AN INVESTIGATION OF CONSUMERS' DECISION PROCESSES AND STYLES.

by

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A thesis submitted to the Faculty of Commerce and Social Science of The University of Birmingham for the degree of DOCTOR OF PHILOSOPHY

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The University of Birmingham
1997

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ABSTRACT

A vast number of new products are launched on to the market every year, 80-90% of which are destined to fail. The aim of the current study was to identify the group of people i.e. market initiators who would be the first to buy a new product. The new product in the current study was polyunsaturated fatty acid (PUFA) fed fish, a healthy food. Previous research has found attitude to determine purchase of food products (Shepherd and Farleigh 1986). Other research has found involvement and cognitive style to interact to predict the purchase of new foods (Foxall and Haskins 1986, 1987, Foxall and Bhate 1993). The current study entailed using a measure of attitude to fish, involvement in healthy eating and cognitive style to ascertain the characteristics of market initiators of PUFA fish purchasers. Attitude to fish significantly influenced PUFA fish, premium price PUFA fish, PUFA salmon, PUFA eel and PUFA sturgeon purchase. Involvement in healthy eating significantly influenced PUFA fish and premium price PUFA fish purchase. Cognitive style as expected did not influence the purchase of PUFA fish or premium price PUFA fish. Cognitive style and involvement did not interact to influence the purchase of any PUFA fish. The information obtained was used to develop a marketing plan.

SECTION ONE: PERSONALITY, COGNITIVE STYLE AND CONSUMER RESEARCH

A vast number of new products are launched every year. Many (80-90%) are destined for failure. It is important for marketers to identify the group of consumers who are willing to try new products i.e. market initiators/innovators. It has been assumed that the identification of market initiators would enable the launch of a new product to be aimed specifically at them. This has led to a number of theories and measures of innovativeness being devised, including Midgley and Dowling's theory, Hirschman's theory, Goldsmith and Hofacker's Domain Specific Innovativeness Scale and the use of the Kirton Adaption-Innovation Inventory both alone and with Zaichkowsky's Personal Interest Inventory. Foxall and Haskin's studies (1986, 1987) have used the KAI and found Kirton's Adaptors and Innovators were both represented in the group of market initiators of various food categories. Aquacultural research has led to the development of PUFA fish, specifically eel and sturgeon. These fish contain higher concentrations of polyunsaturated fatty acids than ordinary fish. Regular consumption of polyunsaturated fatty acids confers various health benefits. The aim of the present study is to combine the use of the Kirton Adaption-Innovation Inventory which measures cognitive style and Zaichkowsky's Personal Interest Inventory to measure involvement in healthy eating to assess whether they contribute to identifying the market initiators of the varieties of PUFA fish. The information obtained will be used to develop a marketing plan specifically targeting the identified group.

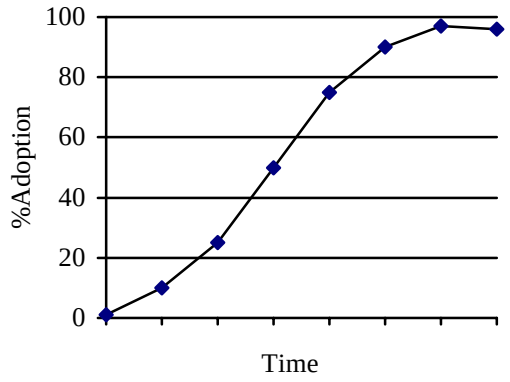
NEW PRODUCT DEVELOPMENT AND IDENTIFYING MARKET INITIATORS.

Hundreds of new products appear every year. PUFA fish are new in two respects. Firstly, fish with flesh rich in polyunsaturated fatty acids is a new concept and secondly the currently available species of PUFA fish are eel and sturgeon, which are not commonly consumed in Great Britain and will be new to most consumers. The majority of new products however fail resulting in considerable financial and resource losses to the companies which developed and introduced them to the market. One method of successfully introducing a new product to the market is to sell it to the minority of consumers who are first to buy in the given market place i.e. market initiators or innovators. They represent a key market segment and researchers are anxious to identify, profile and influence them. Successful identification of the market initiators would allow marketers to formulate a marketing mix which would be more effective in its appeal to the targeted group. The marketing mix consists of the four P's - price, product, promotion and place. Each of these elements must be carefully considered both separately and in respect of their interaction.

The spread (diffusion) and utilisation (adoption) of new products through a social system is described by the theory of adoption and diffusion (Rogers 1983).

Figure 1: The S-shaped

Diffusion Curve

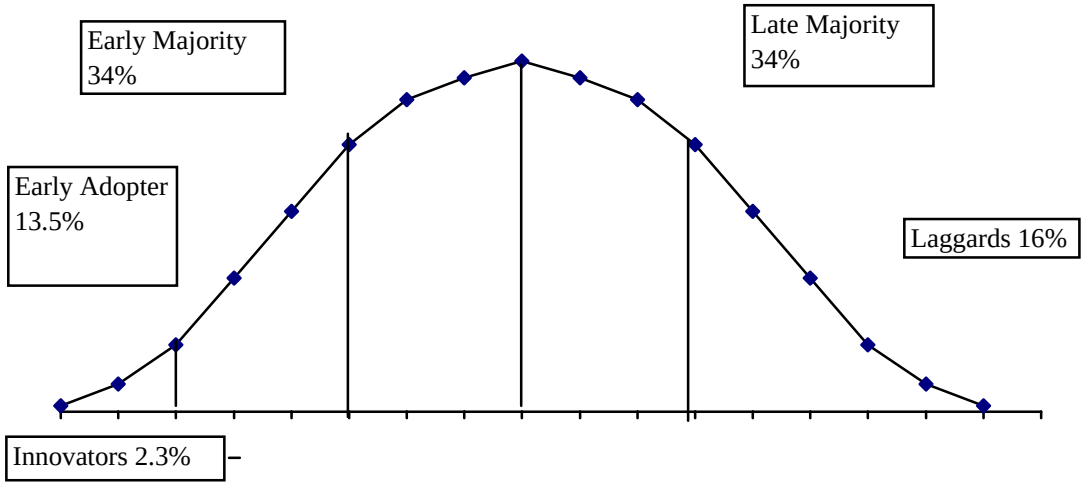


Source Foxall and Goldsmith 1994

The diffusion of an innovation through a social system can be visually represented by the s-shaped diffusion curve (See Figure 1). A new product appears which is adopted by a few people. The rate at which people adopt the product increases until relatively few people are left to adopt the new product. At this point the product may be described as having successfully diffused through the social system. Each individual has to make a decision to adopt or reject the new product. The s-shaped diffusion curve is formed by the accumulation of individuals' adoption decisions.

When the relative time of adoption is measured as a deviation from the mean time of adoption for the whole system the distribution follows roughly a normal curve. The normal distribution can be divided into categories depending on the relative time of adoption (See Figure 2).

Figure 2: Adopter Categorisation of Innovativeness.



Source Foxall and Goldsmith 1994.

A number of theories of innovativeness in relation to market initiators and other adopter categories are discussed below.

MIDGLEY AND DOWLING'S THEORY OF INNOVATIVENESS.

