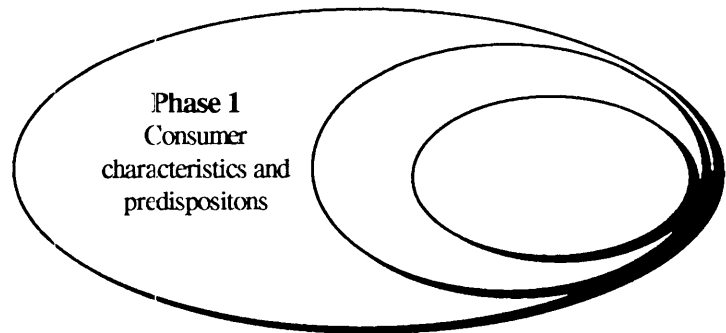


Chapter 6 - Consumer characteristics and their measurement

'I think I've almost exhausted what I can get at the moment... I also have a tendency then to top up during the week because I don't like vegetables... I like them to be reasonable.. well as fresh as you can buy them at the shops right.'

'haven't got many vegies, hold on.... let me look... carrots, broccoli...carrots, broccoli, beans, string beans... See I haven't been to get the meat... usually I buy the meat first then I know which vegies to get.'

(Protocols 1995)



6.1 Introduction

In the previous chapter a model of consumer choice in relation to the purchase of fruits and vegetables was outlined, while in Chapter 4 several propositions as to specific behaviour in response to pricing of fruits and vegetables were put forward. The empirical investigation of the validity of these propositions and the representation of the model is to be addressed in Phases 2 and 3 (presented in Chapters 7 and 8 respectively). However, a necessary element in these investigations is to identify the influence of individual consumer differences on price sensitivity. In this Chapter, Phase 1 of the research is presented. The objective is to develop a set of measures which capture consumer characteristics potentially relevant to choice behaviour, and which can be used subsequently in the principal studies comprising Phases 2 and 3. To this end the substance and analyses of the chapter should be treated as preliminary to these phases, not as a study which stands alone.

Evident in the discussions of earlier chapters is that the manner in which consumers respond to the various attributes of fruits and vegetables will be contingent upon

individual preferences and circumstances. Demographic factors such as age, sex, and profession were indicated as significant to the breadth and specificity of preferences. Income is always a key variable in studying consumer behaviour in marketing and applied economics. However, its influence is not clear-cut in the context of low-cost food purchases. Consumers on relatively high incomes can be highly price conscious, while those on low incomes may be considerably less so. Factors such as the emphasis a consumer places on the importance of a product group to their diet will modify the effect of income, as will dietary restrictions and other physiological factors, as outlined in the model of consumer decision making. Also highlighted in the model are the potential influences on price consciousness of needs for variety, and the manner in which a consumer processes information; this appears to affect the level of attention to price (Inman et al. 1990). The risks associated with a purchase were not made explicit in the model but can be expected to influence consumers' sensitivity to price, particularly in relation to consumption outcomes. A factor which may reduce perceived risk is the level of involvement a consumer has in the product group. High levels of interest or concern with the product group imply greater knowledge. As such, the perceived risk associated with purchasing or preparing unfamiliar fruits and vegetables should be diminished.

In this chapter, the initial aim is to determine how differences in consumer profiles may be identified and measured. Specifically, those differences examined relate to the dimensions of price and budget consciousness, risk, involvement with fruits and vegetables, variety-seeking, and cognitive processing.

Although all of these factors have dimensions in common, they are generally researched as distinct areas (perhaps with the exception of risk and involvement), and for most, various measurement scales have been proposed, as will be evident in the following sections. These scales provide a useful tool for the purpose of distinguishing consumer-centred, as opposed to product-or externally-sourced, affects on consumer behaviour. Ideally the measures would be administered in their existing form, because some degree of reliability and validity has already been established. Since the current research is largely exploratory in nature, established measurement, where possible, would assist greatly in interpretation of behaviour.

However, there are two problems with taking this approach (as noted in the previous chapter). First, in total these scales present a formidable list of questions. Since it is

envisaged that these measurements will be elicited in conjunction with detailed questions concerning shopping behaviour, there is a considerable risk of respondent (and researcher) fatigue, and a subsequent fall in accuracy. What is required is an instrument which captures the central aims of each scale but which is reasonably parsimonious. Second, some adaptation of the existing measures to the context of purchases of fruits and vegetables is necessary. The significance of context to behaviour has been emphasised throughout previous chapters. As a consequence of these factors, an instrument comprising a modified representation of the various scales is developed for the purposes of measuring consumer profiles in Phases 2 and 3.

With the exception of risk, measurement scales are developed for each of the dimensions outlined above. Consumer differences with respect to risk are considered to be best captured with questions specific to different fruits and vegetables. Further, elements of risk are implied in other dimensions, such as involvement.

A final characteristic of consumers which was discussed in Chapter 2 is their predisposition for using a price/quality schema. Argued in Chapter 4 was that a price-quality schema is problematic in the category 'fruits and vegetables' because of the confounding influences of seasonal and other natural elements. Further, there are significant differences among items (strawberries and potatoes for example) which would lead one to expect that a price-quality schema may not be consistent across the category. However, to establish the status of price-quality schema in perceptions of fruits and vegetables, a separate survey instrument was developed and administered in conjunction with the consumer characteristics measures.

In the following sections each dimension is discussed, and a method of measurement established. In Section 6.7 is outlined the development of the measurement scales. The association of different dimensions to one another, and differences in scores across the final sample of respondents are discussed in Sections 6.8 and 6.9. In Section 6.10 the basis for measuring price-quality schema is outlined and the results of the survey discussed. The final section contains a summary of the results of the analyses and a brief discussion of the implications of these for the empirical investigation of purchases in fruits and vegetables.

6.2 Predispositions to price and budget consciousness

Highlighted in Chapters 2 and 4 was that the degree to which price is salient in purchases, and the level of consumer sensitivity to price, can vary according to consumers' general concern for price. Also noted was that price sensitivity may derive from two sources. One is in association with budget constraints, whether actual (real income constraint) or self-imposed. The other, price consciousness, is in relation to the deal itself. The latter is akin to Thaler's Transaction Utility, although aspects of the price-quality trade-off will also be prevalent. Potentially, all consumers are sensitive to the perceived 'fairness' of the deal. However, some are more prone to assessing this aspect than others (see, for example, Dickson and Sawyer 1990).

Although external factors such as the nature of the product group and its pricing structure can be expected to influence consumers' attention to price, we would expect consumers who are price conscious or budget prone to be generally more sensitive to price differentials and changes. Their concern with price may manifest in greater attention to prices during the shopping process, a tendency to purchase more specials than others, or to maintain a mental account of their purchases. Alternatively, price/budget consciousness may be less readily apparent as a determinant of choice during the shopping process but, as suggested by Piggott and Wright (1992), consumers' budget constraints may manifest in those products which they include in their initial set, rather than in consideration on an item-by-item basis.

In either case, the influence of price/budget consciousness is expected to be significant to consumer choice.

6.2.1 Price consciousness

The heterogeneity in consumer price perceptions has generally been investigated through observational or post-interview techniques; both of which are to be incorporated in the present study. Where a distinction has been made between consumer groups, the primary tools have been variables such as income and/or household make-up which represent budget rather than 'value' consciousness. Until Lichtenstein et al. (1993), no attempt had been made to develop a measurement scale, or set of scales, which has the potential to reliably identify individual differences in price perceptions.

Lichtenstein et al. developed a total of seven scales to capture constructs of price perceptions. Five of these represented price in its negative role; price mavenism¹, value consciousness, price consciousness, coupon proneness, and sale proneness. The remaining two identified price in a positive role; price-quality schema and prestige sensitivity. The reported coefficient alphas for these scales ranged from 0.78 to 0.90, indicating internal consistency, and item-to-item correlations were generally in excess of 0.5.

As a basis for assessing price consciousness in the present research, the scales developed by Lichtenstein et al. are more detailed than necessary, and all are not entirely appropriate to the context of purchasing fruits and vegetables in Australia. The construct price mavenism provides more detail than is required in the present study, and was found to be inconsistent in the test results of Lichtenstein et al. Prestige sensitivity was also considered unnecessary for current purposes, and expected to be less prevalent in the fruits and vegetables category. The price-quality schema is treated separately for the purposes of this research and is discussed in Section 6.10. Coupons are not a common feature in the Australian grocery market, and are virtually non-existent in the area of fruits and vegetables.

In the value consciousness construct, a number of items were devoid of useful information. It could be argued that most consumers are ‘..very concerned about low prices, but equally concerned about product quality’, and equally that they ‘..try to maximise the quality [they] get for the money [they] spend’. Neither statement is particularly discriminating. All consumers wish to get value for money. The factor which varies is how value is perceived. For the purposes of this study, a consumer who is highly price consciousness in relation to the ‘deal’, is one who defines ‘value’ as ‘the lowest, possible price for a given quality’. That is, they are prepared to expend effort in a search to minimise the price/quality ratio.

The initial scale to measure overall price consciousness (in its negative role) was limited to six items (see Appendix 6.1). Two of the items included in Lichtenstein’s ‘price consciousness’ construct were relevant, and were adapted for inclusion in the initial test, as was one item from the ‘value consciousness’ construct. Three further items were

¹ A price maven is an individual who sees themselves as a source of price information, and who actively engages in search and dissemination of market prices (Lichtenstein et al 1993: 235).

added to the scale to reflect, respectively; 'sale proneness', whether family eating habits override concerns with price, and whether price enters consideration at all in the purchase of fruits and vegetables given it is a low-cost product category (particularly in Australia).

6.2.2 Budget consciousness

There is no existing scale to measure budget consciousness. The four items proposed as a basis for a measure of this construct reflect a general concern with maintaining control over the total amount spent during a shopping expedition, as opposed to a focus on value (see Appendix 6.1). Some correlation between this and the price consciousness scale can be expected, since a concern with budget should be reflected in a high level of price consciousness. However, the converse is not necessarily so; high price consciousness does not necessarily equate with high budget consciousness. Thus, the correlation should not be substantial.

A further two items indicating planning and adherence to a shopping list were also included (albeit tentatively) under budgeting; 'most of the items I buy, I have planned to purchase before going to the shop' and 'I rarely make a shopping list'. Although these items do not refer to budgeting explicitly, they do imply some concern with budgeting, or careful shopping. Since there is some question as to their placement in budgeting, they will be considered separately to the original four items.

6.2.3 Risk and price sensitivity

Various sources of risk have been identified in the marketing literature on risk; risks associated with time, performance, physical and social aspects, financial aspects, and psychological aspects (Jacoby and Kaplan 1972, Dunn et al. 1986). In Chapter 4, five forms of potential risk were considered relevant to the purchase of fruits and vegetables: risks associated with the difficulty in assessing the quality of products or with preparing the product (performance risk—although the latter may have an element of psychological/social risk), with satisfying the needs of other household members (psychological/social risk), and with the opportunity costs of a particular deal or the timing of use (financial risk). However, also noted was that the operational definition of these dimensions, and their relationship to one another, can vary significantly across studies (Ross 1975). Further, despite numerous attempts to identify a scale to reflect an

overall risk-profile for individuals, the emerging consensus is that attitude to risk is context specific (Slovic 1972, Bromiley and Curley 1992).

The lack of consensus on how to operationalise the dimensions of risk in consumer purchasing behaviour, and the difficulties in identifying a procedure for assessing risk which is generalisable across situations and products, precludes the effective use of risk measurements. Instead, the presence of risk may be more reliably identified through specific questioning on products, and through the choice processes articulated by subjects in the verbal protocol analysis of Phase 3. For example, handled risk should be evident in statements indicating the difficulty with assessing an item, or uncertainty as to the outcome of the purchase. The risk associated with usage timing and the storage quality of products should also be apparent by statements to this effect in the protocols. Rather than outline these in detail here, the inclusion of various questions and codes (for the protocols) in Phases 2 and 3 are discussed in conjunction with other elements of instrument development in the respective phases.

Although direct indications of risk are left to subsequent sections, a factor which can modify the level of risk, and which is measurable, is the degree of involvement consumers have with the product group. This aspect is identified through a self-administered measurement scale, the development of which is discussed in the next section.

6.3 Involvement

In Chapter 4 it was argued that, where a consumer derives significant pleasure from, or has a strong interest in, fruits and vegetables, the risk associated with the use of an item will generally be lower than that for disinterested consumers. Venkatraman (1989) has found this to be the case with other products. For these consumers, high prices were also considered to be less of a deterrent relative to those with little interest in the product group. Those consumers who have a particular liking and/or requirements for a product may be willing either to pay a higher price for that product or to undertake further search (as noted in Chapters 2, 4 and 5). This would also be the case when fruits and vegetables are sought for a specific recipe or special occasion. For others, fruits and vegetables are generally not a source of inspiration or pleasure. Their association is essentially instrumental; *apples are apples*.

The level of interest or pleasure a consumer exhibits towards a product group is generally referred to as 'Involvement' (Zaichowsky 1985). Involvement is considered to be the precursor for higher levels of search, comparisons of attributes and of alternatives, the length of the choice process and attempts to maximise satisfaction.

Involvement can be situation-specific or an enduring association with a specific product category, the latter being tied to central values held by the consumer. Laurent and Kapferer (1985:42) cite Rothschild's (1979) example where "an individual might usually purchase various low-price brands of liquor in a stochastic manner because of low enduring involvement; on the occasion of a visit by the boss, however, a high involvement decision would be made to purchase a specific brand." The area of interest for current purposes is the level of enduring involvement that consumers have for a product group.

6.3.1 The measurement of involvement

The theoretical definition of involvement remains an area of contention. Laurent and Kapferer (1985, 1993) argue that it should be viewed as a multidimensional construct which captures its various antecedents. Included among these are: the perceived risk of the purchase, which includes the importance attributed to the purchase and the probability of mispurchase; the consumer's hedonic predisposition towards the product; and the extent to which the product is perceived as a reflection of the self. Zaichowsky (1985) claims that involvement is best measured incorporating three factors: personal factors including values, needs and interests; physical characteristics of the item which are a source of differentiation or interest; and situational factors which temporarily increase the interest or relevance of the object.

A particular area of contention is whether risk should be measured as a construct distinct from involvement (Venkatraman 1989). On the one hand, high levels of perceived risk generally lead to greater information search and processing. Hence it may be considered a dimension of involvement. However, as outlined above, a consumer who has an enduring interest in a product group will generally perceive a lower level of risk to that of a relatively disinterested consumer. Thus, one dimension of involvement can modify another. It is the potential for this to occur which suggests that risk should be viewed as a construct distinct from involvement, and is treated as such in the current research.

A lesser point of controversy, but with equal potential for complex interpretation, is that of 'importance'. Park and Mittal (1985) propose a two dimensional model of involvement, comprising 'pleasure' and 'importance'. The latter is presented as "It is important that I attend to this product". At issue is, why is it important? If it is important because the consumer perceives a risk with the purchase, then a similar consequence to that of the risk dimension can be expected. 'Importance' may also derive from a specific interest in a product. However, McQuarrie and Munson (1992) argue that 'interest' and 'importance' should be treated as separate dimensions (although the two merged into a single factor for a number of products they examined). An item may be considered important to a consumer (headache remedies and laundry detergent) but not of particular interest to them. A related, but different distinction has caused difficulty for Kapferer and Laurent (1993). The distinction between 'interest' and 'pleasure' was unstable for a number of products they examined. They, too, argued that the distinction should be retained, using virtually the same argument as McQuarrie and Munson: 'One can think of products...where we would expect interest to occur without pleasure (washing machines....), and of products... where we would expect pleasure without interest (ice cream...)' (1993: 354). The similarity in explanations suggests that 'interest' in the study by McQuarrie and Munson equates to 'pleasure' while, in the study by Kapferer and Laurent, 'interest' equates with 'importance'. This being the case, we could hypothesise that 'pleasure' and 'importance' are underlying dimensions of the predominant dimension, 'interest'.

In the fruits and vegetables category, high levels of enduring involvement are most likely to be a consequence of a significant hedonic association with products in the category, and/or of a concern with diet and health (see Chapter 3); the former implying 'pleasure', and the latter, 'importance'. To establish the strength of each dimension according to common practice would require a lengthy process of questioning on the product group (for example, the Product Involvement Inventory (PII) developed by Zaichowsky, and the revised RPII of McQuarrie and Munson). The reason for including an involvement measure is to assess its influence on consumers' price sensitivity and on their confidence in assessing the quality attributes of products (which may manifest in strong choice strategies or heuristics). As such, a few items directed at identifying consumers' *general* involvement with fruits and vegetables was the objective, rather than a lengthy set of

questions attempting to identify the specific sources of involvement. To this end, four items representing various outcomes of an 'interest' in fruits and vegetables were developed (see Appendix 6.1). The items indicate the level of enjoyment, time and effort spent on purchasing fruits and vegetables, and the extent to which consumers seek information on the product group.

6.4 Variety seeking

In Chapter 4 the influence of variety seeking on consumers' response to price was discussed. Although product attributes were considered to be significant to variety seeking, there do appear to be differences in consumers' predisposition to seek variety (van Trijp et al. 1992, van Trijp and Steenkamp 1992).

Variety-seeking is closely related to involvement. A consumer who is highly involved with the product group because of the pleasure they derive from it, would also be expected to rate high on variety-seeking. However, the two constructs may not be related when high involvement is a consequence of health, or other instrumental reasons. Variety-seeking extends the involvement a consumer has with a product group to one where they enjoy exploring new sensations.

For the most part, variety-seeking has been measured by modelling consumers' purchasing behaviour for a specific product(s) over time, an option which is not feasible in the present research. An alternative approach is a measurement scale developed by Van Trijp and Steenkamp (1992a, 1992b). The scale VARSEEK comprises eight items, and is specifically designed to measure variety-seeking in the context of food consumption. The internal consistency of the scale has been found to be between $\alpha=.87$ ($n=807$) and $\alpha=.90$ ($n=151$). Convergent validity is also within bounds; more than 50 per cent of the variance in the consumption behaviour of various food items (including fruits and vegetables) for 191 respondents was explained by the variety-seeking construct. The scale's predictive ability does vary according to product group and has been ineffective in some contexts (Lähtenmäki and van Trijp 1995), which suggests that it may be context dependent.

The VARSEEK scale was used in this research as a basis for developing a scale more specific to the purchase of fruits and vegetables. VARSEEK includes a number of items relating to variety seeking when eating away from home. These were not considered particularly useful to the present study since most purchases would be utilised in the

home. The scale is also designed for information from the respondent only. It does not include items which would elicit information on the influence of other household members on consumers' purchases. To capture this aspect two items relating to household preferences were added to the measure.

A total of ten items were included for testing a measurement for variety-seeking. Four items were adapted from the VARSEEK scale, and a further four added to strengthen the scale, and to ensure sufficient reverse scoring. The remaining two items were those relating to household preferences (see Appendix 6.1).

