

Chapter 8 – Discussion

8.1 Systemic Network Analyses

The network analysis has allowed free responses, and quite a sizeable number at that, to be efficiently handled so that it has even been possible to carry out some statistical tests for association. I think that this is a gain that is not to be lightly dismissed.

(M. Monk, 1983, p. 79)

Recall that one of the primary objectives of the present thesis was to provide a fundamental body of descriptive data relating to knowledge structures of fresh fruits and vegetables. To briefly reiterate, in Chapter 3, it was argued that, if researchers wish to understand consumer behaviour at a more complex level, they must acknowledge the existence of different information processing systems, and design a methodology to tap these. It was further argued that traditional consumer theories and methods introduce contextual limitations, and work from the assumption that we can understand consumer behaviour by merely asking consumers why they purchase certain products.

Two strands of evidence were introduced that work against the above assumption: (a) the existence of different cognitive processing levels, the knowledge contained therein not being tapped by traditional methods that assume one global knowledge base, and (b) the established theory of knowledge acquisition, which posits certain stages of information acquisition. The first stage, which leads to all subsequent acquisition, must be tapped, rather than assuming we can begin research at subsequent stages without being aware of descriptive, fundamental information contained in initial stages.

Stage One, Simple Apprehension, comprises an attempt to discover the 'whatness', or fundamental nature of an object. Stage Two, Judgement, combines and divides concepts inherent in the description of the nature of the object. It establishes general principles common to all instances of a given class of object, and these will enable individuals to combine information derived from Stage One to establish certain facts. Stage Three, Reason, moves beyond

what is known to the unknown. That is to say, the existence of the unknown is inferred from what we do know about the object (Spangler, 1986).

The data reported in Chapter 7 comprise a relatively comprehensive body of Stage One information relating to fresh fruits and vegetables. The word association method utilised has enabled the author to tap individuals' knowledge structures in an unstructured manner and it can be argued that the resulting information is therefore relatively free from contextual constraints. It represents 'relatively pure indicators of the way human knowledge is mentally represented' (de Groot, 1989, p. 82).

This body of descriptive data has been represented in two ways. Appendix 9 contains the raw data, which comprises the actual word association responses obtained for each of the ten fruits and ten vegetables. The data have been placed into frequency breakdowns for each of the ten fruits and ten vegetables. That is, the data is ordered from most to least frequent response for each of the products. It is possible to gain a relatively comprehensive picture of the contents of the knowledge structure of each product, simply by reading through the responses.

The data has also been presented as a series of twenty-two systemic network analyses (one for each fruit and vegetable, and one each for fruits and vegetables as a group). As stated in the results section, each word association response was placed into one of five global categories; *sense*, *function*, *horticulture*, *idiosyncratic* and *evaluation*. These global categories were further subdivided into progressively more specific categories so that a *sense* response, for example, could be further classified as being either visual, olfactory or feel, and classified again as being positive or negative.

As discussed above, it is the case that primary categories of ideas relating to fresh fruits and vegetables are *sense* and *function*. Notions relevant to visual, olfactory and tactile attributes, and also the various uses, or functions, of fresh fruits and vegetables assume a significant place in consumers' knowledge structures of fresh fruits and vegetables. This appears to be the case with all of the fresh fruits and vegetables studied herein. That is, regardless of the type of fruit or vegetable studied, appearance and function factors are important. However, the systemic networks clearly show that, once these primary characteristics have been accounted for, individual fruits and vegetables can be distinguished on the basis of other characteristics, such as horticulture,

idiosyncratic matters and evaluation. Attention to terminal categories, rather than the five global categories identified, provides a rich tapestry of detail regarding knowledge structures of particular fruits and vegetables.

In this way, it is possible to identify particular concepts that form part of the knowledge structure for each product. For example, when looking at the systemic network analysis for broccoli (Figure 7.18), it is relatively straightforward to discern which concepts are most relevant to apples by examining the relative frequencies of responses in the various categories. Again using the example of broccoli, the systemic network illustrates the salience of function, taste, appearance, health and the notion that broccoli is similar in appearance to other objects, such as clouds and trees. The taste responses indicated that consumers have polar views of the taste of broccoli (you either love it or hate it), and the number of health responses indicate that, while broccoli might not be seen by many to taste nice, it is nevertheless considered to be very healthy. In summary, the concepts *health*, *looks like*, *function*, *appearance* and *taste* are salient in the knowledge structure for broccoli. The summary of findings for each of these ten fruits and vegetables is instructive in this regard.

In the results section, mention was also made of the paucity of price-related word association responses given for both fruits and vegetables. This finding is somewhat surprising, given the importance placed on the role of price in consumer behaviour by traditional economists and marketing researchers. Most economic and consumer behaviour theorists stress price as a significant variable impinging upon the purchase decision. However, it is the case that the influence of price on fresh fruit and vegetable purchase has not been studied in any detail (Owen, 1996).

The results of the present study indicate that price-related issues are not uppermost in consumers' minds when providing associations to fresh fruits and vegetables outside of the purchase environment. These findings are not incongruent with those of Owen (1996), who concluded that price is an *implicit*, rather than an *explicit* variable with respect to decision rules used in fresh fruit and vegetable choice, and that consumers tend to identify a 'band of acceptable prices' (iii-iv), with price responsiveness lying at the threshold of the band. In essence, Owen's findings (1996) would appear to indicate that consumers attend to price in a non-analytical, intuitive manner. That is, price is sometimes discussed as an important variable by consumers in a purchase environment, however this is not necessarily illustrated in actual shopping behaviour.

It is evident that providing respondents with context-free situations in which to discuss fresh fruits and vegetables (such as was the case in the present study) removes the emphasis on purchase behaviour and provides a more holistic view of consumers' knowledge structures of these products. The findings of the present research suggest that price is not considered to be a significant attribute of fresh fruits and vegetables when these products are considered outside of a purchase environment. However, this finding does not indicate that price is not an important consideration when consumers are actually in a purchase environment; as stated above, the studies of Owen (1996) are instructive in illustrating the complexity of human decision making; that is, attributes, such as price, are certainly in consumers' minds in a purchase environment. Yet the role of price is more complex than has previously been considered. The present findings point toward the important role that context plays in access to consumer knowledge structures, and decisions that are made on the basis of this information.

In summary, the results of the present study are useful in providing fundamental, descriptive data relating to consumer fresh fruit and vegetable knowledge structures and, in this sense, highlight attributes, such as appearance-related characteristics and functional considerations that occupy a primary place in consumers' minds when viewing fresh fruits and vegetables. This data can be used in future research in an effort to move from Stages 1 and 2 of knowledge acquisition to Stage 3, that is, to go from what is known about fresh fruits and vegetables to what is presently unknown, such as how the attributes identified in the present study are actually used in the decision process.

It is concluded, therefore, that one of the primary objectives of the present research has been achieved. Relatively comprehensive knowledge structures for each of ten fruits and ten vegetables most commonly consumed by the majority of Australians have been obtained. One caveat of importance relates to the generalisability of the data from the present study. It is the case that a general sample of individuals from Armidale were used in the present research. To the extent that individuals in this rural centre differ from individuals from other parts of Australia, the findings must be treated accordingly. For example, the availability of pre-prepared and pre-packaged fruits and vegetables differs as a function of the relative urbanisation of towns in Australia. In metropolitan centres, such as capital cities, there is a wider

variety of pre-prepared fresh produce than is the case in more rural districts. The availability of these products would be expected to feature in consumers word association responses, that is when responding to the word pumpkin, city dwellers might comment less frequently on the difficulty of preparation than country dwellers, as city dwellers are able to purchase their pumpkins pre-cut and peeled. Considerations such as these should be borne in mind when extrapolating the findings of the present research to populations differing in this sense.

Discussion (cont'd.)

8.2 Descriptive Data (differences in word association responses as a function of sex, age and product functionality).

..... neither women nor men can be considered "superior" or "inferior" to the other, any more than a bird's wings can be considered superior or inferior to a fish's fins or a kangaroo's legs. Each sex possesses mechanisms designed to deal with its own adaptive challenges – some similar and some different – and so notions of superiority or inferiority are logically incoherent from the vantage point of evolutionary psychology. The meta-theory of evolutionary psychology is descriptive, not prescriptive – it carries no values in its teeth.

(American Psychologist, March 1995, p. 167)

Chapter 7 provided a report of age, sex and category-type differences in word association responses found in the present study. There were significant differences in numbers of responses as a function of age and sex, however, it was noted that these differences were not unexpected, given that the different age groups and sex groups did not have equal numbers of subjects. That is, the sample was composed of more women than men, and there were more individuals in the 25–39 age group than in the 18–24 and 40–54 age groups, and even less in the 55+ age group.