Midgley (1977 p. 49) defined innovativeness as "the degree to which an individual makes innovation decisions independent of the communicated experience of others". Innate innovators are people who adopt a new product early in the diffusion process with no personal recommendations from prior users. Other individuals require varying amounts of information from different sources before making an adoption decision. A particularly important source of information is the personal recommendation. A positive recommendation from an individual who has adopted the new product will ensure further adoption and the success of the product whereas a negative message will deter adoption and lead to the failure of the product. The time of adoption

depends on factors such as how long it takes the person to receive the required information which is determined by personal characteristics e.g. gregariousness. Other variables intervene between personal characteristics and adoption including income (Midgley and Dowling 1978). Over several product categories it would be expected that innate innovators would be observed as actual innovators more frequently because their adoption is independent of the interpersonal communication network. Actualised innovativeness should not be equated with innate innovativeness. Some observed innovators who receive the requisite information quickly may be innate later adopters and later adopters for situational or interest reasons may be innate innovators. Communicated experience may not be a sufficient criterion for defining innovativeness. The early adopters, early majority and later majority all rely on communicated experience to some extent but laggards may not and could be misclassified as innovators. Midgley and Dowling's overcame this problem by suggesting that innovativeness is the degree to which an individual is receptive to new ideas and that a high receptivity to new ideas is correlated with a low dependence on communicated experience.

Theoretical Considerations.

There are a number of points which need to be considered regarding Midgley and Dowling's model. Mudd (1990) states that the assignment of communicated experience to innovativeness is not logically or empirically justified. It has been demonstrated empirically that various classes of adopters are open to a variety of sources of information, only one of which is interpersonal communication. Midgley and Dowling (1978) realised there was a problem with this point of view in that innate

later adopters who received the necessary information early on in the diffusion process would not be distinguishable from innate innovators. Also later adopters would not be distinguishable from innate innovators whose adoption was inhibited by situational factors. Mudd (1990) states Midgley and Dowling's (1978) escape clause for the problem would be to observe the individuals responding to a number of innovations in a specific product category, in which case the expectation would be that individuals with a high degree of innate innovativeness to display actualised innovativeness i.e. adoption on more occasions than less innovative individuals.

The claim that the adoption behaviours of innovators are essentially independent of interpersonal communication implies that another process is operating to determine adoption behaviour; Midgley and Dowling (1978) seemed to be aware of this i.e. they suggested innate innovators low reliance on communicated experience was correlated with a high receptivity to new ideas. An hypothesis including receptivity to new ideas impinges considerably on their argument. This has downgraded communicated experience to the status of a moderator variable operating to modulate a more basic innovativeness (Mudd 1990).

Midgley and Dowling (1978) assume everyone is innovative to a degree. The main construct in their theory is innate innovativeness and the degree of innate innovativeness determines the extent of actualised innovativeness. They believe innate innovativeness to be a function of dimensions of personality. Observation of single acts of adoption of new products in the same product field and across different product fields as they suggested would provide a measure of actualised

innovativeness but not a direct measure of innate innovativeness. Accordingly, Midgley and Dowling's theory of innovativeness is unsuitable as a means of identifying market initiators.

HIRSCHMAN'S THEORY OF INNOVATIVENESS.

Hirschman (1980) discusses the nature and place of innovativeness in relation to three other basic constructs,

1. Novelty Seeking
2. Consumer Creativity
3. Role Accommodation

Novelty Seeking.

The novelty seeking construct is the individual's internal drive or motivational force that makes him/her actively seek out novel information. Novelty seeking can be divided into two components,

1. Inherent Novelty Seeking - the desire to seek out novel and potentially conflicting stimuli. A consumer who purchases a new product is expressing a desire for novel information.
2. Actualised Novelty Seeking - the actual behaviour by the individual to acquire novel stimuli. An example of actualised novelty seeking could be the act of purchasing a newspaper or a cinema ticket in an attempt to obtain novel information.

Actualised innovativeness, a result of novelty seeking, may be divided into three components,

1. Adoptive Innovativeness - the actual adoption of a new product
2. Vicarious Innovativeness - the acquisition of information concerning a new product. Vicarious innovativeness allows the individual to acquire information about the novel product without actually adopting it.
3. Use Innovativeness enables the consumer to use a previously adopted product to solve a novel consumption problem.

Consumer Creativity.

Consumer creativity could be described as the capability of individuals to apply their problem solving abilities when confronted with a variety of products and consumption situations. Hirschman (1980) states that the creativity of consumers comes from two related cognitive sources,

1. The interconcept network - this consists of information and attributes of product concepts mentally retained in categories and interconcept links are established between them along a number of dimensions including similarities and dissimilarities.
2. Scripts - a script arises from the interconcept network and is a system of temporally and causally related events e.g. a sequence of events in a restaurant. Scripts solving a prior consumption problem will be recalled and used to solve similar problems or they may be rearranged into new configurations to solve a novel consumer situation.

Role Accommodation.

This refers to the number of non-overlapping roles the individual is performing. It seems reasonable to assume that when the individual adopts a new role whose responsibilities are not overlapping with roles currently played, a new set of consumption problems will often be encountered.

Hirschman's three constructs of novelty seeking, consumer creativity and role accommodation and their subdivisions interrelate to determine innovativeness.

Theoretical Considerations.

Mudd (1990) provided a critique of Hirschman's model. The innovative construct is ambiguous. It is not clear whether innovativeness has been disposed of altogether or whether it has been redefined in terms of novelty seeking. The latter view is more probable due to the equivocality of the theory on this point.

Novelty seeking consists of inherent novelty seeking and actualised novelty seeking. Inherent novelty seeking is akin to the personality trait of sensation seeking. It may also be partially made up of other traits such as dogmatism and intolerance of ambiguity. However, Hirschman does not consider the possibility that novelty seeking might be related to personality traits. It is not clear indeed, from what novelty seeking arises.

The model accounts for an individual's competence in evaluating new products not necessarily their level of adopting new products. Hirschman (1980) stated that high

levels of consumer creativity did not necessarily lead to increased new product adoption but rather to more competent new product evaluation.

These criticisms make Hirschman's theory of innovativeness unsuitable for identifying actual market initiators.

GOLDSMITH AND HOFACKER'S DOMAIN SPECIFIC INNOVATIVENESS SCALE.

Goldsmith and Hofacker (1991) developed the Domain Specific Innovativeness Scale to measure domain or product category specific innovativeness which reflects the tendency to learn about and adopt innovations within a specific area of interest. Goldsmith and Reinecke (1992) used the DSI scale to identify innovators in the domain of fashion. A variety of differences in behaviour were found between early adopters and later adopters which would have provided useful information for marketers.

Theoretical Considerations.

The DSI is concerned with behaviours towards a product category. It is debatable whether examining a person's behaviour to a product category can be equated with his/her degree of innovativeness. Also in using the DSI scale innovators would become a homogeneous group. It does not consider the possibility that innovators may consist of heterogeneous groups. These criticisms make the Domain Specific Innovativeness Scale unsuitable for identifying actual market initiators.

PERSONALITY AND COGNITIVE STYLE.

Personality theory has been used for many years in attempts to identify the psychographic features of market initiators. The primary market in the past has been assumed to be homogeneous with regard to its personality traits. Market initiators were generally perceived as impulsive, dominant, inner directed, venturesome and flexible (Foxall 1984, Gatignon and Robertson 1991, Midgley 1977 and Rogers 1983 op cit. Foxall and Goldsmith 1994). Past research into personality and consumer behaviour has tended to produce weak results mainly due to methodological problems.