6.5 Styles of information processing

Highlighted in Chapters 2 and 4 was the tendency for some consumers to respond to a price promotion signal without cognisance of the actual level of the discount. Inman et al. (1990) suggested this behaviour may be due to fatigue, mood, time constraints, consumers' involvement in the product, or to a relatively low need for cognition (NFC). The rationale behind the concept of NFC is that individuals differ in the extent to which they need to understand or make sense of the world, and/or enjoy engaging in problem solving (Cacioppo and Petty 1982). Haugtvedt and Petty (1992) distinguish individuals high on NFC from those low on NFC as outlined in Table 6.1.

Table 6.1 Characteristic differences between High and Low NFCs

HIGH NEED FOR COGNITION	LOW NEED FOR COGNITION
Hold complex constructs of attributes	Hold an image
Recall qualities of attributes	Recall frequency of attributes
High evaluation of information / objectivity	Low evaluation of information / objectivity
Internal reference	External reference
Greater elaboration of information	Use of simple association or inference

A general finding in research into the nature of the construct is that NFC differs according to occupation types (Cacioppo and Petty 1982, Spotts 1994). Those in professional or administrative positions appear to exhibit higher levels of NFC than those in manual occupations, a finding which has been confirmed in more recent studies

Several studies have employed the concept of NFC to examine consumer choice behaviour. Inman et al. (above) utilised an eighteen-item scale developed to measure NFC by Cacioppo et al. (1984). Their findings in relation to consumers' processing of price cut signals were consistent with the NFC hypothesis; low NFCs responded to a promotion signal alone, while high NFCs responded when there was an actual price cut. Inman et al. concluded that promotion signals may act as a heuristic for low NFCs, providing an avenue for reducing cognitive effort.

However, Alba and Marmorstein (1987) provide evidence that the use of a simplifying heuristic need not necessarily be limited to cognitive types. Through a series of experiments they showed that *frequency* of favourable attributes alone can be the basis of subjects' choice between alternatives in situations when time and/or prior knowledge is constrained. Their subjects focused on the number of discounts offered, not the magnitude of discounts, when assessing price discounts offered by three stores under a time constraint.

Baumgartner (1993) also found an interaction between time and NFC. The objective of her study was to determine the bases for holistic and analytic product perceptions. Subjects were asked to classify sets of three sweaters according to their similarity. Three treatment conditions were set: one in which subjects were requested to make their assessments spontaneously, another where subjects were to make careful choices, and a control group. For the control and meticulous groups, NFC had an affect on the type of processing undertaken. Where spontaneity was requested, NFC was not significant to the cognitive process employed for categorising.

In a similar vein to the NFC concept, Epstein (1994) proposes that individuals utilise two primary, and interactive processing systems; experiential and rational. The experiential system is associated with automatic, affective processing, while the rational is deliberative and analytic. In a test of holistic vs rational cognitive processing, Epstein et al. (1994) utilised the NFC scale developed by Cacioppo et al. (1984), and proposed three further scales to capture the affects of the experiential system of processing. The first of these Faith in Intuition (FI), is a unipolar scale designed to measure experiential processing only. The two remaining scales are bipolar. Head over the Heart (HOV) measures the degree to which subjects report that they use rational over experiential processing, and Value the Head over the Heart (VHOV) measures the extent to which they report valuing one

system over the other. Test results indicated that FI and NFC were measuring different systems, and that FI was capturing the experiential system. FI also proved to be significantly, and positively, correlated with heuristic processing. NFC was negatively correlated with heuristic processing. The two bipolar scales did not perform as well as the unipolar scales. Most correlations with heuristic processing were not significant.

Apparent from the preceding discussion is that NFC may be context dependent, and may be an ineffective measure where time constraints apply. However, there is sufficient evidence to suggest that individuals may be distinguished according to an affective-rational continuum, and that these differences may affect the manner in which subjects attend to price.

A total of 21 items were included as possible items in a measure for distinguishing between rational and heuristic processing. Following a discussion with colleagues on the eighteen-item scale developed by Cacioppo et al., only selected items were used, and a number were reworded slightly. The feeling was that the scale exhibited a strong positive bias for cognitively complex tasks which could result in demand bias.

At the time of testing the initial set of measures, the FI scale was not available to the author. Consequently, three items which were thought to capture a tendency in subjects for visual or affective processing were developed (the FI scale was incorporated later in the development of the measures). The 21 items are listed in Appendix 6.1.

6.6 Additional items included in the instrument

A total of sixteen additional items were included in the initial instrument to capture attitude to the nutritional content of different fruits and vegetables, time and energy levels on the day, and a social dimension (see Appendix 6.1).

Five of the items dealt with the subjects' perceived level of energy at the time of completing the questionnaire, and whether they were feeling pressed for time on the day. These items were included to enhance the analysis of analytic vs holistic processing in the main study. In the previous section, time constraints were highlighted as a significant factor in the type of cognitive processing undertaken by subjects.

Four items indicate a concern with satisfying household needs or with impressing dinner guests. In either case, price may be less important in choice. A further four items were

included to gauge perceptions of the variation in the nutritional value of fruits and vegetables. Where consumers consider that there are significant differences in the nutritional value of fruits or vegetables, they may perceive a greater need to vary their selection of items. If this is found to be the case, there should be significant correlation between this measure and the variety-seeking measure.

The final three items related to subjects' general interest in shopping. This aspect was included to determine whether general shopping, and a specific interest in fruits and vegetables, were common, or separate constructs. To the extent that they are separate, support is provided for the contextual dependence of the involvement and variety-seeking constructs.

6.7 Development of the scales

The various measures outlined above were incorporated into a single questionnaire instrument. The measures were checked to ensure a reasonable balance of positive and reversed items, for clarity in language, and to detect complex items. Of the 63 items, 26 were reverse scored.

The questionnaire was developed in two stages. In the first stage, the measures were tested using students and staff at the university. A refined version was then administered to a sample drawn from external students at the university. These students are generally mature-age and in full-time employment. The principal aim of testing the instrument was to develop a set of measures which capture the constructs outlined above, but which is also as concise as possible. The more concise, and less repetitive the items, the less likely are consumers to become irritated or fatigued by the instrument.

An argument against minimising the items in a measure is the potential for reduced reliability. However, a feature of reliability which frequently goes unreported in studies developing measurement scales is that reliability, as measured by Cronbach's alpha, is a function of the number of items *and* the mean inter-item correlation (MIC). Carmines and Zeller (1979: 46) note

While increasing the number of items in a scale can thus improve the scale's reliability, there are significant limitations to this procedure. First, the adding of items indefinitely makes progressively less impact on the reliability....Second, the greater the number of items in a scale, the more time and resources are spent constructing the instrument. It should be noted, finally, that adding items to a

scale can, in some instances, reduce the lengthened scale's reliability if the additional items substantially lower the average inter-item correlation

Of primary importance, then, is that both the alpha and the MIC are within acceptable bounds. For most studies the benchmarks for acceptability are those established by Nunnally (1978). Nunnally recommends alpha coefficients of 0.7 or greater for preliminary research, 0.8 or greater for basic research, and 0.9 or higher for applied research. However, alphas in the 0.90s are fairly rare, and are considered by some to indicate item redundancy rather than reliability (Peterson 1994). The approach taken in the current research is to attempt to maximise both alpha and MIC for each factor.

The questionnaire instrument was separated into two parts. The first included the items outlined in Section 6.4 relating to rational vs holistic processing. The second part of the instrument encompassed the items measuring price or budget consciousness, involvement and variety-seeking behaviour, social concerns, beliefs on the nutritional content of fruits and vegetables, and items to determine time pressure and energy levels.

Items were presented as Likert scales, with six response categories; Strongly Disagree, Disagree, Disagree Slightly, Agree Slightly, Agree, Agree Strongly. A six-item scale was chosen for two reasons. First, an even-numbered scale avoids the need to attempt to interpret a score which is potentially ambiguous. Second, providing a broader range of scores somewhat reduces the impact on analysis of subjects' tendency to avoid the extremes of a range.

In Part Two of the questionnaire a further item, 'Not Applicable', was also included. Since initial testing of the instrument was to be drawn from a university population, it is probable that a significant number of subjects may have little experience of shopping; particularly in those items relating to family needs. Rather than confound the results, it was felt that a clear indication of the lack of relevance of an item would result in a more robust outcome. Even where the population comprises frequent shoppers, there will be consumers who live on their own. As such, the items referring to household needs will not be relevant.

At the conclusion of the questionnaire various demographic information was requested including age, sex, income, employment, household size, and the frequency with which subjects shopped for groceries. These items were included to provide information on the sample, and to identify their influence on the scores of individuals.

6.7.1 Initial testing of questionnaire instruments

The initial form of the questionnaire was administered to 191 students and staff at the University of New England. For the most part, students were in residence at the university's colleges. A breakdown of the sample is presented in Appendix 6.2.

The sample is dominated by subjects under the age of 25. In total, 56.5 per cent of subjects were aged 21 or over, and 68.4 per cent shopped on a weekly or fortnightly basis. Since the principal objective at this stage was to identify a reduced set of items, the age bias was not considered critical to the results. However, some caution is exercised in analysis of the data, particularly in relation to the items focusing on aspects of shopping.

Rational vs experiential processing

An initial screening of all subjects on items relating to NFC and affective orientation indicated no values outside the range, but did reveal a number of cases with missing values, and severe skewness ($z = 3.9$). Cases with several missing values were deleted from the sample, leaving a more than adequate sample of 189² cases, and a ratio of cases to variables in excess of 7:1 (Tabachnick and Fidell 1989). Closer examination of one item, 'I prefer to rely on reason and logic when making a decision', indicated that only 9.47 per cent of cases had scored in the negative. Since the item was not considered crucial to the analysis, it was deleted. A further item, 'I often seem to think in pictures', was also highly negatively skewed ($z = 4.6$, and with only 15 per cent with a negative score), but was retained for analysis without transformation.

A number of further items exhibited negative or positive skewness and/or kurtosis. However, taking into consideration the potential loss in interpretability, none of these was considered sufficiently severe to warrant transformation (all less than $z = 3.9$).

A total of 189 cases and 20 items were retained for further analysis. For all analyses missing data were deleted on the basis of pairwise comparisons.

An initial run using SPSS Principal Components Analysis (PCA) (SPSS Inc. 1989, release 6.1) was made to determine the suitability of the data for factor analysis. PCA with

² This number is higher than the total in Appendix 6.2 because all subjects did not complete the personal particulars at the end of the survey.

Varimax rotation were utilised throughout the analysis since they provide clear structure and unique factors.

Although not outstanding, most indicators of the suitability of the data for factoring were sufficient. Correlations between items were in the region of 0.35, and the KMO measure of sampling adequacy was 0.74. The item 'When working on a problem, I can easily find myself lost in a mass of information which I have collected' did not have the expected sign, which suggested that there was some ambiguity in interpretation. As such, the item was deleted from further analysis.

An examination of the scree plot and initial factor solution indicated a three or four factor solution. The first three factors explained 38.6 per cent of the variance. Factor 1 explaining 19.5 per cent, Factor 2, 11.8 per cent, and Factor 3, 7.2 per cent. The fourth factor included only two items, and lacked interpretability. Consequently, it was excluded from further examination.

Both Factors 1 and 2 were associated with need for cognition. The distinction between the two seemed to stem from an emphasis on task as opposed to a more general interest in understanding how the world works. It is possible that this separation was due to the attempt to reword a number of the items from the original NFC scale. A further influence was that of gender. Using Cronbach's alpha, Factor 1 had high reliability for men ($\alpha=.81$) but not for women ($\alpha=.67$). For Factor 2 neither gender scored well in terms of reliability (both α s around 0.60). The separation of items into Factors 1 and 2 appears primarily due to women. A separate factor analysis for women indicated that they tended to distinguish between creative or investigative thought, and the type of thought required to complete puzzles or complex tasks.

Factor 3 appeared to be capturing Epstein's experiential mode of cognitive processing. Items included in this factor were those dealing with spontaneity, relying on feelings, and letting things happen rather than attempting to understand why they happened.

Despite the separation of NFC items into two factors, the factor solution indicated a clear distinction between rational and experiential items. For further development of the questionnaire, the NFC scale developed by Cacioppo et al., and Epstein's scale for Faith in Intuition (FI) were adopted, with slight modifications. This avenue was preferred because any attempt to strengthen the factors with additional items from various sources

would require significant effort, and validation. Epstein's FI, which was not available for initial testing of the questionnaire, provides an established set of items for testing the experiential construct. Although the NFC has characteristics which are not considered entirely appropriate to the Australian context (see the argument in Section 6.5), it has already undergone testing and, as with FI, has an existing theoretical base.

The items for inclusion in the second stage of the questionnaire development are listed in Appendix 6.3.

Shopping attitude

Analysis commenced with 42 items, and included all cases where the individual shopped at least once a month. Cases where missing values exceeded four were also eliminated, leaving 136 for analysis. Missing values in the remaining sample were dealt with by pairwise elimination.

Five items relating to time pressures and individual energy levels at the time were extracted for separate analysis. As expected, correlations for these items indicated two distinct dimensions: one relating to external time pressure, and the other to how the individual was feeling at the time. Two items, 'I don't feel like thinking too hard today' and 'there are many demands on my time today', which exhibited clearly defined measurement of each dimension, were retained for the final questionnaire.

The items measuring individual perceptions of the variation of nutrition in vegetables and fruits respectively, were averaged to form one variable since their correlation was 0.76. A further item, 'I believe it is important to buy a wide range of fruits and vegetables to get balanced nutrition', was removed from further analysis since its scoring suggested that there was little differentiation across cases, only 8.0 per cent of cases scoring below 'agree slightly'. With these items modified and deleted it is unlikely that a meaningful dimension representing attitude to nutrition would emerge. However, a correlation of the averaged scores for variety-seeking and the nutrition dimension suggested that there could be some association between a tendency to seek variety and perceptions of the variation in the nutritional value of fruits and vegetables.

A total of 35 items remained for factor analysis. While the item to case ratio was lower than desirable, which reduces the stability of the factor solution, this stage represented a

preliminary investigation of possible dimensions. In addition, the robustness of the factor dimensions was established through reliability tests using Cronbach's alpha and by a further development stage with a more substantial sample.

An initial factor solution using PCA indicated a five factor solution. At this point items 'I worry about whether my family/friends will be satisfied with my choices' and 'I only buy food that I like' were eliminated since their loadings on the solution were less than 0.2. The KMO on the final solution was acceptable at 0.71.

Although a five factor solution was indicated by the scree plot, a number of the factors appeared to comprise more than one dimension. Therefore, a second solution of six factors was analysed. With the exception of Factor 6, each was clearly defined. Factor 1 related to involvement with fruit and vegetables and accounted for 18.5 per cent of the variance. Factor 2 accounted for a further 11 per cent of the variance and focused on concerns for budgeting and planning. Factors 3 and 4 explained 7.2 and 6.40 per cent of the variance respectively. Factor 3 characterised the price consciousness construct and Factor 4 the variety seeking construct. Factor 5 included the items indicating involvement in general shopping activities.

Overall, the pattern of factors suggested two dominant dimensions, attitude to fruits and vegetables, comprising Factors 1 and 4, and price consciousness comprising Factors 2 and 3. Both remaining factors were highly specific, and complex. As was expected, specific attitudes to shopping for fruits and vegetables were distinct from general attitudes to shopping. As such, the items in Factor 5 were discarded. Factor 6 included two items referring to household eating habits as distinct from the respondent's habits. These items were retained for the second stage of development, and one additional item added to the questionnaire to support them (see Appendix 6.3). The remaining items in Factor 6 were discarded.

The results of a reliability analysis on the four remaining factors are outlined in Table 6.2. Despite the relatively low number of items, for all factors alpha was reasonably good, as was the mean inter-item correlation. Ideally, all factors would benefit from additional items. It was also apparent that some items would benefit from rewording.

For the second stage of development, both additions to measures and modifications to the wording of items were made. These are indicated in the list of items for inclusion in the second instrument (see Appendix 6.3).

Table 6.2 Reliability results for four Factors of shopping attitude

	ATTITUDE TO FRUITS AND VEGETABLES		BUDGET AND VALUE CONSCIOUSNESS	
	F1: Interest 4 items	F4: Variety 5 items	F2: Budget 6 items	F3: Value 4 items
α	.77	.79	.78	.75
m	.43	.43	.37	.43

m = mean inter-item correlation

6.7.2 Second-stage development of the measures

The modified questionnaire was administered to 392 external students at residential schools in April 1995 at the University of New England (see Appendix 6.4). A total of 23 cases were discarded prior to analysis because of errors in completing the questionnaire. As noted earlier, external students usually comprise mature-age students with full-time occupations. In Table 6.3 are presented the age, sex and shopping frequency for the sample.

Table 6.3 Summary characteristics of the external-student sample

AGE	SEX		SHOPPING FREQUENCY				
	Female	Male	Weekly	Fortnightly	Monthly	Rarely	Total
Under 21	5 (2.8)	6 (3.3)	3 (1.4)	4 (4.0)	2 (13.3)	2 (10.5)	11 (3.2)
21 - 24	26 (14.9)	32 (17.6)	28 (13.1)	19 (18.8)	2 (13.3)	8 (42.1)	57 (16.3)
25 - 34	77 (44.2)	81 (44.5)	90 (42.1)	56 (55.4)	5 (33.3)	4 (21.1)	155 (44.4)
35 +	66 (37.9)	63 (34.6)	93 (43.5)	22 (21.8)	6 (40.0)	5 (26.3)	126 (36.1)
Total	174	182	214	101	15	19	349*

Bracketed numbers are percentages of the total for each column.

* Cases with missing values excluded.

The majority of subjects in the sample were over the age of 25, and over 90.0 per cent of subjects shop at least fortnightly. As such, the sample more closely represents the targeted group of household shoppers. The mean income for the sample was \$30 000-\$40 000, and approximately 49.0 per cent have a combined household income greater than \$50 000. Employment was dominated by professions or management positions (56.0 per cent) which was to be expected given the source of the sample. Only 14.0 per cent were employed in positions outside clerical or administrative work. A further 5.0 per cent were occupied with house duties. In relation to household size, over half the sample lived in one or two person households. Approximately 12.0 per cent were in households of greater than five people, but the mean number of dependants for all respondents in the age groups 25-39 and 40-54 was low, at 0.67 and 0.82 respectively. The bias towards high-income, relatively small households may result in lower ratings for price or budget consciousness. However, this aspect is simply noted for the present, since income is not the only factor which influences these constructs. Consumers can be budget and price conscious of their own volition.

The rational and experiential systems

An initial screening of all subjects on the 27 items comprising the NFC and FI constructs indicated no values outside the range, but did reveal a number of cases with missing values, and severe skewness. Items 1, 2 and 4 of the FI measure were severely, positively skewed, particularly so for women, as were items 5 and 11 on the NFC measure. Since there were sufficient remaining items for each dimension, these items were deleted from further analysis. Also apparent were significant differences between the scores of men and women on 10 of the remaining items. The differences were in the strength of agreement/disagreement, rather than in the direction of agreement. Nevertheless, to ensure the final solutions were appropriate to both genders, separate factor analyses and tests for reliability were conducted for each.