However, it was also reported that numbers of responses in most of the global categories (function, horticulture, idiosyncratic and evaluation) differed substantially; and that two-way and three-way interactions between the variables of age, sex and category-type were significant. Significant differences in numbers of responses in four of the five global categories reflect the relative attention individuals pay to particular characteristics, and it is these effects, taken in conjunction with the (three-way and two-way) interactive effects that require further discussion for the purposes of making sense of any qualitative differences found in the data.

To briefly reiterate the main findings, chi-square analyses on numbers of word association responses in each of the age, sex and category cells showed substantial differences in expected versus observed numbers of responses, in several cases. However, before discussing these findings in detail, the one non-significant finding will be described. It was the case that only one global category of responses showed no substantial differences in expected versus

observed numbers of responses. This was the 'sense' category, and a lack of substantial discrepancies was found for both the vegetable and fruit responses. That is, in the present study, adult males and females of all ages provided approximately equal numbers of word association responses dealing with fruit and vegetable appearance, odour, texture, and so on. Furthermore, word association responses relating to sensory characteristics of fresh fruits and vegetables constituted the second most frequent category of responses overall (the most frequent number of word associations appeared in the function category), which lends credence to the argument that sensory attributes of fresh fruits and vegetables are important to consumers.

This finding is not unexpected, given the argument, stated above, that fresh fruits and vegetables are a unique product, requiring close inspection of sensory cues (texture, colour, odour, and so on) in order to determine relative quality and nutritional value. The argument on the primacy of sensory characteristics in evaluating fresh fruits and vegetables will be elaborated upon here.

It is widely known that vegetables and fruits have been a primary source of nutrients for humans for millions of years (Wrangham & Peterson, 1996). In fact, early hominids (Australopithecines), who were the first bipedal primates were vegetarians (Johanson & Edgar, 1996). Modern humans, who originated approximately 200 000 years ago, were omnivorous, and 'we may hypothesise that the earliest relatives of *Homo* were mainly frugivorous omnivores with a dietary pattern similar to that of modern chimpanzees' (Sussman, 1987, p. 171). The diet of modern chimpanzees, in turn, is predominantly frugivorous (Isabirye-Basuta, 1989), and is remarkably similar to that of a modern hunter-gatherer group, the Kadi San Bushman of the Kalahari, whose diet is comprised primarily of plant products, with only 3.6% animal prey (Sussman, 1987).

Investigating the dietary habits of modern chimpanzees to provide models for early human feeding patterns is widespread (McGrew, 1981; Johns, 1990), and much valuable data has been gathered using this technique. Chimpanzees share 98.4% of genes with humans (Johanson & Edgar, 1996). In fact, some researchers suggest that, due to the biochemical and molecular similarities of humans and African apes, that African apes should be classified into the subfamily Homininae (which currently contains humans), as distinct from the Ponginae family, into which they are currently classified along with orangutans (Johanson & Edgar, 1996). Of course, the actual fruits and vegetables consumed

by early humans and modern chimpanzees (and modern hunter-gatherer groups, for that matter) are different, given the distinct ecology present during these widely divergent time periods. However, the relative amounts of plant and animal foods consumed would not be expected to differ markedly for these groups. That is, fresh fruits and vegetables have been a significant part of the human diet for a vast amount of time, and humans are thus likely to have adapted specialised systems for sampling these foods.

Fruits at varying stages of ripeness have differing amounts of primary metabolites (including amino acids and simple sugars which are important nutrients for animals) and allelochemicals, some of which are highly toxic in large amounts, including tannins. It has been found that chimpanzees are able to avoid consumption of high levels of condensed tannins by consuming ripe fruit as opposed to unripe fruit (Wrangham & Waterman, 1983). It would therefore appear that ripeness (which is evaluated via colour and texture) is an important characteristic of fresh fruits and vegetables, providing cues relating to nutritional content.

It has also been suggested (Thornhill, 1996, pers comm) that fruits differing in shape (symmetry) vary in their nutritional value (amounts of nutrients, and so on), and that humans might possess a hard-wired ability to choose the most symmetrical products, thus increasing nutrient intake. In fact, research has consistently demonstrated a tendency for humans and other species to use symmetry as a cue signalling genetic fitness, and to thus find individuals with a higher level of symmetry (than their conspecifics) more attractive (Thornhill, 1993).

It can be argued that, in humans' evolutionary past, it would be extremely important for humans to possess the ability to choose those plant foods with the highest energy and nutrients, and lowest toxins. These characteristics would have a direct bearing on the chances of survival of individuals. It can be further argued that hundreds of thousands of years of practice in choosing particular fruits and vegetables whose exterior appearance signalled increased nutritional value would lead to a level of biological preparedness to evaluate these products in this manner. According to Johns (1990, p.3), 'human ingestion of plant chemicals is part of an integrated adaptive response that has both biological and cultural components'. These notions are relevant to the present research as follows: it would be expected that, in the present study, word association responses referring to sensory characteristics of fresh fruits and

vegetables would predominate, and this was indeed the case (sense-type responses were the most frequent category of responses for fruits, and the second most frequent category of responses for vegetables).

An argument might be mounted that women would be expected to focus on appearance characteristics as, in contemporary times, they tend to be the primary purchasers of food (Gleze, 1991; Baxter, 1993). However, again using a chimpanzee analogy, it has been reported that male and female chimpanzees show no differences in activities related to collecting and processing plant foods, although sex differences are seen in the procurement of meat products (McGrew, 1981). Given the historical importance of fresh fruits and vegetables for human survival (McGrew, 1981; Johns, 1990), and the fact that, with regard to early humans, both males and females took part in food foraging activity, it would be expected that *both males and females* would show a propensity to provide word associations relating to appearance and, as stated above, the findings of the present research support this contention.

The findings of the present study show a propensity for women aged between 25–54 to produce more 'function' words (for both fruits and vegetables – although there were more 'functional' words provided for vegetables than for fruit) than would typically be expected, and for males in this age group to show the reverse trend. Given the division of labour traditionally found for males and females (that is, women participating in more domestic activities than men), it is not unexpected to find that women think more about the function of vegetables (different ways of preparing them, and so on) than men. Dempsey (1988) and Baxter (1990) provide evidence suggesting that women continue to complete more indoor household chores (including cooking) than males, and that women in the workforce continue to have the major responsibility for household chores.

There was an interesting (but only slight) tendency for this pattern to be reversed for younger males and females when providing fruit responses. That is, younger females produced fewer responses and males produced more. This latter trend might be indicative of the changing values in western countries with regard to traditional male/female roles. That is, the view that males and females can share caregiving and breadwinning roles is becoming more acceptable than it was in earlier times (Gilding, 1997). (Although this is not strongly reflected in actual amounts of housework done by males and females (see below), this tendency might be reflected in the increased incidence for

young males to possess more function information relating to fresh fruits and vegetables than their older counterparts).

Women aged 55+ produced fewer evaluative words than expected, whereas males of this age group showed the reverse trend. Interestingly, women aged 40–54 showed a tendency to produce more evaluative words than expected, again with males showing the reverse. Recall too that this latter finding was stronger for fruits than for vegetables. This finding was quite robust, and might again reflect the fact that women continue to be the primary food shoppers (Glezer, 1991; Baxter, 1990). If women are responsible for purchasing fresh fruits and vegetables for the usage of the family, it would be expected that they would use evaluative terms in describing these products. There is little point in purchasing a wide range of fresh fruits and vegetables if they will not be consumed by the family because they are not liked, and women would be expected to have sound knowledge of the fruit and vegetable preferences of individual members of the family.

Women aged 18–54 produced fewer idiosyncratic responses than expected for vegetables, and males showed the reverse trend. Interestingly, younger women showed fewest, with women producing more responses (but still fewer than expected) as they become older. The same was true for males, that is, younger males produced fewer idiosyncratic words than their older counterparts. For vegetable responses, both males and females in the 55+ age groups showed an effect that is the reverse of their younger counterparts. That is, older women produced slightly more idiosyncratic responses than expected, whereas males aged 55+ produced more idiosyncratic responses than expected. However, it must be remembered that these latter findings show only a weak trend, rather than a substantial phenomenon.