Recent research, however, has produced more successful results from examining personality traits in the context of the consumers' decision making. It has produced knowledge which is of particular relevance to the behaviour of market initiators. Although the results have revealed only weak relationships between dispositional factors and the behaviour of the market initiators there is a consistently recurrent link between innovativeness and category width (broad categorisers differentiate less than narrow categorisers between new and existing products), flexibility (flexible consumers are more willing to accept new products than dogmatic consumers), tolerance of ambiguity (tolerant consumers accept contradictory information, are less likely to perceive differences between products and are more likely to purchase new products than intolerant consumers), self esteem (consumers with high self esteem perceive novel purchase decisions as less threatening than consumers with low self

esteem) and sensation seeking (sensation seekers are more willing to risk buying new products than non-sensation seekers)(Foxall and Goldsmith 1994).

Individual consumer's behaviour can be explained to a certain extent by the personality traits described above. The effect of personality on behaviour is cumulative so rather than attempt to explain behaviour with a measure of one personality trait it would be preferable to use a measure which tapped a number of personality traits. Recent research has used the KAI, a measure of a person's cognitive style. A number of personality traits underlie the concept of cognitive style which is encompassed in the Kirton Adaption-Innovation theory (Kirton 1987).

Cognitive Style and the Kirton Adaption-Innovation Inventory.

The Kirton Adaption-Innovation theory is one of cognitive style. Cognitive style refers to the individual's consistent pattern of processing information and organising it into a system of thought which influences behaviour, especially in decision making and problem solving. Cognitive style (what manner) is distinct from cognitive capacity (how much) which is generally expressed as IQ, level of creativity or cognitive complexity. Cognitive style is also distinguishable from learned techniques of problem solving and creativity. The Kirton Adaption-Innovation theory assumes all individuals are placed on a continuum, the polar extremes of which are very Adaptive and very Innovative styles. The theory is value neutral in the sense that no position on the Adaptive-Innovative continuum is praiseworthy or perjorative. Adaptors and Innovators are not superior or inferior to one another, each will engage in behaviours reflecting their preferred style which may be advantageous or disadvantageous

depending on the perceiver, the nature of the problem, the nature of the setting, group and/or individual and the outcome. The two cognitive styles are described below (Kirton 1987).

Extreme Adaptors prefer order and precision and are concerned with the accuracy of details, prudence, soundness, efficiency and a degree of conformity. They are happiest working within a well established pattern of rule and operating procedures (Kirton 1976, Gryskiewicz 1982, Goldsmith 1984b). Their need for structure and their reluctance to change, lead them to take a more cautious view. Adaptors are relatively narrow categorisers (Foxall and Goldsmith 1994) and are likely to seek to avoid mistakes even if it means missing positive opportunities. In making decisions they tend to be conservative, confining their search for information to within the frame of reference dictated by their personal experience. Adaptors are more intolerant of change and disruption, unwilling to accept ambiguity, more dogmatic and inflexible they are predictably less willing to try new products which reinforces their unwillingness to explore (Kirton 1976, Keller and Holland 1978, Gryskiewicz 1982, Goldsmith 1984b, Kirton 1989).

Innovators prefer to think tangentially, challenge rules and procedures and are less inhibited about breaking with established methods and advocating novel perspectives and solutions. They are easily bored by routine and seek novelty in discontinuous change. They have a tendency towards risk taking and exploration behaviour. As products are seen as more alike by innovators they are less brand loyal (Kirton 1989).

The Kirton Adaption-Innovation Inventory.

The Kirton Adaption-Innovation Inventory (KAI) provides a measure of the Adaptive and Innovative cognitive styles. It originally comprised of thirty two items but the reduced version consists of thirteen items (Taylor 1989). Each item is an example of an Adaptive or Innovative behaviour e.g. A person who is thorough and the respondent has to rate the ease or difficulty of maintaining that behaviour over a long period of time on a five point scale. Theoretically the range of scores is 13-65. Respondents who score above the mid-range point of 36.5 would be described as Innovators and those who score below the mid-range point would be described as Adaptors. The unidimensional Adaptor-Innovator concept is composed of three stable, reliable factor traits, sufficiency of originality, efficiency and rule conformity (Kirton 1989).

Sufficiency of Originality - At the Adaptive extreme there is a preference for the production of fewer, original ideas which are sound, implementable and relevant to the situation as they perceive it. At the Innovative extreme there is a preference for an abundance of ideas some of which are unusual.

Efficiency - This encompasses a range of behaviours. The extreme Adaptors prefer ordered, precise and reliable actions whereas extreme Innovators prefer discontinuous, anti-status quo and potentially subversive actions.

Rule Conformity - This encompasses the methodical, conservative and socially determined behaviour of the Adaptor and the more impromptu and unrestrained actions of the Innovator.

An individual's overall score is composed of scores on each of the three independent subscales. Each subscale is scored so it increases in the direction of innovativeness.

The theoretical mean of the SO subscale is 15 and the range is 5-25. The theoretical mean for both the E and the R subscales is 12 and the range is 4-20. For each individual an overall score is calculated from their responses. Females are significantly more adaptive than males. KAI scores also vary with occupation.

Psychometric Properties.

The thirteen item KAI has a reasonably high reliability of 0.71 to 0.74. The reliability of the subscales were also quite high, 0.79, 0.73 for the sufficiency of originality subscale, 0.79, 0.76 for the efficiency subscale and 0.70, 0.63 for the rule conformity subscale (Taylor 1989, Foxall and Hackett 1992). Factor analysis of the thirteen item KAI revealed the same three factors as for the thirty two item KAI. Taylor (1989) and Foxall and Hackett (1992) found one hundred percent agreement on the item content of the three subscales of the thirteen item KAI .

Goldsmith (1986) investigated the convergence between the KAI and three other innovativeness scales, the Open Processing Scale, the Hurt, Joseph and Cook Innovativeness Scale and Jackson's Innovativeness Scale. Goldsmith's results supported convergence.

In the creativity field cognitive style and cognitive level are not the same. Adaptors and Innovators should be equally creative but in different ways. As the KAI is a measure of cognitive style it should not have a significant relationship with a measure of cognitive level. Mixed results have been obtained in the literature. The KAI did not correlate with some measures of cognitive style e.g. the Creativity Scale. The KAI did

correlate with some measures of cognitive level e.g. the Something About Myself Scale which suggests either that these measures are a partial measure of style or alternatively that the KAI is a partial measure of the level of creativity (Goldsmith and Matherly 1987, Goldsmith 1984, 1987). There was no relationship between cognitive style and intelligence as anticipated (Kirton 1987). The KAI is unaffected by lying, social desirability and yeasaying (Goldsmith and Matherly 1986, Kirton 1987, Goldsmith, Matherly and Wheatley 1986).

Cognitive Style and Market Initiators.

The use of the KAI in studying market initiators is due to the fact that a number of personality traits traditionally associated with market initiators are correlated with the Innovative cognitive style e.g. flexibility, sensation seeking, risk taking. Research using the KAI to investigate the adoption of new food innovations found a complex relationship between cognitive style and innovative consumer behaviour. The research and its findings are outlined below.