A total of 373 cases and 22 items were retained for analysis, and all missing data were deleted on the basis of pairwise comparisons. As in the first stage of the questionnaire development, all analyses were completed using SPSS Principal Components Analysis (PCA) and Varimax rotation.

The KMO measure of sampling adequacy comfortably supported the factorability of the data, with the measure at 0.80. With the exception of Item 7 in the NFC measure, MSAs for each item were around 0.70 to 0.80. Item 7 had a particularly low MSA, and very low correlations with other items, and so was removed from analysis. All of the items had the expected signs.

In line with expectations, the scree plot indicated a distinct break at a two factor solution (see Appendix 6.5). A two factor solution was also supported by the initial statistics. Factor 1 explained 19.1 per cent of the variance, and Factor 2 a further 12.8 per cent. At the third factor contribution to the variance dropped to 6.4 per cent. The total variance explained by the first two factors was 31.9 per cent, which was a reasonable outcome given the type of constructs under investigation. Cacioppo et al. (1984) reported their NFC scale attributed between 27 to 37 per cent of variance, but this was for a single dimension. Epstein (1994) does not provide details on the statistics associated with the construction of FI.

The affect of gender on the factor solution was examined using two factor analyses with the same inclusion of items as the combined analysis. Both sexes indicated a clear two factor solution. Items on Factor 2 (FI) were identical. For Factor 1, the only distinction was in the inclusion of Items 3 and 13 in the NFC measure. Item 3 was significant for women, but not so for men. The converse was the case for Item 13.

With a two factor solution using PCA, 50.0 per cent of residuals on the reproduced correlation matrix were greater than 0.05 in absolute value. A number of communalities were also low, in the 0.1 to 0.2 range. Both of these results were a partial consequence of a forced two-factor solution.

The items comprising the factors are outlined in Appendix 6.5. Reliability of the factors was assessed using Cronbach's alpha. Factor 1 included nine items with corrected inter-item correlations of 0.42 or higher. The alpha reliability for this solution was $\alpha=.79$, with a mean inter item correlation of 0.30. For women the reliability was slightly higher ($\alpha=.80$), but for men it was lower ($\alpha=.78$). Cacioppo et al. reported an alpha reliability of 0.90 for their 18-item NFC scale and Epstein (1994) reported 0.87. Neither reported the mean inter item correlation, and Epstein did not give the number of items remaining in the construct following adjustments for alpha. The lower alpha in the present research may be

due in part to the reduced items in the final solution. The items are indicated in Appendix 6.5.

Factor 2 included five items measuring Faith in Intuition. As outlined in Table 6.4, the measure had a lower overall reliability than that for Factor 1, and the reliability according to gender was greater for men than women. However, the result was not significantly different to that reported by Epstein (1994) for the FI scale (.77 on an unspecified number of items). The items comprising the FI measure are also listed in Appendix 6.5.

According to Nunnally's (1978) recommendations on the reliability of measurement scales, both measures fall within the range which is defined by preliminary and basic research. The overall reliability for each measure is within expectations for psychological and marketing-related research (Peterson 1994). Thus, the reduced set of 14 items was adopted for the post-shopping questionnaire. Details on the variation among subjects on the two measures are outlined in Section 6.8 below.

Table 6.4 Reliability measures for the rational - experiential constructs

	FACTOR 1: NFC 9 items	FACTOR 2: FI 5 items
Female (n=178)		
α	.80	.72
<i>m</i>	.31	.34
Male* (n=181)		
α	.78	.77
<i>m</i>	.30	.40
Total (n=359)		
α	.79	.75
<i>m</i>	.30	.38

m = mean inter-item correlation

* = 8 item solution (excludes item 10 on the NFC scale).

Shopping attitude

Analysis commenced with 28 items, and on all cases where the individual shopped at least fortnightly. A total of 340 cases were included in the analysis. Missing values were dealt

with by pairwise elimination to facilitate analysis of the items where household considerations were not applicable.

Item 1 in the measure of family concerns was deleted following examination of item correlations. An initial factor solution using PCA indicated a four factor solution (see Appendix 6.5). The KMO was 0.83, which indicated the data were suitable for factoring. Following a forced four-factor solution, three further items were discarded because of low communality with the solution. These were Item 2 in the measure of family concern, Item 10 in the variety-seeking measure, and Item 1 in the involvement measure. The latter also reflected a concern with family needs, suggesting that this dimension of shopping requires further development.

The final solution of four factors explained 52.9 per cent of the variance in items. Factor 1 explained 21.8 per cent, Factor 2, 18.0 per cent, Factor 3, 7.3 per cent, and Factor 4, 5.7 per cent. Communalities of items with the factors were in the range of 0.4 to 0.69, and only 39.0 per cent of residuals had an absolute value greater than 0.05.

All factors were readily interpretable. Factor 1 comprised eight items from the variety-seeking measure. Factor 2 also included a total of eight items which were drawn from the price conscious and budget measures. Factors 3 and 4 had fewer items, but were also interpretable. Factor 3, with four items, clearly represented involvement. The final factor incorporated three of the items included in budget consciousness. Two of these related to planning purchases and sticking to a shopping list, and the third, to adherence to a strict budget.

The separation of items in the proposed budget measure into price consciousness and planning/budgeting was not altogether surprising. Highlighted in Section 6.1 was the probability of some correlation between the measures. Consumers who tend to watch their budget were also assumed to be price conscious. The result outlined above tends to support this relationship. However, it appears that consumers can be budget conscious in the sense that they watch the amount they spend, but are not necessarily concerned with adhering strictly to a budget or planning their purchases. Hence, there is a distinction between these aspects of budget consciousness.

Table 6.5 Reliability results for four Factors of shopping attitudes.

	ATTITUDE TO FRUITS AND VEGETABLES		BUDGET AND VALUE CONSCIOUSNESS	
	F1: Variety 7 items	F3: Involved 4 items	F2: Value 7 items	F4: Budget 3 items
Female				
α	.83	.70	.84	.61
<i>m</i>	.40	.37	.43	.34
Male				
α	.86	.79	.82	.61
<i>m</i>	.47	.49	.40	.34
Total				
α	.85	.76	.83	.61
<i>m</i>	.44	.43	.42	.34

m = mean inter-item correlation

Reliability analysis was conducted for the four factors. The solutions where both alpha and the mean inter-item correlation were at their highest are outlined in Table 6.5. The list of items for each factor is included in Appendix 6.5. With the exception of Factor 4 (Budget consciousness), alphas and MICs indicated robust solutions. The relatively low alpha for Factor 4 suggests that the dimension would benefit from additional items. However, the measurement is sufficient for current purposes. In the next section the characteristics of the factors, and their associations with one another, are examined.

6.8 General factor characteristics and demographic profiles

To determine the association among factors, and between factors and various demographics, the mean score for each individual on each factor was calculated. Data were analysed separately for each gender, and only those subjects who reported shopping at least fortnightly were included in the analysis. This ensured that the sample more closely represented the target population.

Prior to analysis all data were screened according to the steps recommended by Tabachnick and Fidell (1989). SPSS for Windows (release 6.1) was used for all analyses.

Initial screening of income, age, employment and house size indicated all data had been entered accurately, but that a total of 41 cases had missing values on one or other of the variables. A comparison between the sample with missing variables and the remaining sample did not reveal systematic differences between the two. Rather than attempting to estimate the missing values, the cases were excluded from analysis according to listwise deletion.

As was evident from Section 6.8.2, the distributions of age, income, household size, and number of children exhibit high skewness. A logarithmic transformation of age, and a reflection then square root transformation of income, considerably improved the distributions of both variables. Household size was first modified by grouping house sizes between five and seven, then applying a square root transformation. Attempts to adjust for the extreme negative skewness in 'number of children' simply resulted in high kurtosis. Consequently, the variable was left in its original form, and the possible affects of its skewness noted. Finally, the distribution of subjects across the employment categories was highly uneven; in some cases single cell groups. To achieve a more even distribution of subjects, the eleven categories were reduced to five. Managerial/administrative (n=108), professional (n=94), and paraprofessional (n=51) were maintained in their original form. Clerical and service were combined in a group of 67, and the remaining categories, trades people, labourers, unermployed, retired, students, and house duties, were combined into a another single category, 'other' (41). The relative distribution of the groups was approximately the same for men and women.

With respect to the factors, two cases in the male sample had extreme scores on one or more factors, and a third had several missing values on items comprising the scores. Of the cases with extreme values, one was in the highest age bracket and had inconsistent scoring: exceptionally low and high scores on involvement and variety-seeking, and again on budget consciousness and price consciousness. The other reported generally low scores on all shopping-related measures with the exception of price consciousness but was otherwise consistent. The case with missing values and the case with inconsistent scoring were excluded from analysis. The remaining case was retained for the present. With the exception of FI, all factors are well distributed (K-S Lillifors $p > .2$). FI exhibited slight negative skewness in both genders but deleting the cases made no difference to the overall results of regression analyses.

The mean scores of factors by gender are outlined in Table 6.6. The differences between means were significant for Faith in Intuition, Variety-seeking and Involvement, and in each case the mean for women was higher. This further supported the need to conduct separate analyses for men and women to ensure gender differences were captured.

Table 6.6 Mean scores and gender differences on factor measures

	NFC	FI**	PRICE C	BUDGET C	VARIETY *	INVOLVEMENT* *
Women (n=167)						
Mean	4.38	4.32	3.64	3.49	3.90	3.96
Stdev	0.71	0.64	1.06	0.94	1.02	1.02
Men (n=153)						
Mean	4.25	4.03	3.59	3.62	3.60	3.46
Stdev	0.65	0.76	0.95	0.91	1.01	1.03

Indicates significant difference between gender means at * p=.01; ** p<.001

6.8.1 Analyses and results

All analyses were undertaken using hierarchical regression analysis and SPSS for Windows (release 6.1). The hierarchical method was employed for controlled entry of all variables according to *a priori* expectation of contribution to variance and causal sequence (Cohen and Cohen 1983). An initial run of each regression equation was conducted to detect the presence of multivariate outliers. The results reported below are the final equations for each analysis.

In Section 6.1 it was proposed that price and budget consciousness represent related but distinct elements of consumers' concern with price, and that the latter was more likely to be related to the disposable income of a consumer. However, the final form for the budget construct reflected a focus on, and adherence to, planning purchases. Items which had been included under budget consciousness, such as 'I usually keep count of how much I am spending', combined in the price consciousness measure which included items relating to consumers' willingness to search for prices, or their concern with gaining the best value for money. Hence, the expected association between disposable income and budget consciousness in the regression results will probably be diminished. To determine the association between the price and budget consciousness factors and the demographics

outlined above, two separate regression analyses were conducted. The primary influences on both factors were expected to be income (negative correlation) and number of children (positive correlation); the latter acting as a proxy for outlays. A second influence was that of age (negative correlation) which was included as a proxy for the affect of lifecycle on budgetary concerns. Finally, two interaction terms, number-of-dependents/income and number-of-dependents/age, were included to reflect the affect of a household's income relative to its expenditure.

Income was entered in step one, followed by number-of-children, age, and the interaction terms. The sequence of entry reflected an *a priori* expectation of the influence of each variable on the dependent variable.

Regression coefficients, standardised betas and correlations for the sample of women are presented in Appendix 6.6. Following step five for the budget consciousness regression $R=.24$, $F(5, 147)$ $p=.11$ was not significant at $p<.05$ with all independent variables (IVs) in the equation. However, the equation was significant at step one with income entered, $R^2_{inc}=.03$, $F_{inc}(1, 151)$ $p<.05$. The only other variable that added marginally to the equation was age ($p<.10$), which was positively associated with budget consciousness. The price consciousness regression, with all variables in the equation was $R=.29$, $F(5, 147)$ $p<.05$. As with budget consciousness, only income was significant to the equation, but more so in this instance $R^2_{inc}=.06$, $F_{inc}(1, 151)$, $p<.01$.

The results for the sample of men was similar to that for women (see Appendix 6.6). For budget consciousness, and with all variables in the equation, $R=.22$ $F(5, 141)$ $p=.23$. Price consciousness was similarly $R=.25$, $F(5, 141)$ $p=.10$. However, unlike the equation for women, 'number of children' was the significant contributor, $R^2_{inc}=.03$, $F_{inc}(2, 144)$, $p<.05$, which was possibly a reflection of the generally uniform, and high, incomes of this group.

The relative absence of correlation between income and budget consciousness suggests that the planning emphasis of this measure may be dominant. As such, it is better characterised in terms of planning-budgeting. Although the association between income and price consciousness in the sample of women was significant it was quite low overall, which supports the earlier contention that price consciousness is not necessarily a function of concerns with disposable income.

The second area of interest is the association between the NFC and FI measures with the demographic characteristics of subjects. Noted in Section 6.6 was that Cacioppo and Petty (1982) had reported significant differences in scores on NFC between managerial/professional groups and trades/manual groups. To determine whether NFC levels were associated with occupational differences, the five categories of occupation were dummy coded into a set of four variables (managerial/administrative, professional, paraprofessionals and clerical/service). A hierarchical regression was performed with occupations entering together and followed by income, as a proxy for levels within occupations.

For the male sample, the set of occupations was not significant on both NFC and FI. FI was also not significant for the sample of women. However, NFC was significant (R=.28, F(5, 155) p=.03) with occupation. The principal contributor $R^2_{inc} = .07$, F_{inc} (4, 156), p<.05. With the exception of the 'clerical and trades' group, all occupational groups were positively associated with NFC. Although the results for FI and NFC suggest that their relationship with occupation is marginal at best, it is possible that the source of the sample, and the low representation of subjects in trades and labour-related occupation, understated this source of discrimination.

The final factors for review are variety-seeking and involvement. Highlighted in Chapter 4 were various influences on variety-seeking such as household size, occupation and income, and age. Partial correlations between variety-seeking and household size, and variety-seeking and age while controlling for income, proved non-significant (at p=.10) in each case, and for both genders. To determine associations between occupation and variety-seeking, a hierarchical regression was conducted of variety-seeking on occupation (using the dummy variables outlined above), income, and including household size and budget consciousness. Income was included at the second step to capture the affects of different levels of responsibility within occupations. The inclusion of household size was to capture the broader household needs which are reflected in the variety-seeking measure. The budget consciousness measure was expected to be negatively associated with variety-seeking, since implied in planning-budgeting is a relative absence of impulsive purchasing or deliberate scanning of produce for ideas or inspiration. The price consciousness measure was not included in the equation. As was anticipated a partial

correlation controlling for income indicated no association between the two ($r=.09$ for women and $r=.05$ for men).

The equation for women, with all variables entered, was $R=.29$, $F(7, 153)$ $p=.06$. With just occupations entered, $R^2=.06$, $F(4, 156)$, $p<.05$. Mean differences among the five occupation categories were further tested using the Modified LSD (Bonferroni) at $p=.05$. The only significant difference was between the managerial/administrative and clerical/service groups; the latter significantly lower. The equation for men, with all variables entered, was also marginal, $R=.33$, $F(7, 134)$ $p=.03$. However, the increments for both income and budget consciousness were significant at $p<.05$. Consistent with expectations, budget had a negative association with variety-seeking ($\beta = -.17$), while income is positive ($\beta = .18$). The contribution to variance of the occupation set was not significant.

Involvement was defined earlier as the degree of ongoing interest a consumer has in a product group. The measure of involvement developed for the current research is specific to fruits and vegetables. The most obvious associations it is expected to have is with other the factors, particularly variety-seeking, which carries with it an implication of interest in the product group. Since involvement represents a willingness to seek information and expend effort in the choice of fruits and vegetables, it is also possible that there may be some correlation between it and the NFC measure. Consumers may have a predisposition for inquiring into a product group. The final relationship of interest is the association between involvement and price consciousness. Although price search may be primarily associated with budgetary considerations, it can also be an activity which is intrinsically satisfying (recall the 'price maven'). Given the broad definition adopted for involvement, price consciousness (mavenism) may be a factor contributing to a consumers' interest in the product group³.

As with the earlier analyses, hierarchical regression was used for controlled entry of each variable. The order of entry commenced with NFC, followed by variety-seeking, and price consciousness. NFC was entered first since it is possible that it may have an

³ Note that a distinction is being made between price consciousness and price sensitivity. Argued in Chapter 4 was that increased involvement may reduce consumers' price sensitivity to the perceived risk as a consequence of uncertainty over preparation. However, this would not necessarily relate to consumers' overall price consciousness.

influence on aspects of variety-seeking and price consciousness. For example, Inman et al. (1990) found a high correlation between NFC and price mavenism.

With all IVs in the equation for women $R=.49$, $F(3, 163)$, $p<.001$, which was significantly different from zero. Following step one, with NFC in the equation, $R^2=.03$, $F_{inc}(1,165)$, $p<.05$. After step two, and the entry of variety-seeking, $R^2_{inc}=.09$, $F_{inc}(2,164)$, $p<.001$. Thus, the association between variety-seeking and involvement was significant as expected. Price consciousness entered the equation at step three and contributed substantial variance, $R^2_{inc}=.12$, $F_{inc}(3,163)$, $p<.001$.

The results for the sample of men was, again, similar to that of the women. Following the entry of all IVs, $R=.43$, $F(3, 151)$, $p<.001$. NFC was not significant to the equation. As with women, the principal contributors to explained variance were variety seeking, $R^2_{inc}=.14$, $F_{inc}(2,150)$, $p<.001$, and price $R^2_{inc}=.05$, $F_{inc}(3,151)$, $p<.01$). An aspect of interest was the slight reversal in magnitude of the contributions to variance of each variable. Overall, men scored lower on involvement and variety-seeking than women, but were similar in their scores for price consciousness (see Table 6.6). It would appear that men associate involvement less with price consciousness and more with a general enjoyment of the product group.

The fact that the price consciousness and variety-seeking measures were essentially uncorrelated themselves indicates that they represent distinct dimensions of the involvement measure. While this supports the notion that involvement is a multidimensional construct, the indication from these results was that the involvement measure is largely redundant for the purposes of the current research. That is, the three measures provide more specific information and also reflect the different dimensions underlying 'general interest' in the product category. However, given the biases in the sample, these results may not be generalisable. Since the measure is not substantial in number of items, it is retained for examination in Phases 2 and 3.

6.9 Perceived price-quality differences in fruits and vegetables

The final aspect of consumers' personalities identified in Section 6.1 as having a possible influence on their purchasing behaviour was the use of price-quality schema. Peterson and Wilson (1985) and Lichtenstein et al. (1989), among others, have argued that perceived

price-quality relationships will be influenced by the extent to which individuals possess a general price-quality schema. In order to investigate this aspect, and the significance of the price-quality relationship in fruits and vegetables relative to other grocery and consumer items, a separate instrument was developed. Listed in the instrument are a number of grocery and durable items, together with selected fruits and vegetables (see Appendix 6.7). Respondents were asked to indicate the extent to which they agreed-disagreed with the statement 'The price of this item is a good indicator of its quality'.