Also, women in the 18–54 age group produced fewer horticultural responses than expected (for both vegetables and fruits) whereas males showed the reverse trend. Both males and females in the 40–54 age groups contributed most to this finding. Older women (55+) showed a slight tendency to produce more responses than predicted, whereas again males showed the reverse. The finding that older women produce more horticultural responses, whereas younger women produce less might indicate a cohort effect. That is, older women would be expected to have more horticultural knowledge, as, firstly, the number of home vegetable gardens has decreased over the years, due to our increased urban density, which decreases yard size; and, secondly, the

increased presence of women in the work force, gives them less time to tend home gardens. In this case, it would be expected that older women would have an increased likelihood of having tended home gardens, and would thus possess more horticultural knowledge than their younger counterparts.

Alternatively, the trend for women to provide fewer horticultural responses might be explicable in terms of Bernard's (1972, cited in Haas, 1979) assertion that males are stereotyped as providers of information and fact, whereas women 'tend to be handicapped in fact-anchored talk.....They are....less likely to have a hard, factual background, less in contact with the world of knowledge' (p. 153). This latter suggestion actually supports the finding that women aged 55+ provided more horticultural words than expected, as these women compared to younger women, would be more likely to possess horticultural information, for the reasons given above.

To elaborate, at first glance, the finding that women aged 55+ possess much horticultural knowledge would appear to belie the suggestion that women typically lack hard, factual backgrounds. However, as stated above, women in this older age group would be expected to have acquired factual data relating to horticultural issues due to their past domestic experiences. It might be suggested that while this older age group of women might 'tend to be handicapped in fact-anchored talk' relating to the world of business and careers, that they would be expected to have some expertise in areas related to their careers as primary care-givers and housekeepers. This trend would not be expected to continue in younger women, many of whom attempt to combine the dual careers of family and professional life, and would therefore have less time for gardening and other activities in which older women participate.

This same cohort effect also explains the tendency for older males (55+) to produce fewer horticultural responses than expected. When many males aged 55+ were in the workforce, they were typically the primary breadwinner, and women were primary caregivers (Gilding, 1997). Their focus on career would leave very little time for home gardens, hence their relatively few horticultural responses. The fact that men aged between 40-54 produce more horticultural words might illustrate the tendency for contemporary western values to reflect an equal division between work and leisure than was the case in earlier times. In fact, the results of a recent study by Baxter clearly show that younger Australians are more likely to hold feminist values than older Australians, and women are more likely to hold feminist views than males. In addition,

Dempsey (1988) shows that 78–80% of males are likely to cite gardening as a regular household chore (as opposed to just under half the women in the sample); however, only 61% of elderly men, as opposed to 56% of elderly women garden at least once weekly. These findings can be interpreted as providing support for the notion that older women garden more frequently than younger women (and are thus more likely to possess horticultural information) whereas the reverse is true for males. Baxter (1990) conducted a study of 220 households in Brisbane, Australia, and concluded that a sexual division of labour is still evident in Australian homes. She noted that the participation of males in household chores is confined primarily to *outdoor tasks* and leisure activities with children while women undertake the bulk of household chores. These findings are echoed by Glezer (1991) and Bittmann (1991).

The results of the present study also demonstrate sex and age differences in favourability evaluations of various fruits and vegetables. It was found that males consistently rated vegetables much lower than did females, and that both males and females rated fruits at a similar level. This finding might provide further evidence of the sexual division of household chores. As stated above, it is the case that women remain the primary domestic labourers in a marriage, and that they are primarily responsible for the purchase and preparation of meals. As also stated above, the importance of fresh fruits and vegetables in the diet has been consistently emphasised in recent times, and it can be assumed that, as a consequence, many women would attempt to integrate these foods into the family's diet. The higher vegetable ratings given by women might reflect the perceived importance of these foods to their families. Following this argument, males, who do considerably less purchasing and cooking of family meals, would be less inclined to attend selectively to the importance of fresh fruits and vegetables in the family's diet.

As stated above, age differences in favourability evaluations of fresh fruits and vegetables were also evident in the results of the present study. It was found that, relative to the rest of the sample, the youngest and the oldest males, and the youngest females rated many vegetables as being less favourable. These low favourability ratings were particularly noticeable for the males aged 55+, indicating that males and females of different ages do not evaluate fresh fruits and vegetables similarly.

The above discussion has been instructive in providing explanations on the basis of sex and age for the findings that males and females of different ages provide qualitatively distinct word association responses to pictures and/or words depicting fresh fruits and vegetables. It appears to be the case that the traditional division of labour that continues to exist in Australia and other western countries is reflected clearly in the thoughts that come to mind when Australians are asked to list any ideas they have about fresh fruits and vegetables.

Moreover, the finding that both adult males and females of all ages provided approximately similar word association responses relating to the appearance and other sensory characteristics of fresh fruits and vegetables provides evidence for the continuing presence of evolutionary-based adaptive food gathering behaviours in human fruit and vegetable consumption. It would be expected that the continued presence of plant products in the human diet would lead to the maintenance of important behaviours associated with evaluating the nutritional content of various plant products.

In summary, the word associations obtained in the present study have reflected the relative importance of particular product characteristics, such as function, appearance, horticulture, idiosyncratic matters and evaluations. It can be concluded that each of these categories of attributes are important to consumers. Furthermore, the primary attention given to functional words attests to the salience of this particular attribute. Johar and Sirgy (1991) have stated that utilitarian, or functional, considerations are important to consumers. Shavitt (1992) also emphasises the point that utilitarian features of products (along with social-identity, or image considerations) are uppermost in consumers' minds when evaluating particular products. It would appear that the focus of marketing researchers on product functionality is supported by the findings of the present study, insofar as function-type words were the most common responses obtained.

The findings of the present study have also highlighted the notion that demographic factors such as sex and age influence the ideas or thoughts that comprise consumer knowledge structures. Depending upon whether an individual is male or female, and the age group to which s/he belongs, it is expected that they will focus on particular product characteristics rather than others. Moreover, the results of the present study are supportive of the notion that the traditional division of labour inherent in many societies exists in contemporary Australia, and is reflected in the ideas that comprise particular demographic groups' knowledge structures of fresh fruits and vegetables.

Discussion (cont'd.)

8.3 Mode of Presentation Findings

In contrast to common coding models the dual coding approach postulates that language and knowledge of the world are represented in functionally distinct verbal and nonverbal memory systems. The verbal system is specialised for dealing with linguistic information and structures. Perceptual information, such as the sizes and shapes of objects, is stored in the nonverbal or image processing system. Among other things, the two systems are independently accessed by their relevant stimuli. The imagery system is activated more directly by perceptual objects of picture than by linguistic units and structures, with the converse being true for the verbal system. At a referential level the two systems are partially interconnected so that the word apple, for example, can arouse a stored image and a picture of an apple can be named.

(te Linde, 1983, pp. 119–120)

Recall that, in Chapter 3, cognitive knowledge structures were discussed. Two types of memory system were described, one positing a single memory system, and another suggesting that humans possess at least two interacting memory systems. According to the unitary, or common code model of memory systems (Te linde, 1983) individuals possess a single conceptual system, which houses various concepts' meanings and associations. If this is the case, in a word association task, stimulus objects differing in dimensions such as colour, texture, and verbal material should each access qualitatively similar information (that is, word association responses) from this one conceptual system.

However, according to theories of multiple memory systems, there exist at least two interacting, parallel memory systems containing information that differs in a qualitative sense (Vogel, 1997; Bechara et al., 1997; Epstein, 1994; Paivio and Lambert, 1981, in Madigan, 1983), as opposed to a quantitative sense. For example, Paivio and Lambert suggest that one system deals with verbal information and the other with nonverbal information. Tulving (1972) writes about memory systems containing procedural, episodic and semantic information, Epstein (1994) focusses on rational (intellective) and experiential (individualistic) memory systems, and Bechara et al. (1997) discuss information dealing with past, emotional experiences as opposed to factual, rationally-derived information.

Word association responses obtained in the present study were analysed to determine if quantitative and qualitative differences in responses would occur

as a function of mode of stimulus presentation. It was suggested that qualitative differences in responses gained as a function of mode of stimulus presentation would provide support for multiple memory models, as a memory model positing multiple memory structures would stipulate the presence of qualitatively distinct knowledge being stored in separate systems, and accessed selectively. However, as stated above, according to a unitary code memory model, stimulus objects differing in dimensions such as colour, texture, and verbal material should each access qualitatively similar information (that is, word association responses) from this one conceptual system.