Study One: Food Innovations. (Foxall and Haskins 1986, Foxall 1995).

This study investigated the relationship between the concept of cognitive style described by the adaption innovation theory and measured by the KAI and the purchase of food innovations. The objective was to assess the KAI as a method of identifying potential market initiators as an aid to new product development.

Thirteen innovative brand name products and their established counterparts were independently categorised using Robertson's classification, into,

- Continuous innovations - those least disruptive to consumption behaviour e.g. line extensions and alterations to existing products
- Dynamically continuous innovations - those which have some disruptive effect on consumer behaviour but do not fundamentally alter behaviour e.g. an electric toothbrush
- Discontinuous innovations - those which have a considerable disruptive impact on consumption behaviour or are associated with a change in life style e.g. video recorders

Respondents were asked what innovative food brands they had purchased and how frequently in the last four months. They also indicated if they had purchased the established counterpart in the same period.

The range of new product purchases was one to eight. There was a positive but weak and non-significant relationship between the number of new brands purchased and KAI scores $r=0.091$ $p=0.22$. Consumers purchasing up to three new brands were Adaptive. Consumers purchasing 4/5 new brands were Innovative. Consumers of more than six new brands were Adaptive. Both Adaptors and Innovators are represented substantially among the initial purchasers of recently launched brands. Buyers of the largest number of recently launched brands were Adaptive.

Purchasers of discontinuous new brands were Innovative. Purchasers of dynamically continuous new brands were slightly Innovative and purchasers of continuous new

brands were Adaptive. It is possible to isolate the initiators of discontinuous and continuous new products by their KAI scores.

Study Two: New Healthy Food Products (Foxall and Haskins 1987, Foxall 1993, 1995).

The previous study demonstrated weak evidence of a tendency for the heaviest purchasers of new products to be Adaptive rather than Innovative. This study examined further this result by investigating the initial purchase of healthy foods. Healthy foods were defined as versions of standard food products which were promoted as having a more beneficial or less deleterious effect on the consumers' health and well being. These products were promoted to the mass market through supermarkets.

The respondents were asked whether they had purchased any healthy food products from a list of twenty four. The volume of innovative purchases was again found not to be linearly related to KAI scores ($r=0.04$ $p=0.26$). The range of products bought was none to nineteen. The KAI scores of consumers of up to two products were Adaptive. Consumers of between three and fifteen products had KAI scores which indicated they were Innovative. The KAI scores of consumers of sixteen or more products were distinctly Adaptive. The result replicates the findings of Study One. In the context of a trait explanation of innovativeness these findings were irregular which suggested a more elaborate explanation of innovativeness incorporating situational variables was required. The results may be partially explained by Innovators and Adaptors approach to healthy food. Innovators purchasing three to fifteen products act on the basis of a

personal definition of healthy eating, selecting products to suit their own requirements. They may not rely on an authority's definition of a healthy diet. Adaptors purchasing sixteen or more products may be far more likely to be pursuing healthy eating in a systematic manner, seeking out and buying a quantity which would constitute a healthy diet as defined by an authority. These anomalous findings would be consistent with Adaption-Innovation theory if commitment or involvement to the product class was included.

Involvement and Zaichkowsky's Personal Interest Inventory.

Involvement as a construct on its own has been found to influence consumer behaviour. Involvement and cognitive style together have enabled the identification of market initiators and their method of solving problems and making decisions.

Involvement has had a variety of conceptually different definitions. These definitions have been unidimensional and multidimensional and the dimensions used in the definitions have varied both conceptually and in number. Broderick, Mueller and Baron (1995) reviewed the involvement literature in an attempt to clarify the construct of involvement. Four dimensions emerged when a number of items from various scales were pooled and factor analysed. These dimensions were normative, i.e. the relevance of a product to the individual consumer's values and emotions, enduring, i.e. an interest and familiarity with the product class as a whole, situational i.e. an interest between brands and types of products and risk i.e. the importance or probability of making an incorrect choice.

Although many definitions of involvement are multidimensional the current study is going to retain the essentially unidimensional, normative definition of Zaichkowsky (1985) which is basically one of personal relevance. She defined involvement as *"A person's perceived relevance of the object based on inherent needs, values and interests"*. The present study examines the relevance of healthy eating to the respondents and whether it affects their fish purchasing behaviours. Zaichkowsky's definition also encompasses enduring involvement i.e. the respondents' interest and familiarity with healthy eating as a whole. Situational involvement and risk are not encompassed by Zaichkowsky's definition of involvement. It is not necessary to measure these two dimensions directly in this study. Situational involvement is a measure of a decision with regard to a specific product within a product class. PUFA fish is currently only a concept, a specific product or brand has not been produced. Healthy eating is a general lifestyle and may encompass huge varieties in degrees of risk which would be difficult to accurately assess with a small number of items.

Zaichkowsky's Personal Interest Inventory.

Zaichkowsky (1985) believed personal involvement described the personal importance or relevance to an individual of an object or activity. The object or activity is a motivating factor which determines attitudes and the probability of consistent behaviour. The PII has the capacity to show ego involvement at the product level. The nature of the product itself, the issues surrounding it and the importance attached to them can also be investigated with the PII. It is comprised of ten items. Each item consist of bipolar adjectives e.g. means a lot to me - means nothing to me

and a seven point scale. The theoretical range of scores is ten to seventy and the theoretical mean is forty.

Psychometric Properties.

Zaichkowsky (1987) found the ten item PII had a very high reliability (α=0.91 to 0.95). The test retest reliability over three weeks ranged from 0.73 to 0.84 slightly lower than the twenty item PII. Factor analysis was performed. The results revealed one main factor and one minor factor. The major factor accounted for the majority of the variance. All of the scale items loaded positively onto the major factor and Zaichkowsky states that a homogeneous, internally consistent measure of involvement is achieved i.e. the scores on the ten items can be summed to indicate the respondent's level of involvement.

The PII is sensitive to different purchase situations. Respondents were asked to rate their involvement when buying wine for everyday consumption and for a special dinner party. The involvement scores were significantly greater when purchasing wine for a special dinner party $t=5.38$, $p<0.001$ (Zaichkowsky 1987).

The role of involvement and its interaction with cognitive style in determining market initiation is demonstrated in the following study.

Study Three: New Healthy Food Brands (Foxall and Bhate 1993, Foxall 1995): Using the PII.

This study expected that Adaptors who were interested and committed to healthy eating would be more likely than Innovators or less committed Adaptors to assiduously seek out more healthy food brands. The Zaichkowsky Personal Involvement Inventory (PII) was used to measure the degree of interest and commitment to healthy eating.

The KAI, PII and a questionnaire with respect to recent food purchases were administered to the respondents.

KAI scores and the volume of innovative purchases were not linearly related ($r=0.04$). A two way ANOVA with number of healthy foods brands purchased as the dependent variable and KAI and PII as the independent variables showed no significant main effects for either Adaption/Innovation ($F<1$) or personal involvement ($F = 1.88$ $p>0.17$). There was a significant interaction effect ($F = 4.27$ $p<0.05$). Highly involved Adaptors purchased the greatest number of new, healthy food products followed by highly involved Innovators, less involved Innovators and less involved Adaptors. These results confirmed the non-linear patterns found in studies one and two and that they can be obtained at brand level of a coherent product group.