A sub-sample of 92 subjects from the previous sample of external students was asked to complete the survey instrument. In Table 6.7 are listed the mean scores for each product. There were clear and significant differences in the price-quality relationship of different products. Those in the 'high' category comprised mainly durable items. An exception was steak which is a consumable but which is offered to consumers according to distinct quality grades. The 'medium' category comprised higher-priced grocery items. Fruits and vegetables only appeared in the 'low' and 'very low' categories. Particularly low price-quality perceptions were held for lettuce, apples and potatoes. The group mean for these products was significantly lower than the 'high' and 'medium' groups, as was the 'low' group (Bonferroni $p=.05$). Overall, the fruits and vegetables included in this study had a relatively low perceived price-quality relationship. Nevertheless, the variations in price-quality perceptions of fruits and vegetables suggest that some behavioural differences may be present in their choice.

The other aspect of interest is the use of price-quality schema. To examine the claim that some individuals impose a general price-quality schema across products, subjects' mean score across all products was calculated to arrive at an overall rating for price-quality perception. This mean was then split into five equal percentiles to examine differences in group scores. In Table 6.8 the group means on a selection of fruits and vegetables for subjects with the lowest overall mean scores (bottom 20 per cent) are compared to those with the highest scores (top 20 per cent). The presence/absence of a general price-quality schema was evident for all items⁴. The difference between the two groups was more substantial than between items. Subjects who perceived little price-quality relationship did so consistently across all items. The converse was the case for subjects perceiving a high

⁴ In fact, on all products the difference between the lowest and highest groups was significant at $p<.001$.

Table 6.7 Perceptions of the price-quality relationship for selected products

PRODUCT	MEAN	PRODUCT	MEAN
<i>High</i>		<i>Medium</i>	
Camera	4.68	Instant coffee	4.03
Cars	4.66	Cheese	4.03
Shoes	4.63	Ice cream	4.01
Stereo	4.53	Suntan lotion	3.75
Wine	4.51	Cakes	3.62
Steak	4.38		
Man's shirt	4.26		
<i>Low</i>		<i>Very low</i>	
Washing powder	3.45	Lettuce	3.20
Strawberries	3.42	Apples	3.18
Paper towels	3.38	Potatoes	3.16
Toothpaste	3.36		
Tomatoes	3.36		
Rockmelon	3.33		
Bread	3.28		

Table 6.8 Means for group price-quality perceptions

	GROUP SIZE	WINE	STRAWBERRY	ROCKMELON	APPLES	POTATOES	TOMATOES
		<i>Means</i>	<i>Means</i>	<i>Means</i>	<i>Means</i>	<i>Means</i>	<i>Means</i>
<i>Price-quality perception</i>							
Lowest	20	3.30	2.35	2.25	2.00	2.15	2.20
Highest	15	5.31	5.27	4.87	4.87	4.47	5.10
<i>Item mean</i>	92	4.51	3.42	3.33	3.18	3.16	3.36

price-quality relationship. A Bonferroni test for differences between means on the five percentiles was significant for all groups, which confirms the existence of differences across individuals on the price-quality schema.

Finally, in Chapter 2 a number of studies were cited which emphasised that consumers' perception of a price-quality relationship did not necessarily correspond to their perceptions of value, or their willingness to purchase an item. Further, value was considered to be the consequence of two competing elements: price as quality and price as a sacrifice. In their investigation of the constructs which can be held in relation to price, Lichtenstein et al. (1989) found their price and value constructs had a slight negative correlation with their price-quality schema. To test whether this relationship holds in the current research, correlations were calculated between subjects' mean scores for price-quality schema and the price consciousness factor⁵. The correlation was negative but not significant ($r=-.05$), which supports the view that the two dimensions are held distinctly from one another.

6.10 Summary and implications for the application of measures

The primary aim of this chapter was to develop a set of measures to identify consumers' attitudes to shopping for fruits and vegetables, and their predisposition to responding to price. The six measures developed capture most of the elements in the box entitled 'Factors determining preferences' in the model of consumer decision processes outlined in Chapter 5.

Also outlined in the preceding sections were the various associations between the measures and a number of consumer demographics. Although these assist to elucidate the nature of influences on choice behaviour which derive from different consumer profiles, they are coarse indications only. The principal value of the measures is in their discrimination of subjects on a single dimension. Behaviour can then be evaluated against the subject's score on the relevant characteristic. In Chapter 7 the measures are incorporated in an empirical investigation of consumers' purchasing behaviour in relation to fruits and vegetables.

⁵ The statements used by Lichtenstein et al. to indicate perceived price-quality beliefs are almost identical in tenor to the statement used in the current survey.

The results of the price-quality schema survey do indicate differences across consumers in their use of this dimension. However, the overall scores for fruits and vegetables were low, which indicates that the product group does not generally invoke the schema. Further, it was argued in Chapter 4 that price-quality schemas are unlikely to be consistently useful because of the confounding influence of seasonal and other factors on price and quality. This being the case, the self-reports of a general-price quality relationship, which were made in a context divorced from the actual shopping process, are unlikely to transfer fully to the shopping situation. Hence, this element of a consumer's profile is not pursued as a separate measure in Phases 2 and 3.

Chapter 7 - Consumer attitudes and purchase behaviour in relation to fruits and vegetables

R: *[can you recall the price of Broccoli?].*

S: *Um, yes, I mean, I couldn't tell you what it was just then, but if it was - if I looked at it and it was just over the top I wouldn't get it, because it's just something that we have...*

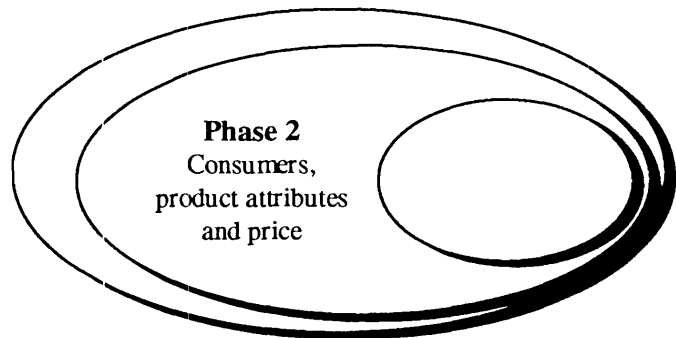
R: *What would you say is over the top?*

S: *Oh, anything more than \$1.50. You are probably going to tell me it's more than that now. I can't remember.*

R: *Yes it is. ...It's \$5 a kilo.*

S: *You're kidding. Wow! See there you go. I didn't even notice.*

(Protocol 1995)



7.1 Introduction

The preceding chapter focused on the development of measures to capture the idiosyncrasies of consumers which may affect their shopping behaviour in general, and their purchase of fruits and vegetables in particular. Of specific interest is how these idiosyncrasies affect consumers' attention to price. In this chapter we move to Phase 2 of the research. Here, the interest is in consumers' perceptions of product attributes and their self-reported attention to price. The study comprising the chapter is based on a post-shopping survey of consumers and involves in-depth questioning on all aspects of their shopping and consumption habits. The study was conducted over a four week period in May 1995 at an independent green grocer, and included 150 respondents.

In Section 7.2 the various instruments utilised in the survey are outlined together with an overview of the manner in which the study was conducted. The remainder of the chapter reports on the analyses and results of the survey. Where relevant the propositions outlined in Chapter 4, and the issues raised in relation to the model of consumer behaviour, are addressed in brief. Full discussion of the results is deferred until Chapter 9, where the findings of this, and Phase 3, can be synthesised.

Following the outline of instruments and the conduct of the survey, discussion turns to the characteristics of the respondent sample and to their general shopping patterns (Section 7.3). In Section 7.4 the personal profiles of respondents are compared to the earlier sample reported in Chapter 6. The six dimensions are examined for validity and reliability and to determine their applicability to the current sample. Following their confirmation, attention turns to the association between the consumer measures and price recall. Price recall is the primary vehicle for measuring consumers' price awareness in this study. A secondary measure is the price sensitivity implied in different forms of reference prices. Variations in the use of reference prices across consumers are investigated in Section 7.4.3.

In Section 7.5 the focus is on the attributes of specific fruits and vegetables. The results are compared to those outlined in Chapter 3 (for example HRDC 1990). Particular attention is paid to the price behaviour of those fruits and vegetables for which prices were collected during January through March of 1995, and how they compare with price variations over the period of the study.

Product characteristics are brought together with the consumer measures in Section 7.6 to determine their combined, and discrete, influences on price recall. Since context affects should also be apparent in the use of reference prices, the two are examined in conjunction with one another in Section 7.6.3.

The chapter concludes with an overview of the findings, and identifies issues which need to be further addressed in Phase 3 of the research.

7.2 The survey instruments and conduct of the study

In Chapter 6 an instrument was developed which comprises the several measurements of consumer characteristics. In addition to this instrument, further questionnaires were developed to capture consumers' perception of the attributes of fruits and vegetables, and to measure their price recall and use of reference prices. The objective in eliciting these perceptions was to address the various issues arising from the model of consumer choice outlined in Chapter 5. In the following sections the development of the questionnaires is discussed with reference to the specific issue they seek to investigate. The final designs for the instruments, and the form of questioning, were achieved with the aid of comments from colleagues, and by drawing on the reports and behaviour of ten

consumers who participated in a pilot study for Phase 3 (conducted during December 1994 and January 1995)¹. In the pilot, subjects provided concurrent verbal reports during their fruits and vegetables shopping, and responded to post-shopping questioning on their perceptions of fruits and vegetables, their shopping habits, and their price recall. It was from these that most modifications to the instruments were made. The key objective with the survey instruments was to ensure that they were effective in eliciting the information required and, thus, that the form of questions were readily comprehensible. The instruments in their final form, and in the order in which they were administered, are included in Appendix 7.1.

7.2.1 Usage context and quality perceptions

In Chapter 4 a variety of contexts in which consumers might utilise various fruits and vegetables was outlined. A primary distinction was made between usage contexts which are preframed and unframed. The consumer was hypothesised to be less attentive to price where the purchase is to fulfil a specific need. A distinction was also made between staples and non-staples. These were considered to interact with the specificity of usage contexts to result in different levels of price sensitivity. For example, in practice what consumers categorise as 'staples' may encompass a range of usage contexts. Staples may comprise foods that are bought in large quantities and consumed daily. However, consumers may also perceive foods which they like to have on hand, but do not necessarily consume every day, as staples. For the latter, there may be no imperative to purchase the item on each shopping expedition. Rather, they may defer their purchase until the price is acceptable. This would be particularly the case if the product has a reasonable storage capacity, for example pumpkin or potatoes.

Usage context also has implications for the volume consumers purchase and, hence, their price sensitivity. Consumers may be less sensitive to price when a member(s) of their household has very specific likes, or where the quantity which is purchased is so small that the total cost of the product is perceived to be negligible. Lemons and mushrooms often fall into this category.

¹ The pilot study is of greater relevance to Phase 3, and is discussed in greater detail in Chapter 8.

To reflect these and other usage contexts, a total of eight options were developed. For each fruit and vegetable purchased, consumers were asked to indicate which option best fitted their reason for the purchase.

1. a staple. A fruit or vegetable which I/we eat a lot of. It is a major food in my/our diet.
2. one of those basic foods which I/we eat regularly, and which I always like to keep in stock.
3. something I always like to have a bit/a few of in the house.
4. one of a number of fruits or vegetables I/we buy just for variety.
5. one of the few things my children/partner will/can eat.
6. something I buy in small amounts as a side-dish with meals.
7. a fruit or vegetable that I buy as a treat, or for a special occasion.
8. other (*please specify*)

Items 1 and 2 were included to reflect the possible distinction in consumers' definition of 'staple'. Items 3, 5 and 6 cover purchases of low quantity items or purchases which cater to the specific needs of family members. For items 4 and 7 there is a degree of ambiguity in expected price sensitivity, which was noted in Chapter 4. On the one hand, the need to satisfy a desire for variety or a treat may prompt a purchase regardless of price. On the other, the item may have been purchased only because it was on special. A final item, 'other' was included for the purposes of identifying further usage contexts.

Related to the specificity of need, is the range of varieties available for a product. Where consumers perceive that varieties satisfy similar consumption needs their sensitivity to price can be higher. In the questionnaire, perceptions of varietal breadth (ie perceived substitutes) were elicited by asking respondents to indicate their level of agreement with the statement 'I think that all the varieties of this item are much the same' (agree/disagree/disagree strongly).

Implicit in a number of the usage contexts outlined is the frequency with which the product is purchased. Although the evidence of its influence on price awareness is mixed, there is some support for purchase frequency being a contributing factor in price sensitivity (see Chapters 2 and 4). In the current research, purchase frequency is treated

as a supplement to usage context. Respondents were asked to indicate the frequency with which they purchased a product on a five-point scale which ranged from 'every two or three days' to 'rarely'.

The final non-price attribute along which it has been argued that consumers' perceptions will differ, is quality. There are two dimensions to quality. The first is the confidence with which consumers perceive they can evaluate the quality of the item, which relates to perceived risk. The second is the degree to which they perceive the quality of the product to be consistent over consecutive purchases. Where either is low the implication is that greater attention will be paid to quality and, potentially, price (where there is a concern over value). To capture these aspects, consumers were asked two sets of questions for each of their purchases. The first was in relation to quality opacity: 'how confident are you that, when you come to use this item, its quality will be what you expected?'. Three categories were provided to indicate confidence, 'very', 'reasonably' and 'not very'. The second was to determine perceptions of quality consistency. Consumers were asked whether they thought the quality of the purchased product was 'Pretty consistent year-round', 'Often varies from week to week' or 'Only varies with seasons. It is pretty consistent when in season'.

While consumers may utilise various sensory strategies for determining quality where it is not readily assessable, an alternative strategy is to employ a price/quality schema. From the results in Chapter 6 it was evident that a proportion of consumers do employ a generalised price/quality schema. However, the results for the sample of fruits and vegetables indicated that price/quality perceptions tend to be absent for this group. This, coupled with the other reservations expressed in Chapter 6 in relation to the efficacy of a price/quality measure, suggests it is not worth incorporation in this phase of the research.

7.2.2 Reference prices

Proposition 6a in Chapter 4 states that, in the purchase of fruits and vegetables, consumers generally use a price image to evaluate prices, rather than actual, previous prices or the prices of alternative fruits and vegetables. To determine whether this is in fact the case, or whether the reference price differs across consumers or according to products, a question was included in the post-purchase questionnaire asking consumers to indicate which of six possible reference prices they had used to evaluate the price of the product they had purchased. The possible options included:

1. the last price paid for that item;
2. the highest price that the consumer would have expected for this item;
3. a general price image which is made up of prices the consumer has most often paid, or seen;
4. the lowest price that might be available for that item in another shop;
5. the price of alternative fruits or vegetables²; and
6. an option where the price of the item was not checked by the consumer.

Option 3 is consistent with Emery's (1962) notion of a price image, and Klein and Oglethorpe's (1987) 'typical' price. It supports the contention in Proposition 6a. Option 1 is also an internal reference, but which is more specific. Implied in its use is an absence of ready alternatives which would suggest it is used for products which are perceived to be unique, or have no options. As such, it may be associated with a lower level of price recall than Option 3. Option 2 reflects Rao and Gautschi's (1982) contention that the reference price employed is the price at which consumers start to experience some dissatisfaction. Options 4 and 5 imply contextual referencing, and a focus on the lowest price available (Mayhew and Winer 1992, Rajendran and Tellis 1994). Consumers favouring these options should also exhibit higher than average price/budget consciousness and price recall. Option 6, on the other hand, indicates a complete absence of concern with the price of the product.

7.2.3 Price related and other potential influences on price recall

There are various price-related elements which may impact on consumers' price awareness, and hence on their recall of price. A potentially potent influence is likely to be the degree to which the price of a product is consistent with consumers' expectations. To investigate general perceptions of acceptable and unacceptable prices, respondents were requested to indicate: what they perceived as the normal price range for the product; the highest they would be willing to pay; and the lowest price they had encountered for the product over the year. Since the range is also expected to differ according to the variability in price, respondents were further asked to indicate whether they adjusted their perceptions of 'the acceptable price' over the year: 'changes

² This item was initially excluded from the questionnaire, and was not available to some respondents. The affect of this is discussed in Section 7.4.3.

according to whether it is in season or not', 'doesn't change' and 'the price range of this item doesn't change with seasons'.

Among the measures included in the consumer-centred questionnaire is the measure of price consciousness. Its association with price recall is expected to be particularly strong. However, this association is potentially reduced where respondents use a 'special' sign as a proxy for price, as highlighted in Chapter 6. To determine the effect of a price promotion signal on price recall, a question asking consumers to indicate whether the item purchased was on special was included in the post-shopping questionnaires.

The preceding sections have outlined a variety of consumer and product-based factors which may impact on consumers' awareness of price and, hence, their accuracy in price recall. In addition to these, information was also requested on various demographics such as age, sex, household size, and employment, and the consumer's position in the household in relation to fruit and vegetable shopping and preparation.

Several questions were also asked in relation to the nature of their shopping habits. Respondents were asked to indicate whether they had noted promotions in the media or within the store, whether they used a shopping list, how often they shopped at the location, and their estimation of the total cost of their purchases and of their normal weekly purchases.

The final collection of four survey instruments is outlined below in their order of administration.

- particulars on the shopping trip under study;
- price recall, and other price-related questions as outlined above;
- perceptions of the attributes of fruits and vegetables, and various demographic information; and
- consumer-centred characteristics, and the manner in which the purchased products were to be used.

The first three were administered immediately following each respondent's fruit and vegetable shopping expedition. The final instrument, comprising the consumer measures, was taken by the respondent for later completion, and return by reply-paid mail. Originally, the intention had been to administer this instrument immediately post-

purchase. To do so would have provided greater opportunity to ensure that all questions had been completed, and would have minimised the incidence of non-response, which is generally greater in mail-back surveys (McIntyre and Bender 1986). However, it was apparent following the first respondent to be interviewed that completing the instrument at the time would not be feasible³. The full form of the instruments is presented in Appendix 7.1.

7.2.4 Conduct of the study

Both this, and the study outlined in Phase 3 were conducted at Armidale, which is a small university town in Northern NSW (population 23,000). The population comprises university members, and agriculture-based, public service and trade communities.

The current study was conducted with the co-operation of the independent green grocer used in the price survey outlined in Chapter 3. The layout of the shop and examples of promotional displays are included in Appendix 7.2. The shop management utilises both external and internal signs to advertise specials, and regularly advertise their specials on radio and in the local newspaper. On entering the shop consumers can refer to a blackboard which lists all current specials, and each specific special is clearly signed at the display of the product. The management also use 'bins' as a means of displaying bulk produce that is either on special or low-priced.