The findings of the present study provide support for multiple memory models. That is, particular modes of stimulus presentation produced word association responses that were qualitatively distinct. To reiterate, using an analysis of variance (ANOVA), it was found that when subjects viewed the name of a fruit or vegetable, such as 'broccoli', they provided many more colour-related responses than subjects viewing an unnamed colour photo, a named colour photo or a named line drawing.

It was also found, using a chi-square analysis, that subjects in the conditions where the picture was labelled (accompanied by the name of the product) provided less horticultural responses than would typically be expected, and more function responses than expected. Further, subjects in the condition where the picture was not labelled produced more horticultural responses than expected, and less function words than expected. Subjects in the unnamed colour condition produced more evaluative responses than expected, whereas subjects in the unnamed line drawing condition produced fewer than expected. Finally, sense-related responses tended to differ as a function of mode of stimulus presentation, however, as Table 7.10 illustrates, there did not seem to be a distinct pattern in these responses.

Analyses revealed no significant differences in the number (frequency) of words produced as a function of mode of stimulus presentation. That is, subjects in each of the seven conditions produced an approximately equal number of responses. This latter finding will be discussed now.

Multiple memory theories clearly focus on memory systems containing information that is qualitatively distinct, however there is no suggestion in the literature of these particular memory systems having differing capacity. That is,

researchers suggest that particular memory systems will contain knowledge or information dealing with particular objects that is different in a qualitative sense. For example, one memory system might contain factual, or intellectual information dealing with apples, while another memory system might contain information relating to apples that is personally meaningful, relating to memories, and so on. However, multiple memory models do not posit that each of these memory systems would hold differing *amounts* of information. Hence, the findings in the present study indicating no quantitative differences in numbers of responses obtained are to be expected.

It is now appropriate to investigate the actual findings of qualitatively-distinct word associations as a function of mode of stimulus presentation, reported above, with a view to reconciling them with existing memory models. Firstly, it can be stated that the results of the present study provide clear support for multiple memory models over unitary memory models. To reiterate briefly, according to unitary memory models, it is the case that qualitatively similar information would be expected to be accessed by presenting subjects with stimulus objects differing in features such as colour, abstractness, and so on. This is so because unitary memory models posit one memory system that contains all of the information an individual possesses relating to all objects. That is, according to unitary memory models, the sum total of knowledge possessed by a particular individual is contained within one memory system, or structure.

However, according to multiple memory models, different memory systems containing qualitatively distinct information co-exist, and work interchangeably. According to Bechara et al. (1997), non-declarative dispositional knowledge contained in one system may be accessed in a decision task, and will assist a (second) system containing facts, or intellectual information. That is, an 'intuitive' memory system influences the type of factual information retrieved from a more 'rational' system.

Tulving and Schacter (1990) also posit multiple memory systems, two of which correspond to Bechara et al.'s experiential and factual systems. Tulving and Schacter (1990) describe a semantic memory, which 'has to do with acquisition and use of factual knowledge in the broadest sense;' and episodic memory, which 'enables people to remember personally experienced events' (p. 301). Finally, Epstein (1994) posits the existence of at least two memory systems, an 'experiential' system, based on personally meaningful events and memories, and a 'rational' system, which is responsible for acquisition and use of intellectual knowledge.

To conclude, the findings of the present study are consistent with multiple memory models. A particular mode of stimulus presentation may access one type of information however, once accessed, associations in other modalities could also be activated. In addition, these findings add strength to the notion of two qualitatively distinct types of information people can produce using the word association technique, one dealing with facts and another dealing with personally meaningful information. To elaborate, the unnamed and named colour photos accessed evaluative words, which can be interpreted as personally meaningful words. Also, the named conditions also seemed to access personally meaningful words (functional, idiosyncratic and evaluative words, which would be expected to be drawn from personal memory⁸), whereas the unnamed conditions seemed to access facts (horticultural words⁹).

In summary, word association responses obtained using different modes of stimulus presentation appear to reflect the operation of two cognitive systems, one intuitive, and dealing with personally meaningful information, and another that has an analytical focus, and which processes factual, intellectual information. It might be speculated that *colour* cues (which are traditionally associated with emotion) inherent in a colour photograph and the name of the object accompanying a photograph lead to access of emotive, experiential information, whereas a picture of the object without an accompanying name leads to access of factual knowledge.

Recall that Hart et al. (1985) found that aural presentation of an item's name was not related to a cognitive deficit of a patient unable to name or categorise fruits and vegetables presented in pictorial form. That is, when their patient, M.D. was presented with an item's name aurally, he could correctly categorise the object as being a fruit or a vegetable. However, he could not correctly name or categorise items presented pictorially. The findings of the present study, and those of Hart et al. (1985) would appear, therefore, to support the notion that presentation of an object in particular modalities (lexical, pictorial, aural, or a

⁸ Inherent in the definitions of the function, idiosyncratic and evaluative categories is the notion that these categories are experiential, or derived from personally meaningful information. Function words relate to functions of the product that the individual is personally aware of, idiosyncratic responses, by definition, are those peculiar to the individual, and evaluative words are personally meaningful in that they relate to an evaluation process to which the individual has placed the various products.

⁹ The various definitions of the categories that fall under the umbrella of 'horticulture' imply a factual, or intellectual base. That is, words falling into these categories relate to horticultural matters and are semantic in nature, as opposed to being tied up with feelings and personal experience.

combination of all) leads to access of qualitatively distinct associations within a person's knowledge base.

These findings are difficult to interpret, and the author is unable to provide a solid argument as to why the name of a product and colour cues access emotive information whereas an unnamed picture of an object evokes factual knowledge. It is beyond the limits of the present thesis to investigate this matter further. Needless to say, the findings of the present study are of theoretical significance in providing further evidence of multiple memory systems, including the organisation of semantic systems into particular categories, and future investigations in this area might profit from using a similar methodology (the word association method) to explore memory systems in more depth. Specifically, analysis of the ordering of word association responses (primary versus secondary) might prove useful in shedding light on the type of information that is accessed initially using various modes of stimulus presentation, relative to successive associations (from the same stimulus object). That is, each person's multiple word associations to each stimulus object might be analysed in an attempt to discern whether the type of information that is accessed initially (the first association to a stimulus word) is qualitatively similar to successive responses (to the same stimulus word). Further research in this area will be beneficial in providing a more comprehensive and complete model of the organisation of semantic systems.

The implications of this information for advertising fresh fruits and vegetables may be substantial, and it may be the case that the findings of future research will provide additional information relating to the effect of different modes of stimulus presentation on the elicitation, or learning of particular types of consumer knowledge. For example, to speculate briefly, if it is the case that particular modes of stimulus presentation predispose consumers to adopt decision processes that are more or less analytical, this information can be used in increasing consumer knowledge of particular products. It would depend upon what ideas that advertisers wish to provide, when promoting various products. If advertisers wish to provide consumers with factual, or uncommon knowledge relating to a particular fruit or vegetable, then it may be important to use a type of presentation that will predispose consumers to access an analytical memory system. However, if promotional campaigns are directed towards eliciting an experiential, emotional cognitive system, a mode of stimulus presentation that has been shown to access intuitive cognitive systems might be more appropriate. Speculations such as these might usefully be explored in future studies of the effects of stimulus presentation modes on consumer decisions.

Discussion (cont'd)

8.4 Self-monitoring Findings

High self-monitors conceive of themselves as rather flexible and pragmatic types, and their social behaviour indeed manifests marked situation-to-situation fashioning of the selves they present to others. Low self-monitors conceive of themselves as rather consistent and principled types, and their actions typically are accurate and meaningful expressions of their enduring attitudes, traits, and dispositions. Both types of people seem to be living their lives in accordance with their personal conceptions of the self.

(M. Snyder, 1991, p. 43)

8.4.1 General Descriptive Findings

In Chapter 5, empirical findings were described (DeBono and Rubin 1995; Snyder, 1987, 1991; De Bono & Snyder, 1989, De Bono & Telesca, 1990, Johar & Sirgy, 1991; Shavitt, 1992, Shavitt, Lowrey & Han, 1992; Jones, 1994) which show a propensity for LSM and HSM to focus on particular characteristics when evaluating a product. Generally speaking, it was found that LSM tended to focus on function, or quality characteristics of advertisements, whereas HSM were found to focus on form, or image-related characteristics.