This study has revealed major points about market initiators. This pattern shows that the market initiators of food innovations are not entirely traditional innovators, both Adaptors and Innovators are substantially represented in the innovator segment.

Personal involvement in the product category influences new product purchase in that product category. Involvement and cognitive style were found to interact to influence new product purchase. An explanation of how involvement and cognitive style interact to influence making decisions in general is described below.

Adaptors and Innovators Approach to Decision Making.

As Adaptors and Innovators with different degrees of involvement will differ in their approach to problem solving and decision making there are likely to be considerable differences between the pre-purchase decision making of these market segments. It was assumed that all market initiators went through a uniform decision sequence including problem recognition, search and evaluation and choice. However, it is likely that Adaptors and Innovators with different degrees of involvement will differ in the way they perform these functions (See Table 1).

Table 1: Decision Styles of Market Segments Based on Adaption-Innovation and Personal Involvement.

Adoption Decision Process	Less involved Adaptors	Innovators	More involved Adaptors
Problem Recognition	Passive, reactive	Active	Proactive
Search	Minimal, confined to resolution of minor anomalies caused by current consumption patterns.	Superficial but extensively based within and across product class boundaries	Extensive within relevant product category; assiduous exploration of all possible solutions within that framework.
Evaluation	Meticulous, rational, slow and cautious; objective appraisal using tried and tested criteria.	Quick, impulsive, based on currently accepted criteria; personal and subjective	Careful, confined to considerations raised by the relevant product category: but executed confidently and (for the Adaptor) briskly within that frame of reference.
Decision	Conservative selection within known range of products, continuous innovations preferred.	Radical: easily attracted to discontinuously new product class and able to choose quickly within it. Frequent trial followed by abandonment.	Careful selection within a product field that has become familiar through deliberation, vicarious trial and sound and prudent pre-purchase comparative evaluation.
Post Purchase Evaluation	Meticulous, tendency to brand loyalty if item performs well.	Less loyal; constantly seeking novel experiences through purchase and consumption.	Loyal if satisfied but willing to try innovations within the prescribed frame of reference; perhaps tend towards dynamically-continuous innovations.

Source Foxall and Bhate 1993.

This research has indicated a tripartite segmentation of the market for innovative food products. At the pre-launch stage of a product, knowledge of these three segments may cause more problems for a marketing manager than it solves. The three segments of the market cannot be reached independently and exclusively and the findings suggest that a message/product aimed at one group may alienate the others e.g. an advertisement with the emphasis on the novelty and discontinuous nature of the product will appeal to Innovators but is likely to deter Adaptors, even highly involved Adaptors. A rational appeal intended to interest Adaptors will be perceived by Innovators as run of the mill. A failure to appeal successfully to these separate segments may partially account for the high failure rate of consumer innovations.

The current study aims to provide marketers with knowledge of the market initiators of PUFA fish. It will determine whether cognitive style and/or involvement influence potential purchasers or whether neither influences potential purchasers. If the market initiators are either Adaptors or Innovators then knowledge of their specific method of problem solving and decision making would enable the marketing mix to be directly targeted at that group through the marketing plan. However if two groups of market initiators, Adaptors and Innovators, are identified knowledge of their clashing cognitive styles would mean an awareness that specifying the marketing mix to appeal to both would be problematic and require considerable thought.

Theoretical Considerations.

There are a number of points to be considered when using cognitive style in researching consumer behaviour.

Foxall (1995) claims innovativeness to be composed of a series of traits one of which is novelty seeking. This removes it from Hirschman's (1980) concept of innovativeness which states that it is conceptually indistinguishable from inherent novelty seeking.

The adoption process is psychographically divided into five segments, innovators, early adopters, early majority, late majority and laggards. Mudd (1990) stated that it was not automatically to be concluded that the innovators of the adoption process were the same as Innovators as defined by Kirton. He stated that innovators and Kirton's Innovators shared a number of traits; both were less dogmatic and had more favourable attitudes toward change and risk. This, he hypothesised, made it seem likely that individuals who score highly on the KAI are likely to adopt innovations early when they appear on the market. However empirical studies (Foxall 1993, 1995, Foxall and Haskins 1986, 1987, Foxall and Bhate 1993) have shown this was not the complete picture. Both Innovators and Adaptors were substantially represented in the innovators or market initiators. Personal involvement with the product field was also an influential factor (Foxall and Bhate 1993). It is an intervening variable which makes it similar to Midgley and Dowling's theory.

Foxall (1995) abandoned the use of actualised innovativeness from Midgley and Dowling and Hirschman's models for the use of adoption. Consequently, actualised innovativeness prevents cannot be confused with the construct innovativeness (Mudd 1990).

Mudd (1990) found that there were several points of agreement between Midgley and Dowling, Hirschman, Goldsmith and Foxall.

1. All the theorists agree that innovativeness is a continuous variable. Foxall gave nominal category status to the variable, using Adaptor and Innovator, but treated it as a continuous variable in his empirical work.
2. Innovativeness is considered by the theorists to be a unitary trait whose origins can be found in the interactions of several more basic variables including risk taking and novelty seeking.
3. Most of the work has dealt with innovativeness in regard to novel products and procedures etc. Foxall's work made an important contribution demonstrating that the KAI is associated with both novel and new product adoption. He produced evidence that KAI classified Innovators are more likely to be early in purchasing novel (discontinuous) products but not early in adopting new (continuous) products whereas Adaptors are likely to be early in new (continuous) products but not early in novel (discontinuous) products.

Mudd asked whether innovativeness relates to adoption at all? Innovativeness as measured by the KAI is related to adoption, although most of the evidence relates to one or more of the pre-adoption stages such as awareness, interest etc.

The positive theoretical considerations of cognitive style alone and with involvement, the fact it does have a number of similarities with other theories of innovativeness and the fact that cognitive style and involvement can be measured with reliable and valid psychometric instruments means it provides a suitable framework for identifying the market initiators of PUFA fish.

THE ROLE OF PERSONALITY AND COGNITIVE STYLE IN THE PRESENT STUDY.

The aim of the current study is to identify potential market initiators of PUFA fish, specifically PUFA eel and PUFA sturgeon and develop a marketing plan targeting these people to ensure the products' success. Both Midgley and Dowling and Hirschman's theories have been criticised for the lack of clarity in their definition of the innovativeness construct. They also lack clear instruction on how innovativeness should be measured. For both of these reasons these theories were not used in this study. Goldsmith and Hofacker's Domain Specific Innovativeness Scale was not suitable for this study because it is used to examine the behavioural characteristics of market initiators in a particular domain. The current study is mainly concerned with the psychological characteristics of market initiators. Goldsmith and Hofacker's scale is relatively new and has not been subjected to intensive psychometric evaluation. The KAI and the PII were the most suitable psychometric tests for the study. Both the KAI and the PII are valid and reliable psychometric instruments. The properties of the KAI have been thoroughly examined since its development and this applies to the PII to a lesser degree as it is a more recently developed instrument. These tests also have a successfully tested theory behind them to provide a logical and rational explanation