The study was conducted over a period of four weeks in May 1995. Shoppers were surveyed over all days of the week, and times of day. Both the author and a research assistant conducted the study. The research assistant was practised in this form of surveying and observed the author's procedure prior to approaching respondents himself. He was provided with sufficient information on the research to assist respondents where necessary, but was not privy to the specific objectives of the research. While both interviewers were present on some occasions, the study was largely conducted in shifts.

To avoid interference with the conduct of the shop, and to ensure respondents were not in a position to check prices, a table with chairs was positioned outside, to the side of the shop.

³ This change did have implications for some of the results and are discussed in relation to these where relevant.

Shoppers were approached in a random manner just prior to paying for their purchases and asked if they had 10 to 15 minutes to complete a set of questionnaires in relation to their shopping. They were told that the research was to investigate consumers' overall shopping behaviour, and that it was for the author's doctoral work. At this point note was taken of the time of day and of the products they had purchased, and the location of those products in the shop (Appendix 7.1). They were also asked to estimate the total cost of their purchases, and if they would be willing to complete a take-home survey (the consumer characteristics and usage contexts).

When a respondent had completed paying for their purchases they joined the researcher at the table. The instruments were self-administered in a set sequence commencing with price recall and other price-related questions, and followed by frequency and quality questions, and finally general demographic information (Appendix 7.1). The price recall was administered first to minimise interference with the respondent's memory. It also acted as a loose control on the timing of recall, since all respondents commenced this section within minutes of completing their shopping.

Due to time constraints, the number of products respondents were asked to refer to was limited to six. Where the number of products purchased was greater than six, a selection of products ranging across product groups was made. The six products were marked on all survey instruments while the respondent paid for their purchases. The average time for completion of the questionnaires was 15 minutes. Some respondents required up to 25 minutes, due in part to their elaboration on answers. Others required assistance with completing the questionnaires (mostly the older respondents who required direction through the survey instruments and clarification on some questions).

On completion of the instruments, the take-home survey was given to respondents, along with a reply-paid envelope. The nature of the consumer characteristics survey and the additional product-based questions was explained to respondents, and it was emphasised that only the marked products required answering.

At completion of the study the management and staff were given small gifts. Subsequently, the general manager has been provided with a report of general findings which may be of interest to his business.

7.3 Data management and sample characteristics

Of the 150 sets of surveys collected from respondents, 145 were sufficiently complete to be included in the analysis. The five sets excluded either exhibited significant inconsistencies or had substantial omissions—generally due to lack of time.

Data on demographics and shopping-related questions were coded according to the number corresponding to a particular state on the instrument (for example, age was coded as (1) for 18-24, (2) for 25-39 etc, see Appendix 7.1). Responses in relation to specific fruits and vegetables were compiled into a rectangular matrix of individual observations for each product purchased on all variables (apple - subject number, demographics, price-related variables, and other perception and usage-related variables). In its final form the matrix comprised 861 observations which represented the purchases of the 145 respondents.

For the initial analyses of consumer-related characteristics, a further matrix was constructed which contained summarised data for each individual on selected variables (for example mean price recall), and which included demographic information (age, sex, income etc) and the respondent's mean scores on the consumer characteristics. Where analyses were conducted on the multiple response data, various steps were taken to minimise potential confounding effects including, segmentation of respondents into relatively homogenous groups and the use of hierarchical regression analysis (Cohen and Cohen 1983). These are discussed at greater length in association with the relevant analysis. Analysis of fruit and vegetable profiles was not subject to the confounding influences of multiple responses. Each observation represents a single individual.

All data were analysed using SPSS for Windows (release 6.1, SPSS Inc., 1989-1993). The Bonferroni multiple t-test was employed for all analyses in which multiple means were tested for statistical significance. However, the nature of this study is exploratory, and so where clear associations between variables were apparent these were noted, even if the Bonferroni test was not statistically significant.

7.3.1 Sample characteristics

The sample comprised 119 women, four couples, and 22 men⁴. Since there were too few couples, and of these the woman tended to be the primary respondent, the four couples were included under 'women' for all analyses, unless otherwise noted.

Approximately 82 per cent (n=123) of respondents normally shopped at this location. For others this was one of two or more locations (4.0 per cent) or an unusual trip (14.0 per cent). Each day of the week was represented in the sample, as were various times of day. These are presented in Table 7.1. The dispersion of respondents across days and times is consistent with the general pattern of shoppers at this grocery shop.

Table 7.1 Distribution of respondents according to weekday and time of day

WEEKDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY	TOTAL
Males	1	-	1	5	3	11	1	22
Females	16	13	16	23	29	19	7	123

Time	8.50-11.30am	11.31-12.59pm	1.05-3.35pm	3.35-6pm	Total
Males	10*	2	3	7	22
Females	35	29	34	25	123

*All these respondents were surveyed on Saturday mornings.

Most of its customers shop towards the end of the week. The high proportion of men on Saturday was due, in part, to an effort to target this group. However, a significant increase in male shoppers on Saturday mornings is in keeping with observed shopping patterns⁵. As would be expected, there is a predominance of women respondents in the morning and early afternoon. The sample represented most socio-economic groups. The majority of men held management or professional positions (63.0 per cent), 9.0 per cent were in trades, and a further 9.0 per cent were unemployed. Only 33.0 per cent of women held managerial or professional positions. Approximately 24.0 per cent were occupied with the home. Another 23.0 per cent were employed in service or paraprofessional positions, and 10.0 per cent were students.

⁴ Informal observation indicated that this was a more than proportionate sample of male shoppers.

⁵ A significant increase in male shoppers was observed both by the author and research assistant, and was confirmed by the grocery management.

In Table 7.2 summary statistics on household make-up are provided. In both gender groups more than 75.0 per cent were either married or in a de facto relationship. Among the male shoppers 64.0 per cent had household incomes in excess of \$40 000, while 14 per cent had earnings less than \$20 000. For women the range of income levels was greater. Approximately 43.0 per cent had total household incomes greater than \$40 000, but for 26.0 per cent total income was less than \$20 000.

Table 7.2 Summary statistics for the protocol sample*

NUMBER OF RESPONDENTS BY AGE GROUP: WOMEN (MEN)													
	18 - 24			25 - 39			40 - 54			55+			Total
	No. dependents			No. dependents			No. dependents			No. dependents			
	0	1-2	3+	0	1-2	3+	0	1-2	3+	0	1-2	3+	
Married (15 men)													
< \$20 000		2		1	2	3	2	1	2	4	-	-	17
\$20-30 000			1	1	5(2)	3	-	4	1	1(1)	1	-	20
\$30-50 000	-	-	-	2(1)	6(1)	2	6	6(1)	2(1)	1	-	-	29
\$50 000+	-	-	-	1(1)	5(1)	4(1)	8(2)	10(2)	6(1)	3(1)	-	-	46
Totals		2	1	7	22	13	18	24	13	11	1	-	112
Single (5 men)													
< \$20 000	3	-	-	4(2)	2	2	1	2	-	1	-	-	17
\$20-30 000	-	-	-	-	1	-	1(1)	1	-	-	-	-	4
\$30-50 000	-	-	-	3	1(1)	-	-	0(1)	-	-	-	-	6
\$50 000+	-	-	-	-	-	1	1	-	-	-	-	-	2
Totals	3	-	-	9	5	3	4	4	-	1	-	-	29
Sample Total	3	2	1	16	27	16	22	28	13	12	1	-	141

* Four respondents did not fill in the income section. Three were women and two were over 55 years of age.

Of more relevance to the context of fruits and vegetables shopping is income per dependants. Of the 34 households with household incomes of \$20 000 or less, 47.0 per cent had one or more dependants, and six of these comprised single adult households.

Overall, household sizes were larger for women than for men. Only 20.0 per cent of women lived in households of one or two members. This contrasts with 41.0 per cent for male respondents. Approximately 22.5 per cent of women respondents reported having three or more dependants, compared to 14.3 per cent of men.

The majority of respondents fell into the age groups '25-39' and '40-54' (90.5 per cent of men and 85.8 per cent of women). Of those in the age group '18-24', 83.0 per cent earned \$20 000 or less. Respondents in the '25-39' category were evenly spread across all income levels. Consistent with the life cycle pattern of earnings, those in the 40-54 age bracket were relatively high income earners (75.0 per cent earn in excess of \$30 000, and 48.0 per cent in excess of \$50 000), while the decline in income is evident in those over 55 years (generally below \$30 000).

A striking feature of the sample is the predominance of women as the sole shopper and cook. Around 98.0 per cent of women reported being the sole or primary shopper in the household, and 86.0 per cent claimed they were the sole or primary cook. Of the male respondents, 67.0 and 43.0 per cent reported being the primary or sole shopper and cook respectively. The bias towards women in shopping and preparation of fruits and vegetables is consistent with those reported for city-based samples (Lewis 1994).

Neither women nor men tended to rely on a written list for their shopping. Among both genders roughly 35.0 per cent used a list for the reported shopping trip. Lists were slightly more common for men than for women, and a few of the male respondents reported having been provided with a list of items to purchase. Shopping frequency and use of a list were unrelated, but there was a slight negative correlation between cooking frequency and use of a list (-0.21 $p=.014$).

The median amount spent by the sample on fruits and vegetables was \$15.00, with the most frequent shop (mode) around \$12.00. However, there was significant variance across the sample. The minimum amount spent was between \$4.00 to \$5.00, and the highest \$55.00. The median estimate for normal weekly shopping was \$25.00. The difference between this and the amount actually spent reflects multiple shopping expeditions over a week⁶. Overall men bought fewer items—usually four to five; as did

⁶ Shoppers often highlighted that this shopping expedition was one of two or more trips. However, this aspect of shopping behaviour was not recorded formally.

respondents whose marital status is single. The median for the total sample was nine items, with six the most common number purchased.

Attention to 'specials' was high across the group. This was not a surprising result given the prominence of promotion signs as outlined earlier. Ninety-three per cent of women reported that they had attended to specials during their shopping. For men the percentage was lower—68.0 per cent—but still significant. Only 20.0 per cent of respondents had noted specials in the media (local newspaper and radio). However, this percentage is somewhat misleading. The management of this shop has regular 'happy hours' on Mondays and Fridays, and 'weekend specials'. Informal reports from respondents shopping during these periods indicated that their shopping strategy was geared to take advantage of these.

In addition to providing information at the time of the interview on basic shopping habits and purchase behaviour, respondents completed a take-home questionnaire which comprised the consumer characteristics and further questions on product perceptions. Noted in Section 7.2.4 was that the administration of this survey was initially envisaged to be post-shopping. Although reverting to a take-home questionnaire avoided the negative affects arising from respondent fatigue, it did affect the validity of one of the consumer characteristic measures. Included among the measurement scales were two statements relating to 'energy' and 'time'. These were included to capture possible contextual affects on consumers' attention to price. Since the instrument was not completed immediately post-shopping, unfortunately, this dimension is no longer valid.

A total of 118 of the take-home surveys (81 per cent) were returned and were sufficiently complete for inclusion in the analysis. Twenty-five per cent of this sample reported that a member(s) of their household had specific dietary needs which influenced their fruits and vegetables shopping. These included various allergies, aversions to specific foods, particular nutrient requirements, and diet conscious considerations. The latter were mostly interpreted as the need to increase consumption of fruits and vegetables relative to processed foods.

The results relating to consumer characteristics and product usage patterns are discussed in detail in Sections 7.4.1 and 7.5.4 respectively.

7.4 Individual profiles

Prior to examining the association between the consumer measures and respondents' purchasing and price recall, the measures were again assessed for reliability using Cronbach's Alpha. In Tables 7.3 and 7.4 the results of Alpha tests are outlined for the current sample against the sample in Chapter 6.

On both Need-for-Cognition (NFC) and Faith-in Intuition (FI), reliability is higher than for the earlier sample. This is particularly the case for FI. The difference between female scores and the total sample suggests that men (including three couples) have higher reliability on NFC, but lower on FI. With respect to the shopping characteristics, reliability has dropped slightly when compared to the earlier sample. However, with the exception of 'involvement' the results were consistent with the earlier sample. In the variety-seeking scale one item, 'Whenever I buy strange foods for my household they are wasted', had a particularly low correlation with other items (0.29 on the corrected item-total correlation) and was deleted, leaving a six item measure. Budget consciousness still has a relatively low reliability at $\alpha=.64$ which adds support for the inclusion of additional items. Even so, the mean inter-item correlation is reasonable so it is retained with caution. The substantial drop in the reliability of 'involvement' indicates the measure is unstable and may be of little use in analysis. A decision on eliminating the measure was made subsequent to examining its behaviour in relation to other indicators.

Table 7.3 Reliability measures for the rational - experiential constructs: Comparison between the current and previous sample *

	FACTOR 1: NFC	FACTOR 2: FI
	9 items	5 items
	Current (Previous)	Current (Previous)
Female (<i>n=94-98</i>)		
α	.81 (.80)	.82 (.72)
<i>m</i>	.32 (.31)	.48 (.34)
Total (<i>n=115-117</i>)		
α	.82 (.79)	.81 (.75)
<i>m</i>	.34 (.30)	.46 (.38)

m = mean inter-item correlation.

* Males are not included due to the small sample size.

Table 7.4 Reliability results for four Factors of shopping attitudes: Comparison between the current and previous sample *

	ATTITUDE TO FRUITS AND VEGETABLES		BUDGET AND VALUE CONSCIOUSNESS	
	F1: Variety 6 items ^Φ	F3: Involved 4 items	F2: Value 7 items	F4: Budget 3 items
Female (<i>n</i> =94-98)				
α	.84 (.83)	.53 (.70)	.81 (.84)	.63 (.61)
<i>m</i>	.46 (.40)	.25 (.37)	.38 (.43)	.36 (.34)
Total (<i>n</i> =115-117)				
α	.83 (.85)	.58 (.76)	.82 (.83)	.64 (.61)
<i>m</i>	.45 (.44)	.25 (.43)	.39 (.42)	.37 (.34)

* males are not included due to the small sample size.

m = mean inter-item correlation.

^Φ = the previous sample included 7 items.

Overall, the results of reliability testing were pleasing, indicating quite robust measures. A second consideration with respect to the measures was whether they reproduced the small but significant associations with the various demographics of the earlier sample. Since women comprise the majority of respondents, and differences between genders were apparent in Chapter 6, regressions were conducted for women only.

The small number of men in the present sample precluded formal, statistical analysis, but trends in the differences between genders were consistent with the earlier sample. Men had a lower mean score on the variety-seeking and 'involvement' measures than women (3.78 to 4.26 on involvement, and 3.60 to 4.00 on variety-seeking) but had an identical mean score for price consciousness (4.00). Within the group, men exhibited little variation in their scores for NFC and FI.

Hierarchical regressions were conducted for each of the six measures to compare the samples of women and, where possible, the same variables were used⁷. As with the analysis in Chapter 6, SPSS for Windows (release 6.1) was used for initial screening and for the regression analyses. The order of entry for variables was also as argued in

⁷ Due to the differences in distributions for occupations between the samples, these were coded with a slightly different emphasis. However, this did not affect the general trends (see Appendix 7.3).

Chapter 6. A detailed comparison of the regressions for the two samples is presented in Appendix 7.3, and the key results are reported below.

With two exceptions the correlations between the consumer measures were consistent with those reported in Chapter 6. Variety-seeking and 'involvement' were positively correlated (0.25), as were price and budget consciousness (0.34). The two exceptions were the correlations between NFC and FI, and price consciousness and 'involvement'. Contrary to the earlier results, and those of Epstein (1994), both the full and income-partialled correlations between NFC and FI were significant (0.36, $p < .001$; 0.37, $p < .001$). An obvious explanation for this is that both the previous sample, and that of Epstein, were base samples and subjected to orthogonal rotation which minimises correlation between dimensions. Thus, the relative absence of correlation in the earlier sample is unsurprising. A further factor which points to the possibility of some correlation for women between NFC and FI is the difference in the earlier sample of the correlations for men and women. Although not significant, the bivariate correlation for women was 0.13, $p = .102$. For men, however, the correlation was virtually nonexistent (-0.03 , $p = .701$). Finally, a partial correlation between NFC and FI, controlling for occupations and income, was performed on the current sample of women to determine whether the association between the two dimensions was a function of these variables. The result indicated no such effect. In fact, the correlation increased to 0.42, $p < .001$.

The stubborn correlation between these dimensions suggests that the measures are not completely unrelated, and is a point of interest for further investigation. However, to do so is not within the scope of this research project and, although significant, the correlation is still relatively low. Since the dimension of primary interest was NFC, the FI dimension was treated as a lower order measure in subsequent analysis.

The second major discrepancy between the current and earlier samples was in the correlation between price consciousness and 'involvement'. In the current sample the two were no longer significantly correlated ($r = 0.11$). The instability of the latter dimension was mentioned earlier, and its possible redundancy in the presence of the more precise variety-seeking and price consciousness measures noted in Chapter 6. A further element which may have contributed to the different results was the change in sequence of items on the instruments between the two samples. The primary source of correlation between the price consciousness and 'involvement' dimensions in Chapter 6

stemmed from two variables; one following the other in the questionnaire instrument. On the current instrument the items were widely separated, indicating this as a possible source of difference. Beyond this there was no clear source for the difference. However, the samples were quite different in construction, and respondents in the current sample completed the questionnaire shortly following their shopping. The earlier sample, on the other hand, was remote from the shopping context. The 'involvement' construct represents the degree of interest and effort a subject is willing to engage in purchasing fruits and vegetables; and it is broad rather than specific in its measurement of this. As such it may represent different things to different people; in this instance 'diet' was significant (0.24). Clearly, in its current form the measure is neither robust nor consistent in its interpretation. Further, it continues to reflect dimensions which are available in other forms and which are more precise. The 'involvement' measure is, therefore, omitted from further analyses.

The results of the regression analyses for the remaining five measures indicated some changes in the magnitude of associations, but otherwise the signs of variables were mostly consistent with the earlier sample⁸. Neither FI nor the variety-seeking equations were significant at $p \leq .05$, which is consistent with the earlier sample. Although price consciousness with all variables entered was no longer significant at $p \leq .05$, two steps within the equation were significant; 'number of dependants' $R^2_{inc} = .06$, $F_{inc} (2, 92)$, $p < .05$, and the interaction of 'number of dependants-age' $R^2_{inc} = .04$, $F_{inc} (5, 89)$, $p < .05$. This differs from Chapter 6 in which 'income' was highly significant on a larger sample size. Budget consciousness was significant at $p \leq .05$, with 'income' highly significant in its contribution to the equation $R^2_{inc} = .12$, $F_{inc} (1, 93)$, $p < .001$. The increase in the level of significance for 'income' on budget consciousness in the current sample may be attributed to the substantial differences in income levels and 'number of dependants' across the two samples, as was indicated in Section 7.3.1 above. Incomes were generally lower than in the earlier sample (particularly in the 18-39 age group), and the number of dependants was significantly higher at all age levels. For example, in the 25-39 age group the mean income level for the earlier sample was 4.8 (roughly \$45 000), and

⁸ Some of the difference in relation to NFC and variety seeking can be attributed to the change in coding for occupations.

respondents averaged 0.8 dependants. In the current sample the mean income level was 3.8 (roughly \$30 000) and the number of dependants per respondent was 1.9.