It was further noted in this chapter that findings of these self-monitoring studies tended to be 'moderate' (Zuckerman et al., 1988) and, in addition, that the theoretical link between self-monitoring, on the one hand, and product attributes, on the other, was tenuous. Recall that various researchers have used particular terms to describe the product characteristics that are purportedly related to self-monitoring propensity. The terms 'quality', 'function', and 'utilitarian' have been used to describe characteristics selectively attended to by LSM, whereas the terms 'image', 'form', and 'value-expressiveness/social identity' have been used to describe characteristics selectively attended to by HSM. Moreover, the most robust findings occurred when the relation between self-monitoring propensity characteristics indicative of 'image', and 'quality' were investigated. The findings relating self-monitoring propensity to 'form' and 'function', and 'utilitarianism' and 'value-expressiveness' were not consistent.

The present study was undertaken to investigate this relationship in more detail than has previously been the case. Specifically, the sample was divided into LSM and HSM, and the word association responses of these two groups

were analysed to determine whether there were, in fact, qualitative differences in responses. Relative numbers of responses in the five global categories (*sense*, *function*, *horticulture*, *idiosyncratic*, *evaluation*) for LSM, on the one hand, and HSM, on the other, were investigated in order to elucidate more specific definitions of the actual product characteristics that are selectively attended to by LSM and HSM.

An inspection of the frequency of responses in each of the five global categories (*sense*, *function*, *idiosyncrasy*, *horticulture*, *evaluation*) is useful in this endeavour. Figures 7.27 and 7.28 show the category breakdowns for the entire sample. With respect to the breakdown of fruit responses, *sense* words predominated, accounting for 44.8% of overall responses. *Function* words were the next most frequent (28.2%), followed by *horticulture* (16.7%), *evaluation* (4.9), *idiosyncrasy* (5%), and finally, *economic* (.5%).

With respect to the vegetable responses, the pattern of findings was very much the same, except that *function* words predominated (39.3%), followed by *sense* responses (36%). These findings can be taken to suggest that words relating to *sense* and *function* of fresh fruits and vegetables are uppermost in individuals' minds when viewing an image of these products.

This particular pattern of responses was also found when examining responses of only extreme LSM and extreme HSM¹⁰. Chi-square analyses were performed on the variables of self-monitoring (high versus low) and category definition (*sense* versus *function* versus *horticulture* versus *idiosyncratic* versus *evaluation*). For both LSM and HSM, with respect to fruit responses, *sense* responses predominated (1030 for HSM; 827 for LSM) at the expense of *function* responses (621 for HSM, 537 for LSM). However, with respect to vegetable responses, *function* responses predominated (734 for LSM, 821 for HSM) at the expense of *sense* responses (799 for HSM, 632 for LSM).

8.4.2 Findings indicate that fruits and vegetables have different functions

It is concluded that, depending upon whether the product is a fruit or a vegetable, that *sense* and *function* responses prevail. The data clearly show that two primary categories, those of *function* and *sense* accounted for almost half of

¹⁰ Recall that details relating to the decision taken to include only extreme self-monitoring scores are located in Chapter 6.

all fruit and vegetable responses. These categories are similar to Snyder's (1991) 'function' and 'form' categories. That is, the *function* category adopted in the present research approximates Snyder's function category, in listing functional characteristics of the product. The *sense* category can be approximately equated with Snyder's 'form' or 'appearance' category.

To elaborate, this finding relating to sense responses is to be expected if it is borne in mind that, when evaluating fresh fruits and vegetables for their quality, sensory stimuli, such as odour, feel and colour are the primary determinants used by consumers. In this case, a wide range of sensory characteristics (not limited to visual properties) of the product would be expected to occur when individuals evaluate fresh produce, thereby necessitating a widening of the 'form' category into 'sense' (which includes all word association responses relating to sensory properties of the object).

The finding that sense responses were primary for fruits, but that function responses were primary for vegetables is in keeping with the ideas of Sommer (1988) whose research findings suggest that 'fruits are more highly valued than vegetables, and this is reflected in their use as descriptors for positive characteristics' (p. 681) and Monnot (1990), who suggests, based upon relatively recent investigations into fundamental motivations for the consumption of fruits and vegetables, that fruits are more emotive than vegetables. Monnot suggests that:

'fruit is strongly associated with the idea of sun and holidays. It corresponds with the reality of life: warm, pleasant and relaxed. Symbolically fruit is considered to contain life which is capable of regenerating the vital forces which are sapped during a day, a year or a lifetime. Symbolically it represents the capacity to regenerate a person's vital body and mental energy.

Fruit provides satisfaction for pleasures which are not only sensual, but also associated with the feelings and even the emotions. As everything about it is light, fruit provides a major source of energy and a good investment in terms of time and motion. It is also appreciated at the end of a meal: "it slides down easily, and aids digestion of the meal." Fruit is loaded with the promise of pleasure, sensations and taste...On the other hand, consumers feel fewer emotional links with vegetables. When presented along with fruits during interviews, vegetables tend not to fire the interviewees' imagination. The fundamental motivation for vegetable consumption is concern about one's health and the desire to rebuild one's energy. The vegetable is less psychologically significant than fruit, perhaps because the satisfaction it provides is less immediate. The pleasure is retarded by the necessities of preparation (peeling, cutting, up, etc), which is lengthy and more difficult than for fruit'.

(Monnot, 1990, pp. 25–26)

This idea is further supported by the relative numbers of idiosyncratic responses given to fruits (5%) as opposed to vegetables (3.6%), indicating that consumers have slightly more personal thoughts associated with fruits than with vegetables. In summary, the findings of the present study indicate that fruits are associated with more sensory properties, than would be expected, whereas vegetables are associated primarily with functional properties in keeping with widespread notions of the emotionality of fruit as opposed to vegetables.

8.4.3 The role of product functionality on self-monitoring

Shavitt (1992) and Shavitt et al. (1992) suggested that any self-monitoring effect would be mediated by the functional nature of the product. That is, utilitarian or functional features of objects would feature in subjects' descriptions of objects since 'all products have features relevant to quality (durability, workmanship, etc.)' (Shavitt et al., 1992, p. 342). In addition, Shavitt (1992) has suggested that products having one primary purpose (either utilitarian or value-expressive) would be evaluated by both HSM and LSM in terms of how well the product serves that particular function. Shavitt (1992) further suggested that, for products having multiple functions, a self-monitoring effect should occur. According to the predictions of Shavitt (1992) and Shavitt et al. (1992), if a product is primarily utilitarian, a self-monitoring effect would not be expected to occur.

Following on from these ideas, in Chapter 6 fresh fruits and vegetables were categorised by the author of the present thesis as having primarily utilitarian functions. It was further suggested that fruits and vegetables might also serve image, or social-identity functions:

Due to the increased public awareness of the benefits of fresh produce consumption (including advertisements wherein famous personalities support the consumption of these products), it might be argued that purchase of these products could also serve a social identity, or value-expressive function. That is, individuals with shopping trolleys (at the supermarket), fruit bowls (in the home) and/or school lunches overflowing with fresh produce, might consider themselves to be presenting a positive image to others.

It is therefore suggested that fresh produce fills a primarily utilitarian function, but that it might also be considered to comprise, to a lesser extent, a value-expressive function. Following from this, and based upon previous research, reviewed above, the following suggestion is postulated: that the multiple-functional nature of fresh fruits and vegetables will lead to a self-monitoring effect, in line with the ideas of Shavitt et al. (1992). That is, given that fresh fruit and vegetables are likely to serve multiple functions for consumers, LSM and HSM will show definite differences in attention to particular product characteristics.

(Kjeldal, 1998, present thesis, Chapter 6)

As stated, the findings of the present research revealed a self-monitoring effect for fruits, but not for vegetables. This finding runs counter to the prediction, stated above that, due to the multiple functions of fruits **and** vegetables, a self-monitoring effect would be expected for both fruits and vegetables.

However, on reflection, and as a result of an analysis of the types of word associations that were given to fruits, on the one hand, and vegetables, on the other, a lack of a self-monitoring effect for vegetables is not unexpected, given the above conception (based upon the findings of the present study) of vegetables as having *functional* qualities at the expense of *sensory*, and of other, more personally meaningful features. That is, in line with the predictions of Shavitt (1992), and Shavitt et al. (1992), it would be expected, given the primarily utilitarian nature of vegetables, that responses from LSM and HSM would be expected to be primarily utilitarian. This was the case, with functional responses outweighing other categories of responses for both LSM and HSM. The non-significant findings regarding a self-monitoring effect for vegetable word association responses will not be discussed further.

