	308.58	65.05	769.31
	-1.03	-0.52	-0.32	0.37	1.07

Chi-square = 5.871 with 4 df p = 0.2090

Rows are levels of selfmon hi-lo
Columns are levels of vege globals

Table Contents:

Count

Expected Values

Standardized Residuals

Table 7.16: Summary Contingency Table showing all significant differences in observed versus expected findings for terminal categories

Self-Monitor (high/low)	Count Std. Resid.	varieties	uses - who	feel	grow	looks like	Row Total
Low		81	5	45	54	40	225
		3.54	-2.13	-2.38	2.37	2.30	
High		37	22	45	82	20	206
		-3.30	1.98	2.22	-2.21	-2.14	
	Column Total	118	27	138	136	60	

Table 7.17: Summary Contingency Table showing all differences in observed versus expected findings for terminal categories relating to the global category 'idiosyncratic'

Self-monitor (high/low)	Count Std. Resid.	ATPW †	expression	homonym	memory	represents	sex	story	Row total
Low		5	10	2	18	13	3	12	63
		.97	-0.60	-0.47	-1.49	-1.2	-0.74	-0.74	
High		2	16	4	37	26	7	20	112
		-0.9	.56	.44	1.39	1.12	.71	.69	
		7	26	6	55	39	10	32	

† Association to previous word

Table 7.16 is a summary table showing all terminal categories where significant differences in observed versus expected numbers of word association responses were found. Table 7.17, another summary table, shows the observed versus expected frequencies of word association responses for the global category *idiosyncratic*.

In Table 7.17, findings that near significance are in boldface. As can be seen, the terminal categories of 'memory' and 'represents' showed differences in observed versus expected numbers of word association responses that neared significance. These findings are instructive in terms of illustrating trends, or patterns, to the data, and will be discussed further in the Discussion (Chapter 8).