Arguably, the present sample is more representative of the general population. It includes respondents from a more diverse population, and is not subject to the influence of an underlying homogeneity in the sample. Further, the association between budget consciousness and income, and the absence of association between price consciousness and income, is more consistent with the argument developed in Chapter 6. That is, a consumer who is subject to a budget constraint is more likely to engage in planning and budgeting. Price consciousness, on the other hand, has its emphasis in 'value' and is potentially relevant to all income levels.

Of all regressions, that for NFC produced the most significant change between samples ($R=.48$, $p=.002$ as opposed to $R=.29$, $p=.03$). In the earlier sample 'clerk/trade' was significant within its set at $p\leq.05$. In the current equation 'student' was the most significant variable in the first set, and the increment in explained variance due to 'income' was the major contributor to the equation $R^2_{inc}=.068$ $F_{inc}(7, 86)$, $p<.01$. The change in emphasis here is not surprising given the source of the earlier sample. In the present sample administrator/managers had the highest scores on NFC, followed by students. Paraprofessionals were the lowest scorers on this dimension and mainly comprised respondents who were in the 'caring' professions. Overall the results for NFC lend some support to the findings of Cacioppo and Petty (1982). Higher scores on NFC are apparent in occupations where conceptual thinking is a primary activity.

In summary, the scores for women in the current sample on variety-seeking, FI, and price consciousness appear to be respondent-specific rather than associated with a particular demographic measure. Budget consciousness partially reflects respondents' income levels, but the variance explained is not substantial. NFC, the strongest result, suggests that those in occupations which are analytically and conceptually focused exhibit higher need-for-cognition. Whether or not this carries over to shopping behaviour is investigated in Section 7.4.2 below.

7.4.1 Individual profiles and shopping behaviour

Price and budget consciousness are the dimensions of primary interest to this research. To determine the validity of the measures, both were assessed against respondent

behaviour with respect to purchases of specials, purchase intentions, and use of planning tools such as lists.

Across all respondents, and for the subset of products for which data were collected, budget consciousness was significantly and positively correlated with the ratio of intended (predetermined) purchases to total purchases (0.38, $p < .001$). On a five point scale of budget consciousness, respondents in the lowest percentile bought approximately 45.0 to 50.0 per cent more items than they had intended, while the top percentile only purchased in the vicinity of 15.0 per cent more. The emphasis on 'intention' was also apparent in the associations with specials purchased. Budget consciousness had no association with the overall ratio 'total number of specials to total purchases' but was positively correlated with those specials which had been intended purchases (0.29, $p = .001$). Conversely, the association with unintended specials was negative, although not significant at $p \leq .05$.

Whether or not a respondent used a list to complete their shopping was slightly positively correlated with budget consciousness (0.26, $p = .006$). Overall, these behaviours reflect an emphasis on planning and adherence to a budget. Not only do these results add validity to the budget consciousness measure, they also suggest that consumers scoring high on this dimension are more likely to be methodical in their shopping approach: to predetermine their choices and to stick, for the most part, within those parameters.

In Section 7.3.1 it was reported that respondents' attention to specials was high for *all* respondents in the sample. Even so, there was a small, but significant correlation between price consciousness and attention to posted or advertised specials (0.23, $p = .014$), implying that greater attention was paid to specials on offer by those who were price conscious. Respondent behaviour when examined against price consciousness was markedly different to that of budget consciousness. Price consciousness was significantly and positively related to the ratio of items purchased on special to total purchases (0.47, $p < .001$), and was essentially uncorrelated with 'intended purchases to total' (0.01, $p = .879$). However, as with budget consciousness, there was a positive correlation where the 'intended' purchases were specials (0.37, $p = .001$). Also apparent was a slight distinction between fruits and vegetables. The correlation with purchase of fruit specials to total fruit purchases was 0.44, $p < .001$, while with vegetables the

correlation was lower at 0.26 ($p=.004$). Finally, there was no correlation between price consciousness and use of a shopping list. As with budget consciousness, the results outlined above lend validity to the price consciousness measure. They also suggest that price consciousness is measuring a cognitive orientation which manifests in active response to stimuli during the shopping process. Consumers are less likely to plan their shopping, rather they respond to prices and options as they are encountered.

7.4.2 Price recall

To determine the association between respondent profiles and their general attention to price, a mean price recall was produced for each respondent. Price recall for each purchase was calculated as *actual price less recalled price / actual price* (Zeithaml 1984) and is reported in absolute terms as a percentage of the actual price (0.0 to 100.0 per cent). Accurate recall included estimates of at least 95.0 per cent of the actual price. All lower estimates were treated as inaccurate unless otherwise specified (Wakefield and Inman 1993, Dickson and Sawyer 1990). The mean price recall was achieved by first coding the accuracy of recall for each product using the 95.0 per cent rule (1,0) then averaging across products. The reason for coding the recalls prior to averaging was to avoid exaggerated reports of recall accuracy. As an example, a respondent with the following percentage recall on five products: 90.0, 95.0, 100.0, 70.0 and 50.0, would have an average recall of 81.0 per cent on these scores. However, for two of these the price recalled was substantially different to the actual price and, on the 95.0 per cent rule, are inaccurate. Thus the more appropriate reflection of this respondent's accuracy is 60.0 per cent not 81.0 per cent.

The calculation of accurate recall within the 95.0 per cent range was for comparability with earlier studies. However, in Chapter 5 it was noted that defining accurate recall within these bounds is likely to result in an underestimation of price awareness, so that a price recall of \$1.10 when it was, in fact, \$1.20 is categorised as inaccurate on the 95 per cent rule. Yet it is impossible to assume that the individual had not taken cognisance of the price during their shopping. This is particularly relevant to the current study where the range of prices, and type of pricing, varies substantially across products. Further, consumers purchased a number of products which may have further reduced their ability to recall the actual price. In acknowledgment of the likelihood that price awareness is

underestimated, where appropriate the effect on results of a wider margin for accurate recall is discussed.

Prior to converting the scores to absolute percentages and then into codes, the direction in which respondents' erred in their recall was examined against the consumer measures and the 'special status' of products. There was no significant association between direction and the various measures but the direction of error was significant for 'special status' at $p < .001$ (equal variance t-test of means: 'not on special' 0.03, 'on special' - 0.04)⁹, which indicates that respondents tended to underestimate the price of products not on special and to overestimate the price where products were on special.

Partial correlations, controlling for number of items purchased (Lichtenstein et al. 1993) produced positive, and significant, correlations between price consciousness and price recall (0.34, $p < .001$) and between price consciousness and special recall (0.31, $p < .001$). Neither budget consciousness nor NFC was significantly associated with price recall. Inman et al. (1990) found some association between NFC and the level of attention to the actual value of price discounts. Although it is not possible to replicate their study here, a closer examination was made of the association between price and special recall. In Table 7.5 are outlined four possible combinations of recall according to the 'special' status of the product. The data represent the number of recorded purchase instances for each particular state. Thus, 75 purchase instances were recorded where the product was not on special and where respondents could recall neither the price nor the special status of the product.

The first area of interest is recall when products are on special. The results indicated that the most common occurrence was for both price and 'special' status to be recalled when the product was on special, particularly where the special was a 'bin' item (55.4 and 68.5 per cent). This finding is consistent with those of Wakefield and Inman (1993), who argued that recognition of special status may be a cue for greater cognitive processing.

⁹ When total recall and 'can't recall' are omitted the difference is even more pronounced ('not on special' 0.06 and 'on special' -0.14).

7.4.3 Reference prices

Consumers' use of reference price has been discussed in several chapters. The approach taken to assess respondents' use of reference prices in the current research was to collect self-reported perceptions of the price (if any) which were used to assess a product. Posited in Section 7.2.2 were six possible references (including no reference to a price). Of interest is the extent to which consumers utilise different reference prices, and whether these vary with the context of each purchase. The findings outlined in Chapters 2 and 4 suggest that substantial differences can be expected across the sample. For the present the focus is on differences across respondents.

To determine a respondent's use of reference price, and to provide a basis for comparison across the sample, each respondent was given a score for each reference price which represented the use of that reference as a proportion of total purchases. Thus, a respondent with five purchases which comprised two 'last price paid', one 'alternative prices', and two 'general price image' would result in 0.4, 0.2, and 0.4 with all other price references zero. Similarly, for three purchases, two of which were 'last price paid', and another 'didn't check', the scores would be 0.66, 0.33, and zero for all others. From these proportions, respondents were categorised according to the dominant reference price they employed; with dominance defined as a contribution in excess of 50.0 per cent. Five of the resulting categories represent the different options on the survey instrument: 'last price paid', 'lowest price available', 'alternative prices', 'general price image', and 'didn't check the price' (no respondents reported 'highest price' as dominant). Respondents who scored on two or several references, none of which exceeded 50.0 per cent, were categorised in a sixth group, 'subordinate references'. This was further divided into subgroups to reflect the five categories above. The distribution of references is outlined in Table 7.6.

Of the 143 respondents who provided complete reference prices, 30.1 per cent reported employing a single reference for all purchases. Of these, 'general price image' was the most common (48.8 per cent), followed by 'last price paid' (20.9 per cent). A similar pattern was present in the remaining categories where two or more references were used. Significant in the two and three reference categories was the relatively high frequency of 'didn't check'. The percentage of 'didn't check' was also high for subordinate references (26.4 per cent). In these categories 'didn't check' appeared to reflect the context of a purchase.

Table 7.6 Reference price frequencies for Sample 1 respondents.

REFERENCE PRICE	NUMBER OF REFERENCE PRICES USED*				TOTAL
	Single	Two	Three	Four>	
Dominant references (> 50 per cent)					
Didn't check the price	7	12	6	-	25 (21.7)
General price image	21	13	8	2	44 (38.3)
Price of alternative products ¹	2	2	1	-	5 (4.3)
The highest price it might be	-	-	-	-	-
The lowest price available	4	2	3	1	10 (8.7)
The last price paid	9	11	9	2	31 (27.0)
Total dominant references	43	40	27	5	115
Subordinate references (≤ 50 per cent)					
Didn't check the price	-	17	19	16	52 (26.4)
General price image	-	17	14	13	44 (22.3)
Price of alternative products ¹	-	-	10	9	19 (9.6)
The highest price it might be	-	4	10	8	22 (11.2)
The lowest price available	-	3	8	5	16 (8.1)
The last price paid	-	15	17	12	44 (22.3)
Total subordinate references	0	56	78	63	197
Total respondents	43 (30.1)	48 (33.6)	35 (24.5)	17 (11.9)	143

* Where a single reference is used the numbers correspond to respondents. For two references the number is double that of respondents, and so on for three and four references etc.¹ This option was included in the survey at Respondent number 52¹⁰. As such, its frequency is slightly under estimated. With the earlier cases excluded, its contribution to the total 'dominant' category increased by only two per cent, and for the subordinate category by two to five per cent. Thus, its overall status in the groups remains unchanged.

While a 'general price image' or 'last price paid' were still the most common references in the subordinate category, the proportion of other references had increased. 'The highest price it might be' represented 11.2 per cent of all subordinate references, and 'alternative products' 9.6 per cent. The pattern of use of these references suggested that they too were primarily context specific, although the former was used as a single reference by two respondents.

¹⁰ It was this respondent who alerted the author to the need for this reference price to be included in the questionnaire.

A further aspect of interest in relation to reference prices was their association with the consumer measures and their influence on consumer recall. There was no significant difference between number of references used and the consumer measures. Nor was there a significant difference in price recall across references¹¹. In a combined 'single' and 'two' reference category, the 'lowest price' and 'alternative prices' categories, which are both contextual references, had slightly higher means on budget and price consciousness. However, neither of these was significant ($p > 0.05$). The 'general price image' category was slightly higher on NFC than other categories, and was substantially higher than 'last price paid'¹². Klein and Oglethorpe (1987), in their discussion of reference prices and reference points in general, argue that the last price paid or seen is the most concrete reference point, and therefore the most accessible. References which are based on what is typical of the market are necessarily more abstract and require higher levels of processing. The higher mean for NFC on the 'general price image' category appears consistent with their argument. Despite this, there was no significant difference in price recall between the categories.

The only other difference which was significant, and expected, was that between the 'didn't check' category and all others on price consciousness ($p = 0.05$).

The results from the analysis of reference prices are generally consistent with those of earlier studies (Kalwani et al. 1990, Mayhew and Winer 1992), Rajendran and Tellis 1994), and with the expectations outlined in Section 7.2.2 above. As with the evidence on price recall, there seems to be a strong contextual element underlying the use of references. This is particularly the case where several references were employed. A further investigation of the use of reference prices is undertaken in Section 7.6.3 in conjunction with product attributes. To assist with this investigation, attention first turns to the perceptions respondents reported in relation to the attributes of fruits and vegetables and the manner in which they used them.

¹¹ There was a substantial decrease in price recall where the price was not checked (mean recall 0.20). However, since both reference price and price recall were a function of the respondent's recollection of the purchase, there are no grounds for drawing conclusions.

¹² Where respondents were limited to those using only one category the difference is significant using Bonferroni $p = .05$.

7.5 Respondent perceptions of differences in the attributes of fruits and vegetables

Emphasised in earlier chapters was the variety of contexts in which fruits and vegetables are used, as well as the variation in their attributes such as price and quality. The relatively small associations between consumer characteristics and price recall or reference prices suggests that responses to price are affected by the specific attributes of fruits and vegetables.

In earlier chapters it was noted that of particular relevance to consumers' price awareness and sensitivity were: variance in price, price level, quality consistency (as argued in Chapters 3 and 4), varietal differences (in a similar manner to brand affects), and the contexts in which consumers use the product (see Chapter 4).

The measurement of these variables comprise both objective and subjective criteria. The analyses of price level and variance, and varietal breadth feature both types of measurement. Measurement of the remaining attributes relies on the self-reports provided by respondents in post-shopping questionnaires.

7.5.1 Price levels and variance

Price levels and variance were measured from actual prices of the products at the survey location over the four week period surrounding the study.

The mean, mode, standard deviation and coefficient of variation for the price of each fruit and vegetable purchased are listed in Appendix 7.4. Among fruits, the products with the greatest variation ($C = \sigma/\mu$) are rockmelon (0.32) and paw paw (0.36), followed by navel oranges (0.27) and bananas (0.25). Ten of the 18 fruits did not vary in price over the period of the study. Vegetables exhibited slightly higher variance, and approximately 54.0 per cent had at least one price change over the period. The greatest variation was in broccoli (0.58), cauliflower (0.45), and zucchini (0.50); all traditional winter greens.

In Table 7.7 is provided a comparison of the means and price variation between this and the sample of selected products collected at this location during January and March 1995. The mean price level for Granny Smith apples and navel oranges has reduced considerably, but increased for strawberries and grapes. With the exception of bananas, rockmelons and strawberries, the character of variation in fruit prices between the two

periods has changed substantially. Grapes and pears, which were highly variable in the earlier survey, do not vary at all in the second. Oranges, on the other hand, have increased in variance.

Table 7.7 Mean prices and Coefficients of variation for selected fruits at the Independent - Jan to Mar 1995 and May 1995

ITEM ¹	JAN TO MAR		MAY		ITEM	JAN TO MAR		MAY	
	Mean	Cov	Mean	Cov		Mean	Cov	Mean	Cov
Delicious Apples	1.80	.42	1.13	.14	Beans	3.40	.27	3.32	.22
Granny Smith	2.68	.11	1.20	.00	Broccoli	4.60	.09	3.06	.58
Bananas	2.35	.24	1.92	.25	Cabbage	1.90	.00	1.20	.00
Grapes	2.93	.58	3.90	0	Carrots	1.36	.41	1.67	.08
Oranges	2.40	0	0.97	.27	Cauliflower	3.58	.11	2.22	.45
Peaches	2.30	.39	-	-	Ice Lettuce	1.75	.23	0.98	.23
Pears	1.77	.42	2.40	.00	Onions	1.58	.30	1.90	.00
Rockmelon	1.96	.40	2.01	.32	Potato	1.53	.06	0.75	.18
Strawberries	2.61	.14	3.46	.16	Pumpkin	1.08	.11	0.64	.10
Watermelon	0.55	.22	0.55	.00	Tomato	3.28	.20	4.18	.11
Sample means	2.14	.29	2.11	.12		2.41	.18	1.99	.20

¹ Grapes = white seedless; Oranges = Navels.

Unlike the earlier sample, variation in the price of vegetables in the current sample is much higher than for fruits. Cauliflower, broccoli and potatoes are the primary source of increased variation over the earlier period. Conversely, carrots, onions and tomatoes have significantly less variation. With respect to price, pumpkin, potatoes, cauliflower, lettuce and broccoli all have substantially lower mean prices in the current period. In fact the mean price across all vegetables is 20.0 per cent lower than in the earlier period.

Across all products, with the exception of apples, a decrease in price variation has corresponded with an increase in price level. The converse is true where variation has increased; price level has decreased. A partial explanation for these changes is in the seasonal influence on supply. Grapes, tomatoes, broccoli and cauliflower are all seasonal products (although these are available year-round, their price and quality continue to reflect seasonal influences).

In addition to these objective measurements of fruits and vegetables, respondents' perceptions of the 'normal' price for the products they purchased were collected in post-shopping questionnaires.

Respondents' perceptions of the normal price range for a product varied substantially across the sample. For consistency, they were encouraged to provide a range, rather than a point estimate. With the exception of kiwi fruits and snowpeas, where price was perceived to be stable, the majority of estimates comprised a range. Vegetables such as broccoli, tomatoes, squash and zucchini had the highest dollar value variation (in all cases over \$2.00). The only fruits in this category were grapes and pawpaw. However, when the price ranges were examined against the mean prices for fruits and vegetables, the variation in prices implied by the ranges was substantial for both groups. For fruits such as apples, oranges, bananas and rockmelon the range was greater than 80.0 per cent of the mean prices reported in Table 7.7 for the May period. This was similarly the case for broccoli, carrots, potatoes and pumpkin, although the latter were on relatively low mean prices (\$0.75 and \$0.64 respectively). The narrowest price ranges reported across the fruits and vegetables in Table 7.7 were for beans (53.9 per cent) in vegetables and, in fruits, grapes (59.0 per cent), but both products were higher-priced relative to other products.

The breadth of the price ranges reported by respondents indicates a general awareness of the price variance in the product group. Further, comments accompanying their completion of the post-shopping questionnaires suggested that they attributed most of this variance to seasonal factors. Also prevalent in conversation were references to the variety of contexts in which fruits and vegetables could be acquired including: home-grown, road-side stalls or local producers. In the case of road-side stalls and local producers many respondents recollected having paid extremely low prices (for example \$1.00 for five kilograms of apples). A consequence of this was that many experienced substantial difficulty in determining what they considered to be the lowest price they had paid for a product over the recent past. It was also difficult for some respondents to identify the highest price they would be willing to pay for a product. While this was particularly the case for relatively price insensitive respondents, for others, the primary difficulty was due to their attempts to take into account the affect of seasonal fluctuations on what they perceived as unacceptably expensive.