8.4.4 Word associations for fruits revealed a self-monitoring pattern

As reported above, a self-monitoring effect was observed for fruits in the present study, which is in line with prediction that, given that fruits have multiple purposes, a self-monitoring effect would occur. An analysis of the types of word associations that were given to fruits indicates that fruits are considered to be multi-functional in nature. As reported above, more sensory, as compared to functional, word associations were given to fruits, indicating that attributes distinct from function are uppermost in consumers minds while viewing various fruits. It is therefore suggested that the word association responses produced in the present study are supportive of the notion that the

functional nature of fruits is eclipsed by a consideration of attributes that are sensory in nature, that is, fruits are considered not only to be functional in nature, but sensory characteristics also assume a primary role in consumer knowledge structures of these products.

In order to further investigate the proposed relationship between self-monitoring propensity and particular product characteristics, the breakdown of fruit word association responses into global categories will be explored in more depth. It is interesting to note that the findings, as discussed above, indicate that HSM and LSM do not show significant differences in word association responses relating to *sense* and *function*. That is, relative numbers of word association responses relating to 'form' (appearance) and 'function' were approximately equal for both extreme LSM and extreme HSM. This finding runs counter to previous research in this area. That is, in contrast to previous studies, reviewed in Chapter 6, that have shown that LSM tend to focus on functional product characteristics, whereas HSM focus on image, or form-related product characteristics, the findings of the present study show no significant discrepancies between observed and expected numbers of words in *sense* and *function* categories for LSM and HSM.

Rather, findings of theoretical interest from the present study tend to be clustered among the three lesser categories (*horticulture*, *idiosyncrasy*, *evaluation*) and an exploration of these trends will be undertaken in order to shed light on qualitative differences in word association responses for LSM and HSM.

As stated, there were significant differences in observed versus expected findings for both LSM and HSM. These differences related to the *horticulture* category, and to the terminal categories 'uses – who' and 'feel'. It was found that LSM produced fewer *idiosyncratic* and more *horticultural* responses than expected, whereas the opposite was true for HSM. That is, for HSM, more *idiosyncratic* responses were found than expected yet less *horticultural* responses were found than were to be expected.

In summary, differences in observed versus expected numbers of responses in each of the five global categories were not found for the *sense* and *function* (global) categories, but were found for the *horticulture* and *idiosyncratic* categories, and for the terminal categories 'uses – who' and 'feel'. Interestingly, LSM produced more *horticultural* responses than expected, and HSM

produced fewer of these. Conversely, LSM produced fewer 'uses – who' and 'feel' responses than expected, whereas HSM showed the opposite pattern.

Table 7.14 (located in Chapter 7) shows each of the deviations between observed and expected numbers of word association responses in terminal categories that were substantial. It is to these findings that we must turn in order to investigate proposed qualitative differences in the expressed ideas of LSM and HSM regarding particular objects.

Note that the terminal categories relating to the global category of *horticulture* that showed large discrepancies between observed versus expected numbers of responses were 'varieties' and 'grow'. For these categories, LSM produced many more responses than expected, whereas HSM produced many fewer responses than expected. In a similar vein, LSM produced many more responses relating to the 'looks like' terminal category (which falls under the umbrella of the 'sense' global category), whereas, again, HSM produced many fewer responses than expected.

Contrast this with the large discrepancies between observed versus expected numbers of responses for the terminal categories of 'uses – who' and 'feel', which fall under the umbrella of the global categories *function* and *sense*, respectively. In this instance, LSM produced many fewer responses than expected, whereas the reverse was true for HSM.

Finally, Table 7.17 (located in Chapter 7) shows that, although a significant discrepancy between observed and expected numbers of word association responses was found for the global category *idiosyncrasy*, inspection of the terminal categories indicates no large discrepancies between expected and observed findings. However, there were some standardised residuals that almost reached significance, and these trends are instructive in the present attempt to shed light on qualitative differences in word association responses for LSM and HSM. The findings of interest are indicated in bold face.

As Table 7.17 illustrates, LSM provided fewer responses relating to 'memories' and 'represents', whereas HSM showed the opposite trend. Recall that the terminal category 'memory' is defined as 'a response indicating that the individual has a memory of the product in a specific context. For example, to a picture of an apple, the individual might respond with the phrase "mum's apple pies"'. The terminal category 'represents' is defined as 'a response that

suggests that the product in question represents something. For example, to the picture of a pineapple, an individual might respond with the word "exotic". Or, to a picture of a strawberry, an individual might respond "luxury" .

Recall that HSM also provided more responses than expected in the 'uses – who' and 'feel' categories, whereas LSM showed the opposite trend. These findings are relevant to those dealing with the individualised responses discussed above. The definition of 'uses – who' is thus: responses indicating that certain groups of people use this product. The 'feel' category is defined as 'words that describe how the product feels when it is touched, or handled. For example, to a picture of a pineapple, an individual might say "prickly", or "spiky".

It would appear that each of these categories (feel, uses – who, represents, memory) are highly individualised in nature. That is, each of these categories tends to focus on *experiential*, or personally meaningful ideas. These findings appear to indicate that HSM focus on experiential characteristics of products. LSM, on the other hand, provide fewer responses (than expected) of a personal nature.

Further support for this contention comes from an inspection of Table 7.17. Although several of the standardised residuals were moderate, a definite trend in the expected direction was found. It is the case that LSM provide fewer *idiosyncratic* responses than expected, and HSM provide more responses than expected for every terminal category except the ATPW* . Note that each of these categories (expression, homonym, sex, and story) are categories of responses focussing on *highly individualised* remarks.

In contrast, the categories for which LSM produced more responses than expected were 'looks like', 'grow', and 'varieties'. These categories are defined thus: 'grow' – 'how the product is grown'; 'varieties' – 'identifying the product in terms of a specific variety (Batlow, Delicious, e.g.) or brand'; and 'looks like' – 'responses indicating that the product looks like something else. For example, to a piece of watermelon, the individual might respond with the word "canoe".

These definitions clearly indicate that responses belonging to these categories are focussed on the product itself, rather than the individual making the

* association to previous word

response. That is, these responses do not appear to be individualised. It might also be stated that these responses are more factual, or intellective, in content, as opposed to being experiential. These results suggest that LSM might be more inclined towards thoughts of a non-personal, factual nature, whereas HSM are not.

In summary, it would appear that LSM and HSM do, in fact, show distinct qualitative differences in the word they use to describe an object. Recall that previous research in this area has focussed on two specific categories of responses: image and quality. Recall also that various researchers have used particular terms to describe the product characteristics that are purportedly related to self-monitoring propensity. The terms 'quality', 'function', and 'utilitarian' have been used to describe characteristics selectively attended to by LSM, whereas the terms 'image', 'form', and 'value-expressiveness/social identity' have been used to describe characteristics selectively attended to by HSM.

The findings of the present study do not provide support for the tendency of HSM to selectively attend to ideas relating to image/form/social expressiveness, or for LSM to focus selectively on ideas relating to function, quality or utilitarianism. Rather, the findings of the present study appear to indicate that LSM focus on intellective, factual, non-personal information when describing objects, whereas HSM focus on highly individualised, experiential ideas.

8.4.5 Implications of the findings of the present research for self-monitoring theory

Can these findings be reconciled with existing research? The work of Epstein (1994), Hammond (1996) and others, described in Chapter 3, is relevant to this discussion. Recall that several contemporary psychological researchers suggest that at least two memory systems exist, one dealing with rational, factual information, and the other dealing with experiential, personal information. Hammond (1996) discusses the Cognitive Continuum, according to which cognitive processes occur anywhere along an intuitive-analytical continuum, with many everyday decisions using a combination of both polar extremes, or what Hammond refers to as 'quas rationality'. Epstein (1994) discusses the notion of interactive modes of cognitive processing, the rational (verbal-

analytical, deliberative, rational) and the experiential (a largely preconscious, nonverbal, automatic process based on experience and emotionally-laden).

This discussion on two interacting, parallel systems of information processing is directly relevant to the ideas, introduced earlier, of Vogel (1997) and Bechara et al. (1997), who posit the existence of two systems of knowledge, one that is largely factual, and which proposes response options and possible outcomes relating to these, and applies reasoning strategies to the activated facts and options; and another, which contains information related to past, emotional experiences and the rewards and punishments attached to these behaviours. When faced with a sensory representation of a particular situation or object, it is thought that the latter (experiential) system is accessed prior to the former (factual) system, and that the information contained therein biases, or influences how information in the factual system is dealt with. The authors suggest that the ventromedial frontal cortices of the central nervous system are involved in containing experiential information.