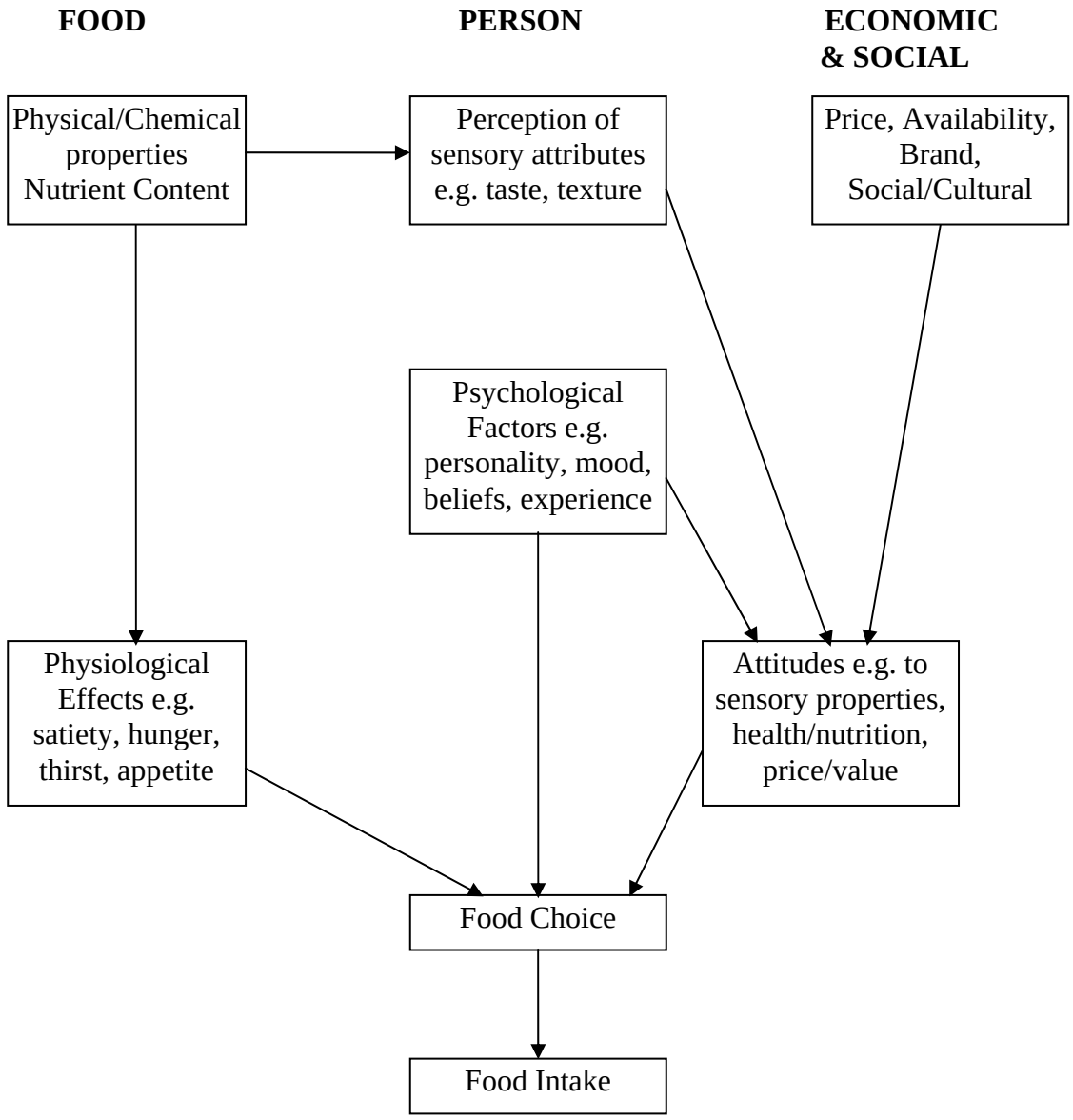
of the results. Studies (Foxall and Haskins 1986, 1987, Foxall and Bhate 1993) using these instruments have revealed two major points about market initiators. Market initiators are not solely made up of traditional innovators. Both Innovators and Adaptors are substantially represented in the innovator segment. Personal involvement in the product category influences new product purchase in that product category. Foxall and Bhate (1993) found Adaptors highly involved in a product category will purchase more new items from that category than highly involved Innovators, less involved Innovators and less involved Adaptors. PUFA fish are novel in two respects. The PUFA fish currently available are eel and sturgeon. Both of these species are not commonly consumed in Great Britain and will therefore be novel to the majority of consumers. PUFA fish have greater concentrations of polyunsaturated fatty acids in their flesh than ordinary fish. Consumption of polyunsaturated fatty acids has been associated with a number of health benefits including the prevention of heart disease. The success of new products such as PUFA eel and PUFA sturgeon depends on the market initiators. If the market initiators are satisfied with the products they will repeat buy and convey their positive experience to other potential consumers ensuring the products' success. If the market initiators are dissatisfied with the products they would not repeat buy and would convey their negative experiences to other potential consumers ensuring the products' failure. Measures of the cognitive style and the degree of involvement in healthy eating of the potential market initiators of PUFA eel and PUFA sturgeon would provide information which could be used in devising a marketing plan which would specifically appeal to them and ensure PUFA eel and PUFA sturgeon were successes.

SECTION TWO: ATTITUDES

Food choice is of interest for two main reasons. First the food industry want to know what food products people purchase and why, in order to develop new products which will be attractive to consumers. Secondly, the health authorities want to understand what influences food choice so they may be able to develop health promotion campaigns which will be effective in making people's diets healthier. One of the main factors perceived as influencing food choice is attitude which is discussed in this section. Attitude's role in determining food choice is broadly outlined. The definitions and functions are described and followed by various attitudinal theories, the Theory of Reasoned Action and the Theory of Planned Behaviour. In new product development, concept testing may be used to evaluate consumers' attitudes and understanding of a new product. The data obtained are often used unsuccessfully to predict adoption behaviour. Concept tests do no more than forecast whether anyone will try the product. An examination of the attitudinal differences between purchasers and non-purchasers of fish, different formats of fish, different species of fish and each variety of PUFA fish will provide knowledge about what attitudes are prevalent in what segments. This information can be incorporated into devising a marketing plan targeting the market initiators of PUFA fish.

FACTORS DETERMINING FOOD CHOICE.

Figure 3: Some Factors Affecting Food Choice and Intake.



Source Shepherd 1990

There are a number of factors which contribute to determining food choice, some are presented above in Figure 3.

Attitudes are formed by the sensory attributes of the food, psychological factors and the economic and social environment. The sensory attributes of the food relate to the perceived taste, texture, smell and appearance of the food. These sensory attributes do not determine whether a person will choose a food but they will determine whether a person likes it or not. The psychological factors include personality, experience, mood and beliefs. An individual's beliefs about the nutritional effects of a food may be more important that the actual nutritional effects in determining their choice. The economic and social factors include price, availability, brand and social and cultural influences. The three factors above determine attitudes. Attitude measures the combined influence of the food's sensory characteristics, the affect of the economic and social environment and the individual's characteristics and is generally believed to enable prediction of food choice (Shepherd 1990). Definitions of attitudes, their functions and attitudinal theories vary, along with their ability to predict behaviour. These areas are discussed below.

THE DEFINITION OF AN ATTITUDE.