While these observations largely rest on anecdotal evidence, they serve to illustrate the potential complexity in the images consumers' hold of prices in this product group. They also highlight the futility of using respondents' self-reports of what they perceive

to be the highest price they would pay, or the lowest they have encountered, to develop a measure of price expectations (Steenkamp and van Trijp 1989). In the present study price expectations were measured within the context of shopping at this particular location, and by using the mean prices collected over the period surrounding the study as a benchmark for expectations (Appendix 7.4). This does omit the influence of prices at other locations but the majority of respondents shopped almost exclusively at this shop, which should minimise this effect.

7.5.2 Perceptions of varietal breadth

As noted above, although it may be possible to measure varietal differences by actual varieties on offer, central to consumer behaviour is their perception of the scope of product available. A consumer who perceives all tomatoes as essentially the same can be expected to behave differently to one who considers them to be substantially different. Outlined in Table 7.8 are respondents' perceptions of the varietal breadth of selected fruits and vegetables. The products are separated into three categories. The first two represent products for which over 60.0 per cent of respondents perceived (1) little or no varietal difference and (2) clear varietal differences. The final column lists fruits and vegetables where opinion was divided as to varietal breadth. Against each fruit and vegetable is the number of varieties that were available at any one time over the four week period of the sampling.

There is a clear association between perceptions of varietal breadth and the number of options available at the shop. Although the absence of choice at a specific time may contribute to respondent perceptions of varietal options, they would have encountered different varieties over time. However, these differences may have been attributed to 'quality' rather than varietal differences. The purpose of determining perceptions of varietal breadth was to investigate whether the status of this perception affects price sensitivity, as it does in the presence or absence of brand loyalty. In this respect, column three is of most interest. Despite the presence of a number of options, respondents differed in the extent to which they perceived these to provide the same attributes. If these differences in perceptions can be attributed to underlying preferences, then respondents may also differ in sensitivity to price differentials across varieties (assuming

Table 7.8 Respondents' perceptions of varietal breadth and the options available for purchase

VARIETIES ARE MUCH THE SAME (1)			VARIETIES DISTINCTLY DIFFERENT (2)			MIXED RESPONSE			
Number of observations	Product	Options	Number of observations	Product	Options	Number of observations	Product	Options	(1) / (2)
9	Kiwi fruit	1	43	R apples*	5	55	Bananas	2	41/59
21	Lemons	1	15	G apples*	2	55	Mandarins	2	45/54
16	Pineapple	1	18	Grapes*	3	12	Passionfruit	1	50/50
6	Watermelon*	1	36	Oranges*	3	15	Rockmelon	1	47/53
			6	Paw Paw	1				
			8	Pears*	2				
36	Broccoli*	1	18	Cucumber*	5	21	Avocado	2	57/43
15	Brussel sprouts*	1	44	Potatoes	4	9	Cabbage	4	44/56
21	Capsicum	2	20	Pumpkin*	4	32	Lettuce	4	41/59
57	Carrots*	1	18	Sweet potato	3	11	Mushroom	1	46/54
34	Cauliflower	1	53	Tomatoes	3	34	Onions	3	59/41
7	Parsnip*	1	14	Beans	3	19	Squash	3	47/53
5	Snowpeas*	1	5	Eggplant	2	18	Zucchini	2	50/50
9	Spring onions*	1							
20	Celery*	1							

¹ In the first two columns products listed are those where the status of the product was perceived by 60.0 per cent or more of respondents.

* 80.0 per cent or more respondents perceived this status.

some price consciousness). Consequently, where all options are considered to be much the same, respondents may engage in price comparisons and, following from this, their price recall should also be higher.

7.5.3 Perceptions of quality consistency

Argued throughout earlier chapters was the potential affect of quality inconsistency on sensitivity to price. Proposition 6b in Chapter 4 posited that consumers' price sensitivity would be coarse relative to products with similar substitution characteristics, but which were not subject to price fluctuations as a consequence of variation in quality and supply. As with varietal differences, individual perceptions of quality consistency are highly variable. In Table 7.9 are listed selected fruits and vegetables according to perceptions of consistency. Those included in the 'Quality consistent' column comprise fruits and vegetables reported as consistent by 60.0 per cent or more of the sample. The same is true for 'Quality varies weekly or according to season'.

The quality-consistent products comprise mainly vegetables, and within this group, root vegetables. Although there are clear patterns with respect to perceptions of quality consistency, there remains substantial respondent variation which precludes definitive conclusions at this stage.

A second question respondents were asked in relation to quality was how confident they were that 'when they came to use an item the quality would be as they had expected'. In other words, how confident are they of their ability to judge the quality of different fruits and vegetables? Respondents were provided with three options as outlined in Section 7.2.1. Two of the options 'reasonably confident' and 'not very confident' were combined because the distinction between the two was respondent-dependent rather than representative of different degrees of confidence.

Table 7.9 Customer perceptions of the consistency in quality of selected fruits and vegetables

QUALITY CONSISTENT	QUALITY VARIES FREQUENTLY	
	Weekly variation*	Seasonal variation
Lemons	Grapes	Apples
Broccoli	Pears	Kiwi fruit
Cabbage	Rockmelon	Mandarins
Capsicum	Beans	Oranges
Carrots	Cucumber	Passionfruit
Celery	Snowpeas	Paw Paw
Mushrooms	Spinach	Avocado
Onions	Squash	Brussel sprouts
Parsnip	Tomatoes	Cauliflower
Potatoes		Eggplant
Pumpkin		
Spring onions		
Sweet potatoes		

* In at least 50 per cent of cases respondents perceived these products to vary on a weekly basis.

Listed in column one of Table 7.10 are items where 60.0 per cent or more of respondents were very confident of the quality. In column two are items where 60.0 per cent or more were only reasonably confident of the quality. These items mainly include those which have to be eaten or cut to assess their quality. Mandarins can be bitter or sweet; eggplant may have grubs; etc. Of interest is the inclusion of grapes. It would appear that many respondents do not try the grapes before they buy, even though it is possible to do so. Alternatively, they may consider that a single grape is not necessarily representative of the bunch.

Table 7.10 Customer confidence in assessing the quality of selected fruits and vegetables

VERY CONFIDENT OF THE QUALITY	REASONABLY CONFIDENT OF THE QUALITY
Lemons	Grapes
Kiwi fruit*	Granny Smiths
Broccoli	Mandarins
Cabbage	Oranges
Capisicum*	Pawpaw
Carrots	Rockmelon
Cauliflower	Brussel sprouts
Garlic/ginger	Cucumber
Mushrooms	Chokoes
Onions	Eggplant
Parsnip	Tomatoes
Sweet potato*	
Zucchini	

* for products other than those starred in this column, the percentage was 70.0 per cent or greater.

7.5.4 Usage contexts

The final area to be examined which has the potential to affect consumers' sensitivity to price is the context in which fruits and vegetables are used. Again, there is variation in individual responses. In Table 7.11 listed are those fruits and vegetables with at least five observations. Column two includes the categories 'staple' and 'basic', the first suggesting high volumes, while 'basic' suggests a regular item but not necessarily purchased in high volumes; an example being the presence of cucumbers and mushrooms in this category. The percentages highlighted in bold font indicate the dominant usage context with which a product is associated.

Consistent with the data reported by HRDC (1990), and with the conclusions of Chapter 4, apples, oranges, tomatoes and potatoes are considered by most respondents to be staple food items in household diets. An unexpected product in the 'staple' category is capsicum. A possible explanation for this is the increasing popularity of Italian dishes

Table 7.11 Purchase frequencies and product usages for selected fruits and vegetables (percentages).

PRODUCT	PURCHASE FREQUENCY ¹	USAGE CONTEXTS: TWO MOST COMMON		
		Staple or regular	Diet variation	Small/sidedish /treat
Bananas	97	72.3	14.9	
Apples	95	80.0	8.0	
Oranges	93	78.1		9.4
Beans	78	56.3*	25.0	
Broccoli	84	54.1	27.0	
Capsicum	91	50.0		27.8
Carrots	98	97.8		
Cucumber	86	75.0*		25.0
Lettuce	91	84.6*		11.5
Mushrooms	82	53.8*		30.8
Onions	84	93.3		
Potatoes	89	89.5		
Pumpkin	87	84.2	10.5	
Sweet potato	77	50.0*		40.0
Tomatoes	95	81.4		11.6
Zucchini	82	69.2*	12.1	
Mandarins	85	34.3	54.3	
Passionfruit	56		50.0	25.0
Pineapple	49		58.8	23.5
Watermelon	50		66.7	33.3
Brussel sprouts	23	18.2*	72.7	
Cabbage	57	50.0*	50.0	
Spinach	60	25.0	75.0	
Squash	60		53.3	26.7
Grapes	73		28.6	35.7
Lemon	65	33.3*		50.0
Paw paw	43		28.6	57.7
Eggplant	0		33.3	66.7
Garlic/ginger	57	25.0*		75.0
Leeks	0		50.0	50.0
Snowpeas	0		25.0	75.0
Spring onions	50	20.0*		80.0

* Starred items in this column indicate that the major contribution is from a 'basic' food which the respondent likes to keep in the house.

¹ Percentage of respondents purchasing the item at least fortnightly.

and 'stir fry' cooking. The prominence of these fruits and vegetables in respondents' diets is also indicated by the high percentage of respondents purchasing the product on at least a fortnightly basis. The average for all products in the 'staple' or 'basic' category is 88.0 per cent. In contrast to the products in the second column, products perceived to be

a source of variation are purchased less frequently (mandarins are highly seasonal purchases). On average only 55.0 per cent of respondents purchase products in this category on a fortnightly or greater basis. The products in the final category represent those which are purchased in small quantities or for a treat. The infrequency of their purchase (only 31.0 per cent are purchased on a regular basis) supports their status as 'treats' or embellishments to meals.

Although each product in Table 7.11 can be characterised in a dominant usage context, it is apparent that their place in a household diet varies substantially across respondents. This was particularly true for a number of products not included in the table such as kiwi fruit, rockmelon, avocado and cauliflower. None of these products could be categorised into a dominant usage category. Even within Table 7.11 the only products which can safely be assumed to represent a particular category of usage are the sub-set of products in the 'staple' category with representation of 75.0 per cent or greater. If usage context (as represented by the categories outlined in Section 7.2.1) is in fact an important element in determining consumers' attitude and behaviour with respect to price and quality, these results suggest that consumer-specific usage contexts are the requisite level for analysis.

7.6 Profiles of fruits and vegetables and respondent recall and reference prices

In Section 7.4.3 respondent-centred characteristics were examined against ability to recall price and the types of reference prices respondents reported employing in their evaluation of prices. Over this section the focus is on the influence of product and contextual factors on these measures of price awareness. To investigate these, and other effects, on respondents' attention to price, a hierarchical regression analysis on price recall was conducted. Hierarchical regression was chosen as the preferred method because it enables parsimonious analysis of multiple variables, and at the same time minimises the confounding affects on each set of variables through the process of partialling (Cohen and Cohen 1983). This provides the necessary control on the influence of respondent-centred characteristics, such as price consciousness, prior to examination of the contextual attributes.

Since it is the effects of variation across product attributes and contexts which is of interest, a review of respondents' price recall was undertaken to identify uniform patterns in reporting. Of the 145 respondents, eight (5.5 per cent) recalled the price of all products purchased (as defined by 95.0 per cent or greater) and twelve (8.3 per cent) had no recall of prices. The former had substantially higher mean scores than the latter on price consciousness (4.62 and 3.47), and in the number of products they purchased on special (66.0 per cent and 19.0 per cent, $p=0.05$). On these criteria, it would appear that the level of price recall for these respondents was largely a function of an individual predisposition for attention to price, and essentially unrelated to product or contextual factors. Since these groups exhibit no variation in their recall, they were excluded from both the price recall and reference price analyses.

In the analysis of reference prices a purely descriptive processes was employed, and coupled with analysis of variance where appropriate. The objective in this analysis is to identify associations between the use of reference prices and the various product attributes outlined over the previous section. An important element in analysing the patterns of reference price usage is the need to distinguish influences which are contextually-based from those which are essentially respondent-specific. To this end, the analysis of reference prices was confined to those respondents who reported using three or more references across their purchases.

A final area which needs clarification prior to turning to the detail of these analyses, is the manner in which the attributes outlined over the preceding section are to be measured. Although subsets of products had features in common, it was evident that substantial variation remained in the perceptions respondents held of products. Clearly, these differences preclude the use of general product-based categories in the analyses of price recall and reference prices. This does not present a difficulty in relation to the price recall analysis, since continuous variables and variable interactions are easily managed within regression analysis. However, some form of classification for continuous variables such as price level and variance would assist in the descriptive analysis of reference prices. The categorisation of these attributes is discussed in conjunction with the analysis of reference prices in Section 7.6.

7.6.1 Respondents' price recall

Respondents' price recall was examined against seven sets of variables. Each of these sets is discussed below, and in the order in which they were entered into the equation. The sequence of entry was based on the variables' primacy in determining price recall, and on their relationship to other variables. The dependent variable, price recall, was coded in four intervals. Four (4) represented total price recall, three (3) recall within 20 per cent of the price, two (2) incorporated all other levels of recall beyond the 20 per cent, and one (1) those who had indicated they could not recall the price. Encoding the dependent variable in this manner provided a finer distinction between levels of recall, and delineated failed attempts to recall (2) from instances in which respondents explicitly reported they had not attended to the price of a product (Wakefield and Inman 1993).

Of the independent variables (IVs), the initial sets to enter the equation were sex and price consciousness. Both variables are fundamental to consumers' predisposition towards price awareness, as was highlighted over this and the previous chapter.

'Special status' was the next entry and represented the first of the contextual variables. Not only was 'special status' earlier identified as a significant determinant of price recall, it also contributes to the status of later variables which are price-based. However, its effect on price awareness is not only price-based, it also reflects the signalling characteristic of specials. A price change in the absence of a special is only influential if the change itself is noted. Thus, to include the price-based variables prior to specials would be to confound these distinct influences. The variable is dichotomous, with one (1) indicating that the product was on special.

There were four price-related variables considered to effect price recall. One of these, price level, required considerable modification before it was in a suitable form for analysis. The problem with the measurement of price level is that pricing of fruits and vegetables may be by the kilogram, the item, or the package, which precludes meaningful comparisons across products. For example, in their original form, passionfruit at \$1.20 for three and oranges at \$1.20 per kilogram would be treated as equivalent in the analysis. However, the volume of oranges for \$1.20 is substantially higher than that for passionfruit.

To overcome this discrepancy, all fruits and vegetables were given a 'per kilogram' equivalent¹³. Thus, the comparison between passionfruit and oranges became one of \$6.90 for the former and \$1.20 for the latter, which is a truer reflection of their relative value. Although converting 'per item' prices to 'per kilogram' resulted in some odd price:item associations (such as lettuce per kilogram which does not occur in the real world) the approximation was felt unlikely to distort results significantly since the volume of product a consumer receives for a given per-item-price can itself vary substantially.

The mean price, as measured in the modified format, was the first of the price-based variables to be entered because, a priori, higher prices are associated with greater price sensitivity. The next entry comprised two variables relating to the effect on recall of price variance. One of these was the coefficient of variation of price ($c = \sigma/\mu$) which had a range from 0 to 1, and the other was a proxy variable which was included to capture the effect of expectations-to-price paid (expectations). The proxy variable was calculated as the actual price paid divided by the original mean price, and expressed the magnitude of difference between price paid and what may be perceived as the 'normal' price (Emery 1962). Although price recall accuracy should increase along with increasing discrepancies between actual and expected prices, this effect may be influenced by the normal pricing characteristics of a product (Gabor and Granger 1964). A given difference between price-paid and the 'normal' price may have a relatively small impact on a consumer where the price of the product is subject to substantial variation, but a significant impact where the product exhibits generally low levels of price variation, since the latter represents a stronger signal. To capture this association, an interaction term which combined the 'expectations' variable and price variation was entered in the next set. Each of the variables representing main effects required transformation to compensate for severe skewness. For mean price a logarithmic transformation was used and for 'expectations' and variation the square root was used.

The next set of variables to enter the equation were quality consistency and variety breadth. Price awareness and, hence, recall is considered to be a function of the status of these variables. Regardless of the price, consumers should be more concerned with determining the value of a product where its quality is perceived to be inconsistent.

¹³ This was achieved by weighing a sample of each product and estimating the price-per-kilogram equivalent.

Quality inconsistency acts as a cue for monitoring value, as was argued in Chapter 4. The inclusion of varietal breadth was to determine the validity of Proposition P1, that perceived similarity may be associated with greater attention to the price, or price-quality, differentials of alternatives. Both variables were reduced to a dichotomous code in line with the discussion in Section 7.5.2. Varietal breadth was coded (0) to indicate varieties were perceived as similar and (1) to indicate they were perceived as different¹⁴. The quality consistency variable was similarly coded with (1) indicating the product was perceived as quality inconsistent.

The final set of variables relate to usage context. The inclusion of usage context in the equation provided an opportunity to examine the association between variety-seeking and price awareness (as represented by price recall) and to partially address Proposition P3. Other areas of interest were the nature of associations between the volumes of product purchased (for example, a single lemon) and 'treat' and price recall. Apparent from Table 7.11 in Section 7.5.4 was the high correlation between purchase frequency and different usage contexts; staples were generally purchased more often than those sought for variety. Noted in Section 7.2.1 was that purchase frequency has been often employed in studies of recall on the assumption that it implies greater price knowledge. Also noted was that the evidence of its effect on price recall is mixed (Rajendran and Tellis 1994). In the present study purchase frequency appeared to be largely redundant¹⁵, and so usage context was considered a sufficient representation of respondents' familiarity with a product. To represent the different usage contexts in the equation, four effect-coded variables were produced: 'variety', 'treat', 'sidedish or a few', and 'basic', with 'staple' as the implicit usage context.

As with previous analyses, all data were screened prior to analysis using SPSS Frequencies and Regression. Two multivariate outliers were detected. In both cases the price at which the product had been purchased was extremely low (for example, tomatoes purchased at \$0.99 when their mean price was \$4.99). In one instance the

¹⁴ Varietal breadth was initially combined with 'number of options' to produce a variable which had zero (0) for 'varieties are different' and a nominal scale ranging from one to the number of options. However, this variable was highly skewed and its effect on the equation did not differ from varietal breadth. An attempt to adjust for skewness simply resulted in a dichotomous distribution and so varietal breadth was maintained in its original form.