The self-monitoring findings of the present research are consistent with the contentions of Epstein (1994), Hammond (1996) and Bechara et al. (1997). The results of the present research indicate clearly that HSM produce word association responses that suggest selective activation of an experiential, personally meaningful system, while LSM produce responses indicative of a factual, intellectual system.

In a general sense, these results are of assistance in further explicating the manner in which LSM and HSM differentially focus on particular product characteristics. Firstly, in line with the findings of Shavitt (1992) and Shavitt et al. (1992), it would appear that the functionality of the product itself influences self-monitoring effects. That is, if a product is multi-functional, as opposed to possessing one primary function, qualitative differences in word association responses for individuals differing in self-monitoring propensity exist. To reiterate briefly, a self-monitoring effect was found for fruits which appear to display a utilitarian and expressive function, whereas for vegetables, which are primarily utilitarian, a self-monitoring effect was not found. Therefore, in future research investigating the role of self-monitoring in consumer preferences, it is suggested that particular notice be paid to specifically categorising products in terms of functionality. These categorisations will be crucial/necessary in hypothesising self-monitoring influences on differential attention to product characteristics.

Secondly, the findings from the present study have provided more specific descriptions of the qualitative differences in ideas that LSM and HSM have toward objects. Rather than LSM focussing on product quality, and HSM focussing on product image, as previous research in this area has indicated, it would seem that the differences between these two groups are more fundamental in nature, and relate to differential access to particular memory systems, namely, the rational, or factual system and the experiential, individualised system.

Recall that the word association study undertaken for the present thesis was deliberately unstructured. This type of methodology provides respondents with a context-free environment in which contents of fruit and vegetable knowledge structures can be elicited. This is the first such study I am aware of that examines self-monitoring in a free-recall situation, and the results are instructive in providing more information on the specific nature of self-monitoring effects. The information produced in the present thesis comprises descriptions of the contents of LSM and HSM knowledge structures relating to fresh fruits and vegetables, and it is the case that clear differences in the contents of the knowledge structures of LSM and HSM exist. These observed differences are congruent with contemporary decision and cognitive information processing theories, and further research in this area would benefit from an in-depth investigation of these differences and efforts to reconcile these findings with previous research findings on self-monitoring. Not only will findings in this area be of assistance to marketers, but will increase our understanding of multiple memory theory.

With respect to the implications of self-monitoring for fresh fruit and vegetable choice, it can be stated that the findings of the present study, when viewed in conjunction with previous self-monitoring research, demonstrate that individuals differing in self-monitoring propensity do appear to focus on particular product characteristics. Furthermore, this tendency might reflect a more basic pre-disposition for LSM and HSM to access cognitive knowledge systems that are located at various points along an intuitive, or experiential – rational, fact-based cognitive continuum, when evaluating products. The goal of marketers and consumer behaviour psychologists is to better understand the behaviour of consumers, and it is suggested that the (self-monitoring) findings of the present research are instructive in this regard. These findings have provided a link between self-monitoring theory and cognitive decision theory (Hammond, 1996; Epstein, 1994; Damasio, 1994), thus moving consumer behaviour research a little closer to its (above-stated) goal.

8.5 General Discussion and Implications

"Fan her head!" the Red Queen anxiously interrupted. "She'll be feverish after so much thinking."

(The Complete Works of Lewis Carroll, 1987, Chapter 9.)

It is useful to view the findings of the present study from the perspective of the primary objectives of the thesis. It was stated at the outset that research into fresh fruit and vegetable decision making has not been conducted in a systematic and comprehensive manner to date. Several industry-based studies exist, however the methodologies employed have not often been appropriate to this early stage of research. Existing marketing methodologies were explored and it was concluded that they too do not provide fruitful results given the infancy of research in this area.

It was suggested that knowledge acquisition follows a series of distinct stages, that academic research is an instance of knowledge acquisition and should therefore mirror these stages. The first stage of knowledge acquisition concerns description of the object of interest, and it is necessary to obtain a relatively comprehensive body of fundamental descriptive data which can be used subsequently to hypothesise relationships between concepts, thereby taking researchers into Stages Two and Three of knowledge acquisition, that is, moving from known facts to an investigation of presently unknown data.

The findings of the present study are instructive in this sense. A relatively comprehensive body of information dealing with knowledge structures of ten fruits and ten vegetables has been obtained, and has been ordered in a manner that allows researchers to quickly and easily isolate salient concepts related to each of these products. These findings will be of assistance in future research of fresh fruit and vegetable decision making, since the data clearly comprise empirical evidence of factors that combine to make up consumers' knowledge structures of these products. The relative importance of these concepts and the manner in which they feature in the decision making process can be usefully investigated in future fruit and vegetable studies.

The descriptive summaries of each of the ten fruits and ten vegetables are instructive in demonstrating that each fruit and vegetable is different, with particular attributes linking together to form a descriptive pattern unique to that particular product. For example, inspection of the systematic network for

pineapples (Chapter 7) indicates the existence of clear elements, or themes that together comprise the pineapple knowledge structure. The unusual taste and sensory properties of pineapples, their many functions, their growth in tropical locations and negative health issues related to their consumption, such as mouth ulcers are predominant in consumer knowledge structures of pineapples. These findings are highly consistent with those of Milgate (1994) regarding common themes associated with pineapples, and many of the word association responses obtained in the present study are similar to those produced by Milgate's (1994) respondents, thus providing some degree of validity for these categories. Thus, the results of the present study provide information regarding the attributes, or product characteristics that are implicated in the decision process for different fruits and vegetables, and can be used to begin building consumer decision models that relate specifically to particular fresh fruits and vegetables.

Advertising campaigns for fresh fruits and vegetables tend to promote fresh fruits and vegetables as a group, or fresh fruits as a group, and fresh vegetables as another. Messages such as 'eat 5 + 2 per day' (Miller, 1997, pers comm.) are indicative of these promotional attempts. The findings of the present study suggest that individuals, while labelling these products as either fruits or vegetables, identify particular positive and negative attributes as belonging to a particular product, and healthy eating campaigns might benefit from two strategies.

Firstly, health officials can act to reinforce the attributes that consumers presently see as being positive, for example, broccoli as being very healthy or cauliflower as tasting nice with various sauces, or, as an alternative, working towards reducing consumers' negative ideas about various fresh produce (as identified in the present study), such as 'potatoes are fattening', or 'pumpkins are too difficult to prepare'.

Secondly, health promoters might examine the descriptive networks for each fruit and vegetable to determine whether there are gaps in consumer knowledge about particular products which might benefit from subsequent attempts to educate the public regarding benefits of these products (such as vitamin content, cooking methods, and so on) of which the public is presently unaware.

In summary, the fruit and vegetable industry can use the information provided in the descriptive networks (from the present research) to enhance product

attractiveness by minimising the perceived negative characteristics of particular fruits and vegetables, and maximising their perceived benefits and positive attributes. Measures such as these may prove to be beneficial in increasing the consumption of fresh fruits and vegetables among the Australian population.

Substitutability of products is a related issue, and will be briefly discussed here. Marketers discuss the notion of 'positioning' of products (McCarthy, Perreault & Quester, 1997, p. 132), and this refers to the position, in the market, that is given to particular products or brands by consumers. 'Perceptual maps', based upon data derived from consumer interviews visually depict where, in an 'hypothetical product space' (McCarthy et al., 1997, p. 133), various brands of a product are located (for particular consumers). If two products are judged by consumers to have attributes that are similar (for example, both products might be deemed to be highly nutritious and suitable for particular meals), they are located closely together on a perceptual map, and are considered to be more substitutable than two products that are located further apart on the map. That is, if two products are located together, one product is easily substituted for another, if the 'favourite' product is not available.

Many intuitive ideas about the substitutability of various fresh fruits and vegetables exist in the marketplace, and the results of the present research are instructive in this regard. As stated above, the descriptive summaries for each of the ten fruits and ten vegetables demonstrate clearly that consumers tend to see each fruit and vegetable as unique, and that, although product characteristics that are related to appearance (sense) and function are important for all of the fruits and vegetables studied, other product characteristics distinguish individual fruits and vegetables. For example, pumpkins and potatoes, which are traditionally seen as being somewhat substitutable, are quite dissimilar in important respects. The descriptive summaries for each of these vegetables show potatoes as being highly functional, almost unanimously considered in a very positive light, and sensory characteristics and idiosyncratic responses are not important considerations. Pumpkins, on the other hand, are seen as having fewer functions, sensory characteristics tend to be important, and idiosyncratic responses, particularly those dealing with stories (Halloween, Cinderella, and so on) are an important part of consumers' knowledge structures of pumpkin. Close inspection of the frequency breakdowns for these products (Appendix 9) highlights the distinct profiles given to each of these products.