Eagly and Chaiken (1993) define an attitude as *"a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour"*. A psychological tendency may be regarded as a type of bias which predisposes the individual towards evaluative responses which are either positive or negative. An attitude is developed on the basis of the individual's evaluative response to the attitude object (Eagly and Chaiken 1993). Attitudes are learnt or acquired rather than inborn. They are developed through personal experience, reasoning, information and

the communicated experience of others. In a marketing context, consumers hold attitudes towards brands, products, companies, stores or advertisements. Their attitudes are a like or dislike of these stimuli (Foxall and Goldsmith 1994).

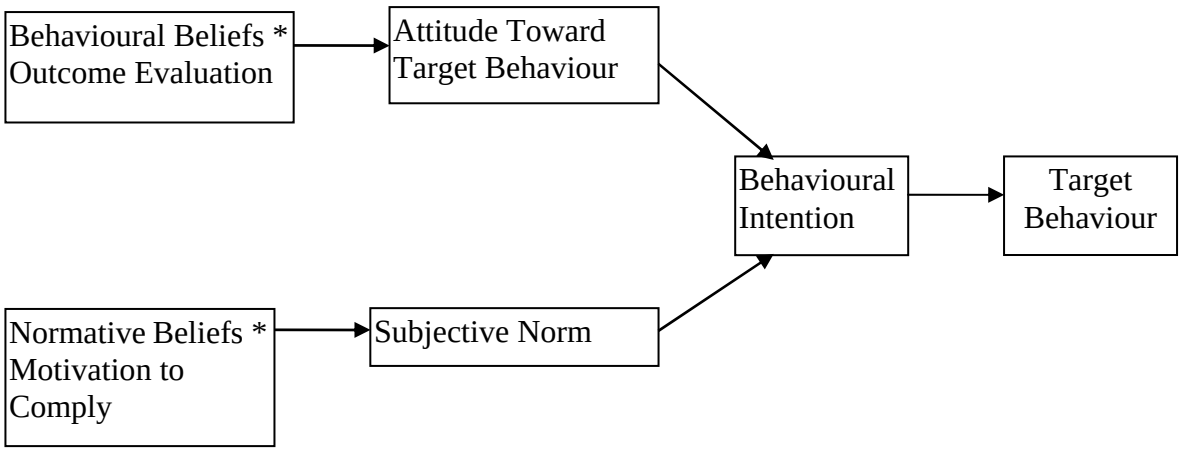
THE FUNCTIONS OF ATTITUDES.

A number of functions have been suggested for attitude. Maier (1965) believed attitudes to determine meanings by providing context for the interpretation of new information, reconcile contradictions by helping individuals evaluate each others opinions, organise facts and select facts. Kahle (1984) believed attitudes to have one basic function, that of social adaptation. This means attitudes help individuals to acquire useful information, assimilate new information and efficiently direct behaviour to enable adaptation to the environment and ensure survival. Lutz (1991) stated that attitudes were used in the organisation of psychological and behavioural activities. The variety of attitude functions is due to humans having different motives. A variety of objects may be perceived as satisfying these motives. Attitudes are formed towards these objects in assessing their characteristics (beliefs), evaluating their favourability (affect) and making a decision in how to respond to them (intention) i.e. whether to use them or not in satisfying of motives. In marketing, attitudes are of great importance because they represent how consumers assess and react to advertisements, brands, products and stores as they seek to satisfy their needs through consumption. In knowing what function an attitude serves and the motivation behind it, it may be possible to devise an appropriate method for altering it.

ATTITUDES IN CONSUMER RESEARCH.

There are two major theories in attitude research, the Theory of Reasoned Action and the Theory of Planned Behaviour. The Theory of Reasoned Action places attitudes within a sequence of connected cognitive constructs, beliefs, attitudes, intentions and behaviour (See Figure 4). Attitude is a function of two components, behavioural beliefs i.e. the perceived consequences of an act and outcome evaluation, an evaluation of the consequences. The subjective norm also consists of two components. The normative beliefs are the person's perceptions of significant others' opinions as to whether they should perform a particular behaviour. Motivation to comply is the degree to which a person wants to do what a significant other thinks they should do. Other variables such as demographic variables, personality traits influence the four components above. Behavioural intention is a function of the individual's attitude to the target behaviour and the subjective norm. The model predicts behavioural intentions but it is assumed that under the right conditions, intentions will approximate behaviour. This theory is applicable to volitional behaviours, it does not apply to attitudes towards objects, people or institutions, non-volitional behaviours, goals or outcomes (Ajzen and Fishbein 1980, Ajzen 1985, Fishbein and Stasson 1990).

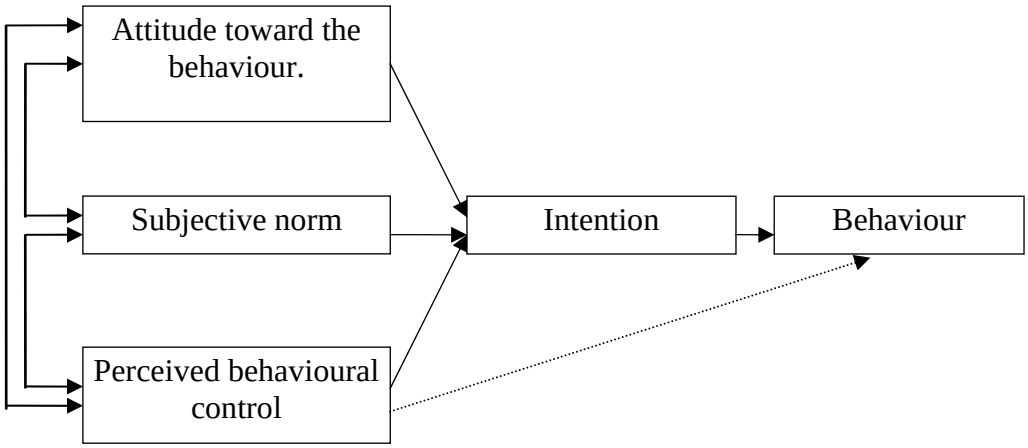
Figure 4: The Theory of Reasoned Action.



Source Fishbein and Ajzen 1975

The Theory of Planned Behaviour is similar to the Theory of Reasoned Action except that it has the additional component of perceived behavioural control (See Figure 5). Perceived behavioural control is defined as the individual's perception of how easy or difficult it is to perform the behaviour. It is determined by control beliefs which are the individual's beliefs about whether they possess the skills resources and opportunities to engage in the behaviour. Perceived behavioural control may have a direct link to behaviour and a link to intentions (See Figure 5). The aim of this theory is to explain behaviours not completely under volitional control (Ajzen and Madden 1986, Ajzen 1987).

Figure 5: The Theory of Planned Behaviour.



Source Ajzen 1991

Both of these theories have been successfully used to explain food choice (Shepherd and Stockley 1985, Shepherd and Farleigh 1986a, 1986b, Shepherd and Stockley 1987, Sparks and Shepherd 1992, Raats, Shepherd and Sparks 1995).

Both the Theory of Reasoned Action and the Theory of Planned Behaviour have a central belief that the attitudinal and behavioural measures must have the same degree of specificity in what they are measuring to obtain high correlations between attitudes, intentions and behaviour. Prediction of a single act is only likely to result from an equally narrow measure of attitude which corresponds exactly to the act to be predicted. In order to obtain high correlations between attitude, intention and behaviour the measures must correspond in four respects,

1. the object, the target of the inquiry must be clearly stated
2. the action the individual is to imagine performing with respect to the target object
3. time
4. context

This suggests that it is inappropriate to measure global attitudes to an object and expect to predict successfully whether the individual will purchase a specific product.