¹⁵ To determine whether frequency was an important factor in its own right, a regression was run including frequency and its interaction with usage contexts. None of the associations were significant and so it was omitted from the analysis.

respondent recalled both special and price and, in the other, only the special status. Although both observations were quite valid, the extremeness of the price could only be corrected by substantially changing it. Given the relatively high number of observations these were omitted from further analysis. The results of the regression are contained in Table 7.12, and are reported in summary in the following sections.

With all IVs entered, the equation is significant at $R=.42$, $F(13, 488)$, $p<.001$. Sex, the first variable to enter, was not significant. However, at step 2 the equation became significant with the entry of price consciousness $R^2_{inc}=.05$, $F_{inc}(2, 499)$, $p<.001$. At step 3 'special status' was also significant and is the major contributor to the equation is $R^2_{inc}=.06$, $F_{inc}(3, 498)$, $p<.001$, with a positive effect on recall. The mean price level did not contribute to the equation which suggests that the relevance of this attribute is contingent on other factors. However, at step 6 the set comprising variance and 'expectations' was marginally significant $R^2_{inc}=.01$, $F_{inc}(6, 495)$, $p<.05$, which is consistent with the contention that the greater the disparity between the price paid and the mean price, the higher the recall. At step 7 the entry of the variance/expectations interaction term confirmed the expectation that where price variance is high, respondents' recall accuracy would be reduced ($R^2_{inc}=.03$, $F_{inc}(7, 494)$, $p<.001$). The combined quality consistency and varietal breadth term contributed a marginal, but significant increase to the equation $R^2_{inc}=.01$, $F_{inc}(9, 492)$, $p<.05$. Quality consistency was positively associated with price recall, suggesting respondents payed more attention to price where quality was not consistent. The sign for varietal breadth was negative, confirming that greater accuracy in recall was associated with perceptions of similarity among alternatives. The final set to enter was usage contexts which was not significant. However, 'variety' had a negative sign indicating a lower attention to price relative to other contexts. Similarly, where the product was purchased as a sidedish or in small quantities the association with recall was negative which indicates there is a tendency for less attention to price in these contexts. The converse was the case for 'Treat' which had a positive association with recall.

It would appear that in this context respondents may have been aware of the product's higher cost, as may be implied by the term itself.

Despite the expected signs on all variables, the explanatory power of the equation was not impressive. The 13 variables together explained only 18.0 per cent of the variance in price recall indicating that further, underlying factors influence recall. As noted earlier,

Table 7.12 Hierarchical regression of selected variables on Price recall (n=502)

Variables	PrCal (DV)	Sex	PrC	Spcl	LnM	Cvsq	Pmn	PmCv	Qcon	Vbrdth	Varit	Treat	S/few	Basic	B	β
Sex	.063														.290	.076
PrC	.225	-.044													.219	.174
Spcl	.282	.015	.195												.777	.318
LnM	-.125	.013	-.111	-.341											.005	.003
Cvsq	.038	.003	.097	.422	-.301										.476	.093
Pmn	.049	-.002	.094	.496	-.221	.734									1.438	.328
PmCv	-.001	-.003	.074	.499	-.139	.799	.936								-3.907	-.568
Qcon	.136	-.004	.002	.128	.063	.083	.066	.066							.278	.117
Vbrdth	-.003	.007	-.061	.017	-.082	-.059	-.093	-.141	.174						-.177	-.075
Varit	-.031	-.030	-.029	.094	.083	.009	.064	.104	.168	-.062					-.177	-.109
Treat	-.004	-.079	-.095	.058	.174	-.036	.041	.085	.120	-.016	.742				.375	.172
S/few	-.051	-.029	-.041	.037	.137	-.007	.042	.073	.049	-.052	.653	.776			-.218	-.116
Basic	.001	-.108	-.049	.069	.066	.016	.049	.078	.055	.077	.556	.737	.637		.044	.029
Means	2.771	.892	3.951	.373	.621	.355	.300	.152	.532	.454	-.100	-.271	-.201	-.022	Intercept = 1.323	
Stdev	1.184	.310	.944	.484	.641	.230	.270	.172	.499	.498	.727	.542	.630	.785	R² = .18	
Rsqr Inc		.004	.056	.114	.115		.127	.152		.165				.178	Adjusted R² = .16	
F_{inc} statistic			27.49	32.60			3.402	14.56		3.83					R = .42	
F_{inc} significance			***	***		*	*	***		*						

* p<.05; ***p<.001

PrCal (DV)=price recall; PrC=price consciousness; Spcl=special (0,1); LnM=Log mean price (kg); Cvsq=covariation (squared); Pmn=price paid/mean price; PmCv=Cvsq*Pmn; Qcon=quality consistency; and Varit (variety), Treat, S/few (sidedish and few), Basic=effect-coded reasons for purchase.

an aspect which may have confounded the association between price recall and the variables was the number of products respondents were required to recall. There was a small but significant correlation between total products purchased and accuracy in recall (-.029, $p < .001$). However, it should be kept in mind that the context in which the price recalls were elicited *is* the context in which consumers conduct their purchases. If the low performance of the equation can be attributed, in part, to memory idiosyncrasies, then the relevance of the variables included in the equation may be underestimated. At the very least their potential influence on consumers' price awareness and sensitivity warrants further investigation.

7.6.2 Reference price and context specific attributes

The final area to be examined in relation to price awareness and sensitivity is respondents' use of reference prices. As noted in Section 7.4.3, in analysing the effects on use of reference price the sample of observations was limited to those respondents who reported using three or more references, since it was among these that context specific attributes were prevalent. Also mentioned in Section 7.4.3 was the need to identify a basis on which to classify the continuous variables, price level and variance. This was achieved with the assistance of Cluster analysis using SPSS Average Linkage Between Groups in combination with Squared Euclidean distance (release 6.1).

A total of 861 observations were included in the analysis. The modified price level discussed in the previous section was employed as the measure of price level, and was standardised to a 0-1 range by dividing all prices by the highest priced product. The variance measure (coefficient of variation) was used in its original form.

The results of clustering suggested a four-cluster solution was most appropriate (see Appendix 7.5). However, one of the clusters had only five members (all chokoes) and another had a particularly high standard deviation on a relatively low price level ($m = \$2.16$, $\sigma = \$1.21$) which resulted in an overly extended price range of \$0.95 to \$3.37. To improve the grouping a decision was taken to manually adjust the solution. Cluster 4 was combined with Cluster 1, which also had a relatively low price level and higher than average variance. To reduce the range in Cluster 2, the cluster was manually split in accordance with the next level of bifurcation.

Statistics for the final four-cluster solution are outlined in Table 7.13. Clusters 1 and 4 represented different ends of the price spectrum (\$1.46 and \$7.18) but both had little or no variation in price (0.06 and 0.00 respectively). The converse was the case for Cluster 2 which has the highest price variance of all clusters (0.37). Cluster 3, which was split from Cluster 2, represented the middle ground. The price level was high relative to Clusters 1 and 2 (\$3.63), and it also contained products with some price variance (0.11). The four price/variance categories together with the categories associated with special status, quality consistency, option availability and usage context, were examined for their association with reference prices. Outlined in Table 7.14 is the relative contribution of each reference price to the total references used, by product attribute and state of that attribute. The figures marked in bold indicate particularly high or low contributions relative to other references on a particular dimension (eg. 'Special status' - 'yes'), or a substantial contrast between the reference's contribution to one dimension relative to another (eg. the difference in percentages for 'Highest' between 'Special status'- 'yes' and 'no'). The purpose of the table is to highlight associations between reference prices and *specific* product attributes; there are, of course, clear overlaps across the different variables (eg 'special status' and 'price variance') and these are acknowledged throughout the discussion.

Table 7.13 Classification for price-level and variance*

ATTRIBUTE	CLUSTER 1		CLUSTER 2		CLUSTER 3		CLUSTER 4	
	Mean	Stdev	Mean	Stdev	Mean	Stdev	Mean	Stdev
Variation	.06	.06	.37	.14	.11	.06	.00	.00
Price per kilogram	1.46	.65	1.68	.73	3.63	.67	7.18	1.46
Cluster members	355		286		168		52	

* All clusters are significantly different from one another on both attributes at $p=.05$.

Apparent from the table is a distinct difference in the contribution of references according to 'special status'. 'Didn't check', 'general image' and 'the highest' were the most employed where the product was not on special. Not reported in the table, but worth noting, is that the number of observations for each of these references on 'not on

Table 7.14 Relative contribution of a reference to all references for an attribute - comparison across attributes

CONTEXT	PERCENTAGE FREQUENCY OF REFERENCE RELATIVE TO OTHER REFERENCES						TOTAL
	<i>Last</i>	<i>Highest</i>	<i>General</i> ¹	<i>Lowest</i>	<i>None</i>	<i>Alternate</i>	<i>Count</i>
<i>Special status</i>							
No	24.0	8.3	25.0	6.9	30.4	5.4	204
Yes	35.8	2.8	18.9	17.9	8.5	16.0	106
Total	28.1	6.5	22.9	10.6	22.9	9.0	310
<i>Price level/variance</i>							
Low/low	29.1	3.9	22.0	9.4	26.0	9.4	127
Low/high	28.3 ¹	6.5	19.6	18.5	17.4	9.8	92
Med/med	27.5	11.6	29.0	5.8	17.4	8.7	69
High/none	22.7	4.5	22.7	-	45.5	4.5	22
Total	28.1	6.5	22.9	10.6	22.9	9.0	310
<i>Quality consistency</i>							
Consistent	22.2	7.1	25.4	6.3	30.2	8.7	126
Inconsistent	30.7	6.3	25.2	15.7	11.8	10.2 ²	127
Total	26.5	6.7	25.3	11.1	20.9	9.5	253
<i>Options available</i>							
One only	27.7	8.5	16.0	7.4	31.9	8.5	94
Two or more	28.2	5.6	25.9	12.0	19.0	9.3	216
Total	28.1	6.5	22.9	10.6	22.9	9.0	310
<i>Usage context</i>							
Staple	29.7	5.4	25.7	12.2	14.9	12.2	74
Basic	30.0	10.0	31.7	10.0	15.0	3.3	60
Variety	27.7	3.1	21.5	12.3	12.1	12.3	65
Bit or few	15.8	10.5	10.5	5.3	47.4	10.5	19
Sidedish	20.0	13.3	26.7	13.3	13.3	13.3	15
Treat	15.8	5.3	31.6	10.5	31.6	5.3	19
Total	26.6	6.7	25.4	11.1	20.6	9.5	252

¹ Where not on special the contribution to Low/high is 12.8 per cent, as opposed to its overall contribution of 24.0 per cent.

² Where not on special the contribution to 'Inconsistent' is 9.5 per cent, as opposed to 6.0 per cent overall. However, where on special it contributes 24.0 per cent to 'consistent' as opposed to 16.3 per cent overall.

special' compared to the 'on special' state is substantial (87.3, 71.8 and 85.0 per cent respectively). Where the product was on special, 'alternative products' and 'the lowest' were the most common references. As with the former references, observations for these references were heavily weighted on this dimension (60.7 and 57.6 per cent). 'The last price' was approximately evenly divided between special categories (56.3 per cent for 'not on special' and 43.7 per cent for 'on special'). Its relatively high contribution to products on special can be attributed to its frequency in the sample generally.

The differences evident in references across the four price/variance categories were primarily due to products which were not on special. 'Didn't check' represented the highest proportion of references for categories with no or little price variance, and 'the highest' and 'lowest' references had greater representation where variance was moderate or high. Particularly evident where the product was not on special was the relatively low use of 'last price' in relation to the low price/high variance category. With the exception of 'didn't check', there were no substantial differences in the use of reference price between quality consistencies or across varietal breadths. However, use of 'lowest' and 'alternative' is greater where quality is inconsistent. 'Lowest' also weighted heavily on the low-price/high-variance category which suggests 'lowest' is used frequently where products are subject to seasonal variation. An absence of price checking was associated with quality consistency, and where only one option was available for purchase. 'General' and 'lowest' were more common where products have a number of options, although the difference is marginal. As with the results of the price recall analysis, products purchased in small quantities ('a few or bit') exhibited the highest percentage of no price checks (47.4 per cent) relative to other contexts. Conversely, 'lowest price' was the least used (5.3 per cent). Also exhibiting a high proportion of no price checks was 'treat' (31.6 per cent) but, as indicated earlier, by nature the category has an implicit recognition of price/cost, so the slightly lower percentage was expected.

The final area for examination is the association between reference price and price recall. Presented in Table 7.15 is the frequency with which both special *and* price were recalled as a percentage of all price/special recall combinations. In the final column the mean price recall (at 95 per cent or higher) for each reference is listed together with their standard deviations. Once again the figures are presented only for respondents who used three or more reference prices.

Table 7.15 Reference price by 'price/specials' recall and mean price recall

REFERENCE PRICE	PERCENTAGE RECALL OF PRICE AND SPECIAL		PRICE RECALL	
	Per cent	Combined categories	Mean	Stdev
Last	43.9	82	.49	.50
Highest	35.0	20	.35*	.49
General	23.7	58	.41*	.50
Lowest	59.4	32	.64*	.49
Alternative	56.0	25	.68*	.48
Total/Mean	36.1	284	.50	.50

* 'Highest' and 'general' are substantially different from 'lowest' and alternative'.

The 'lowest price' and 'alternative price' recorded the greatest occurrences of recall for both price and special status (59.4 and 56.0 per cent) and produced the highest mean price recall. Across references, 'general price image' is substantially lower than other references in the percentage of price and special recall, as is the 'highest price'.

These two also have significantly lower means on price recall when compared to the two contextual prices. However, a note of caution in the interpretation of the results in relation to 'general price image' and 'alternative' is required. First, the standard deviations on price recall for *all* references is high relative to their means. Of greater interest, though, is the particular sensitivity of these references to changes in the definition of accurate price recall. If price recall is extended to include 80 per cent accuracy, the 'highest' reference doubles (70.0 per cent and mean=0.75, stdev=0.44). Similarly so for 'general price image' (53.4 per cent and mean=0.72, stdev=0.45). Both references would then be equivalent or greater than the group means (52.1 per cent, recall mean=0.72).

The change in these references under the two conditions again raises the issue of what it is that a measure of price recall is actually representing. 'A general price image' implies several prices/qualities may be held by the consumer, manifesting in a range of price insensitivity. This being the case, it is only necessary to determine that a new price is within this 'acceptable range'. Consequently, the price which is recalled may well be inaccurate when accurate recall is defined within narrow limits (ie 95 per cent). This

cannot be said to reflect inattention to price as would be the implication of results from the narrower definition. Rather, the narrow definition of accurate recall can be viewed as measuring precision in relation to recall, whereas a wider definition (eg ranges within, say, 80 per cent) captures general price awareness. The 'lowest' and 'alternative' references are contextual and quite specific, and are most often used where there is substantial price/quality/option variance, and so it follows that the greater precision in recall of their prices is unsurprising, and may be explained within the framework of 'attention theory' (Kahneman 1973).

7.7 Summary

Throughout this chapter the various influences of consumer characteristics and product attributes have been explored. The sample utilised for the study represents a broad spectrum of consumers, both in the constitution of their households and in their income levels.

The pattern of shopping presents a picture of a product group which is purchased at frequent intervals, usually every two to three days. It is also one in which respondents tend to rely on product cues and mental lists, rather than planned purchases, and where there is a particularly high awareness of 'specials'.

Central to determining the relative contribution of individual and product-related attributes was the use of the consumer characteristics measures developed in Chapter 6. In Section 7.4.1 the measures were again examined for reliability and validity. Price, and budget, consciousness and NFC proved to be robust measures with high validity.

Evident in this sample is a significant association between budget consciousness and income. Conversely, price consciousness has little association with income; a reversal of the results from the earlier sample. The difference between the two measures was apparent in respondents' behaviour. High budget consciousness was positively associated with planned purchases and negatively with impulse purchases. These results are consistent with the notion that budget consciousness (as defined by the scale) reflects a measured approach to shopping—including adherence to an income constraint—while price consciousness reflects a reactive approach and emphasises 'value'. It also provides tentative support for the assertion that the budget constraint may manifest in those

products which consumers include in their initial set, rather than in consideration on an item-by-item basis; as is the case with price consciousness (Piggott and Wright 1992) .

The measure FI remains an unknown quantity and did not contribute to analyses beyond its association with NFC. This latter association suggests the nature of the measure requires further investigation. Variety-seeking has no association with demographic measures and did not contribute to the analyses incorporating price recall. Its influence on shoppers will be examined further in Chapter 8.

Respondents' reports on quality consistency, varietal breadth, and usage context indicated diverse perceptions. They were most in agreement with mainstream fruits and vegetables such as apples, oranges, potatoes, pumpkin and tomatoes. The quality of vegetables was generally assessed with greater confidence than fruits.

Price recall was highest where respondents were price conscious. However, the principal source of variation was the distinction between particularly high scores and particularly low scores on price consciousness.

A substantial degree of variance in price recall appeared to be context-specific. The greatest influence is 'special status', which is positively associated with recall. Recall was also higher for fruits than for vegetables.

Respondents exhibited lower recall where the product was subject to high levels of price variation, which provides tentative support for Proposition P6b. In contrast, recall was high where variation was less frequent. Together with the findings for specials, it would seem that 'signalling' is an important influence on recall.

Overall, price-based attributes were the principal influences on respondents' recall. However, there is some indication that quality inconsistency, in its own right, is associated with higher recall. The implication is that quality inconsistency prompts greater attention to the combined attributes in order to determine the 'value' of the product.

Among usage contexts, products sought for variety exhibited lower recall than staples or basics. Small purchases were also associated with lower recall, but treats with higher recall, although only the latter was significant.

The results for reference pricing are consistent with those of earlier studies, as noted in Section 7.2.2). A significant proportion of respondents employed a uniform reference

price; for the most part the 'general' or 'last' price. Although the 'lowest' and 'alternative' references were employed consistently by several respondents, the references were more frequently context specific. The 'highest' price was almost exclusively contextual. Where several reference prices were used by respondents, internal references were dominant for products not on special, and external references where the product was on special. However, 'last price' was also prevalent for products on special. Further, 'last price' was the least employed where the product was not on special and the product characterised by a low price and high variance.

In relation to quality consistency, high seasonal variation in quality was associated with the 'lowest' and 'alternative' references. The price of quality-consistent products was generally not checked. As noted earlier, these results may indicate a correspondence with price variation, since 'quality-inconsistent' products generally had relatively high variance and 'quality-consistent' products low price-variance. Although there was little difference in the types of references used across usage contexts, small volume purchases tended to have fewer price checks.

Together, the attributes and characteristics outlined above represent a complex set of possible affects. Although tentative conclusions have been drawn, evident is the need to examine further respondents' behaviour in relation to price. The results indicate price recall to be a coarse measure of price sensitivity at best. In many respects a clearer picture of price sensitivity is conveyed by the differences in reference prices. Intuitively, most of the associations between variables and price recall are appealing. They are also largely within expectations. Important in Phase 3, then, is to confirm these associations. Phase 3 also offers an opportunity for determining the degree to which price recall is useful as a measure of price sensitivity.