Another example relates to the substitutability of pears and apples. The word association responses obtained in the present research indicate that pears are considered to have fewer functions than apples, horticultural matters are of less concern, and idiosyncratic responses related to the unique shape of pears play a prominent role in consumers knowledge structures. Idiosyncratic responses for apples, on the other hand, relate primarily to stories (such as Snow White, for example). Again, inspection of the frequency breakdowns in Appendix 9 show clearly different profiles for these products.

Finally, grapes and peaches are generally thought to be substitutable, however the frequency breakdowns for each of these fruits show that they are, in many respects, seen as distinct products. It is important for industry bodies to be aware of these areas of dissimilarity for promotional purposes (as stated above) and also so that traditional notions of substitutability, and views of consumer behaviour based upon these, can be revisited.

The present studies were also undertaken with a view to investigating cognitive knowledge structures. Relevant literature on memory systems was described, and it was suggested that each of the multiple memory theorists, while using different terminology, were converging on the notion that humans possess at least two memory systems that interact in a particular way to influence decision making. The findings of the present study provide two strands of support for the multiple memory model.

Firstly, the word association responses were categorised and analyses were undertaken to determine whether presenting the stimulus materials in different modes would influence the types of responses obtained. Qualitative differences in word association responses were found, and it was suggested that these findings supported the multiple memory model, since different modes of stimulus presentation should only lead to qualitatively different knowledge being accessed if this knowledge was stored in separate systems. The results of the present study are therefore useful in providing a more detailed account of the contents of, and access to these systems. For example, use of colour and a verbal label accompanying a stimulus object appear to lead to access of episodic information. Subsequent research attempts by the author of the present thesis will deal with a more exhaustive study of the effects of various modes of stimulus presentation on access to cognitive systems.

Secondly, findings of the present study relating to the personality construct of self-monitoring (Snyder, 1987) led support to the multiple memory model.

Previous theory suggested that LSM and HSM selectively attend to particular product characteristics when evaluating a product. However, it was noted that various researchers used particular terms to describe the product characteristics that are purportedly related to self-monitoring propensity. The terms 'quality', 'function', and 'utilitarian' have been used to describe characteristics selectively attended to by LSM, whereas the terms 'image', 'form', and 'value-expressiveness/social identity' have been used to describe characteristics selectively attended to by HSM. Moreover, the most robust findings occurred when the relation between self-monitoring propensity characteristics indicative of 'image', and 'quality' were investigated. The findings relating self-monitoring propensity to 'form' and 'function', and 'utilitarianism' and 'value-expressiveness' were not consistent.

In the present study, the word association responses of extremely LSM and extremely HSM were analysed in order to shed light on this theoretical problem. It was suggested that differential patterning of word association responses of LSM and HSM, in each of the five global categories of *sense*, *function*, *evaluation*, *horticulture* and *idiosyncrasy* would reflect these individuals' selective attention to particular product characteristics, thereby enabling researchers to more clearly determine whether LSM and HSM do evaluate products differently.

Recall that LSM provided more responses relating to the categories 'grow' and 'varieties' than expected, whereas HSM provided responses relating to 'represents', 'memories', 'uses-who' and 'feel'. These findings demonstrate quite clearly that LSM focus on intellectual, factual, non-personal information when describing objects, whereas HSM focus on highly individualised, experiential ideas.

So it would appear that particular personality types tend to selectively access the experiential and factual memory systems. Bechara et al. discuss 'access to records of previous individual experience – specifically, of records shaped by reward, punishment, and the emotional state that attends them' (1997, p. 1294). These records 'facilitate the efficient processing of knowledge and logic necessary for conscious decisions' (1997, p. 1294). That is, these researchers suggest that primacy of access to the experiential system influences the type of factual information subsequently gleaned from the intellectual system. It might be the case that HSM are more susceptible, or attend more heavily to experiential information relating to rewards and punishments, and that this

information limits the amount of factual information that is subsequently accessed from the factual, intellectual system.

Discussions on LSM and HSM have focussed on the functions that products serve for them (Snyder, 1987; Shavitt, 1992; DeBono & Rubin, 1985). It has been suggested that HSM use products to convey a particular image of themselves to others, whereas LSM use products to satisfy utilitarian, or functional needs. If this is the case, then it would be expected that *memories of* successful or unsuccessful image projection would influence HSM subsequent evaluations of products, whereas *factual information* related to the actual product would influence the evaluations of LSM. When viewed from this perspective, the results of the present study make good sense.

These ideas can be further explored by assessing LSM and HSM in terms of decision making style and other areas of cognitive functioning. Rowe and Boulgarides (1992, p. 38) have designed a 'Decision Style Inventory' which provides in-depth information relating to the type of information used by persons differing in preferred decision style. Decision makers are categorised as 'directive', 'analytic', 'conceptual', or 'behavioural', and these various decision styles parallel, to a certain extent, Hammond's Cognitive Continuum (1996). That is, individuals using these four decision styles use differing amounts of information to make decisions, and can tolerate various levels of ambiguity in decision environments (cognitive complexity). The 'analytic' and 'conceptual' decision styles have a high degree of cognitive complexity, as they use much information to make decisions, and tolerate a high degree of environmental uncertainty. The 'directive' and 'behavioural' decision styles differ somewhat, in that the 'directive' style has a lower tolerance for ambiguity and uses less information to make decisions, and considers few alternatives (decision options). The 'behavioural' decision maker is similar in using less information, and considering few alternatives, however, the 'behavioural' decision maker differs from the 'directive' in being extremely people-oriented, that is, the 'behavioural' decision maker primarily considers the impact of decisions on people, and shows a great deal of empathy and concern for others. These latter decision styles would appear to be moving toward the intuitive end of Hammond's Cognitive Continuum (1996), whereas the 'conceptual' and 'analytic' styles are firmly anchored at the analytic end of Hammond's continuum.

Further research on the cognitive styles of LSM and HSM might benefit greatly from use of Rowe and Boulgarides' (1992) 'Decision Style Inventory', in providing more detail relating to the type and amount of information used by these individuals in a decision context. The information gleaned from research of this type might shed more light on the findings of the present study which show that LSM tend to use more factual information when describing objects, whereas HSM use experiential, personally meaningful information. It might be the case that LSM and HSM are differentially represented within the four decision styles mentioned above, with LSM tending towards an analytic or conceptual style, and HSM moving towards a directive or behavioural style.

Rowe and Boulgarides (1992) have also developed a 'Communication Style Inventory', which has been validated with the 'Decision Style Inventory', and taps individual communication styles. Four communication styles are identified, namely: 'Directors', 'Reasoners', 'Persuaders', and 'Empathisers'. These four styles parallel the four decision styles discussed above and are relevant to a discussion of self-monitoring, in the following way. A primary distinction between LSM and HSM relates to the manner in which these individuals interact, or *communicate* with others. As discussed in depth above, LSM focus on presenting their 'true self' to others, whereas HSM show a more adaptive interaction style, attempting to fit their behaviour into particular situations as they see fit. These differing communication styles deserve in-depth investigation, and it is suggested that the 'Communication Style Inventory' (Rowe & Boulgarides, 1992) is a potentially useful instrument in this respect.

It is suggested that future research on the cognitive styles of LSM and HSM will benefit from use of both of the above mentioned inventories, as these can provide further information on the types and depth of information used by individuals differing in self-monitoring propensity. Furthermore, the 'Communication Style Inventory' might shed light on the manner in which these differing decision styles affect the communication styles of LSM and HSM which, in turn, will provide much needed data relating to the specific ways in which LSM and HSM differ.

In light of the impressive research support for the construct of self-monitoring in the fields of both psychology and marketing which, when taken together, strongly support self-monitoring as a personality construct in its own right, it is suggested that future studies utilising a word association methodology to

further investigate the specific manner in which the behaviour of LSM and HSM differs would be highly beneficial.

Finally, the present thesis has been beneficial in presenting the word association method as a useful investigatory tool in: (a) providing general descriptive information that is a relatively pure indicator of how knowledge is cognitively stored, and (b) investigating qualitative differences in cognitive representation of knowledge. It is concluded that the word association method has much utility in investigations requiring access to knowledge structures for the purposes of providing fundamental data on any object of academic interest.

*"Begin at the beginning",
the King said, gravely,
"and go on til' you come
to the end: then stop".*

(The Complete Works of Lewis Carroll, Chapter 12, p. 93)

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