In the current research these theories could not be used for a number of reasons. PUFA fish is a conceptually new product and unfamiliar to potential consumers therefore attitudes towards it will not have been formed. In order to obtain a high correlation between attitude to PUFA fish and intention to purchase PUFA fish, the attitude would need to have been formed.

The species of PUFA fish are sturgeon and eel. These species of fish are not commonly consumed in Great Britain so many people will not be familiar with them, particularly their sensory qualities. People may have formed attitudes to these species of fish based if not on experience, on knowledge and perceptions. Eel has a snake-like appearance and is generally perceived to be eaten in a jellied format by Cockneys. These are negative perceptions which may lead to negative attitudes and prevent purchase of PUFA eel. Sturgeon is generally associated with the production of caviar, a luxurious up market food. This perception may lead to the formation of a positive attitude and encourage the purchase of PUFA sturgeon. Consumers' attitudes to eel and sturgeon will range from unformed to fully formed based on their knowledge and experience. This suggests that a specific measure of attitude would yield unreliable results for people with unformed attitudes to eel and sturgeon. People with fully formed attitudes only could not be used as they constitute a minority of the general population.

As PUFA fish is conceptually new no specific products have been developed therefore it is impossible to produce a specific measure of attitude and behaviour in terms of the object, action, context and time. For example a measure of attitude and intention to purchase PUFA eel or PUFA sturgeon from a large multiple within the next week cannot be obtained as a range of PUFA fish products have not been developed and therefore they are not available in any retail outlets to purchase. The Theory of Reasoned Action and the Theory of Planned Behaviour require a degree of specificity that cannot be achieved with regard to PUFA fish.

The consumers' reactions to a number of varieties of PUFA fish was to be investigated so the Theory of Reasoned Action and the Theory of Planned Behaviour would dictate that an attitude and behavioural measure for each variety would have been required which for the reasons above would be impossible. It would also be impractical as it would increase the length of the research instrument.

As a specific measure of attitude could not be used, a global measure of attitude to fish could be utilised. If a person does not have an attitude to a specific item formed, presumably in forming an attitude to it he/she will refer to their knowledge, experience and perceptions of objects in the same category which in the current study would be fish species and fish products in general. Although a global measure of attitude to fish may not produce high correlations with intention to purchase PUFA fish, the overall attitude may be broken down to examine how various attitudinal aspects e.g. health, ease of preparation differ between different consumer segments.

The Theories of Reasoned Action and Planned Behaviour have been criticised for being limited in their ability to explain certain behaviours and for omitting a variety of variables which have been found to improve the predictive power of the models. Triandis (1977) introduced habit as a possible component of the theories. Habit was defined as *"situation specific sequences that are or have become automatic so they occur without self instruction"*. A number of studies have found habit to contribute to these theories in predicting food choice (Feldman and Mayhew 1984, Tuorila and Pangborn 1988, Towler and Shepherd 1991/92). Habit may have a role in determining the purchase of PUFA fish. The theories of reasoned action and planned behaviour are concerned with behaviours over which people have full control or at least partial control. It is debatable whether people have conscious control when they are shopping or whether people develop a shopping habit i.e. they may routinely purchase the same items each shopping trip without consciously thinking about it. The formation of a shopping habit may occur when people perceive shopping to be a tedious chore or when it is carried out in a rush. Routine purchasing would operate on two levels in the context of the present study. People who do not buy fish usually, would not think about buying fish or PUFA fish in the future and people who only buy fish fingers usually, would not think about buying cod steaks, fresh cod, PUFA eel or PUFA sturgeon. If food shopping is routinised then it would be inapplicable to use one of the above theories alone which do not take habit into account, to predict PUFA fish purchase.

Bentler and Speckart (1979) modified the Theory of Reasoned Action by incorporating past behaviour, with a direct link to behaviour and a two way link to

attitude. A number of studies have found prediction of a variety of behaviours e.g. smoking, consumer behaviour, improve when past behaviour is incorporated into the model (Ajzen and Madden 1986, East 1992, 1993). Past experience of buying and eating fish will influence the future purchase of a product within the same category e.g. PUFA fish. People who have tried fish in the past, particularly sturgeon and eel and have enjoyed it are more likely to purchase another product from the range of fish available in the future e.g. PUFA fish.

A few studies have found the addition of perceived moral/ethical obligation to improve the prediction of behaviour (Raats, Shepherd and Sparks 1995, Sparks, Shepherd and Frewer 1995). In the current study perceived moral/ethical obligation may influence the purchase of PUFA fish. People may be concerned about the methods of producing PUFA fish which may contribute to their willingness to buy it.

Self-identity has been found to influence people's behaviour independently of their attitude (Sparks and Shepherd 1992). Self identification as a healthy eater influenced adolescents' food choice (Dennison and Shepherd 1995). In the current study people who are involved in healthy eating may be more likely to purchase PUFA fish.

Liska (1984) stated that behaviours requiring resources, co-operation or skill were not covered by the Theory of Reasoned Action or the Theory of Planned Behaviour.

Behaviour is not fully accounted for by attitude alone and factors such as those mentioned above may independently contribute to providing an explanation.

Attitude in the two theories mentioned is being used as a sole predictor of intentions and actual behaviour. In the current study attitude is not being used as a sole predictor of behaviour, it is being used in conjunction with a variety of other variables. Also the overall measure of attitude which consists of a number of individual statements would be analysed to investigate the differences between a variety of consumer segments.

ATTITUDE DATA IN NEW PRODUCT DEVELOPMENT (NPD).

Concept testing is often used to assess consumers' understanding and favourable disposition towards a new product and whether they are likely to purchase it. It is assumed that attitudes and intention to buy in concept testing will predict adoption behaviour. This assumption is incorrect (Tauber 1981 op. cit. Foxall and Goldsmith 1994). The current level of knowledge does not enable forecasts from attitude measures to predict purchase choice successfully. It is only when actual measures of behaviour become available that future behaviour will be predictable with accuracy. However, these measures are costly and by the time these are obtainable it is too late to abort projects that will not fulfill the financial objectives set for them. Generally then, it is unwise to expect reports of attitudes and intentions to predict future product choice before it has been launched onto the market.

THE ROLE OF ATTITUDE IN THE PRESENT STUDY.

The intention of the current study is to identify the market initiators within the fish market who would be prepared to purchase PUFA fish, particularly PUFA eel and PUFA sturgeon and to develop a marketing plan. These people were to be identified by examining a number of demographic, psychological and behavioural variables. One of the psychological variables which was expected to aid in the identification of the market initiators was attitude to fish. The Theories of Reasoned Action and Planned Behaviour provide good predictions of behaviour from intention and good predictions of intention from attitude but only when the measures of attitude, intention and behaviour have the same degree of specificity i.e. they are measuring attitudes, intentions and behaviour with regard to a certain object, a certain behaviour, at a specific time, in a specific context. There is a problem in achieving this degree of specificity in the current study for the reasons previously mentioned. A global measure of attitude to fish whilst not providing the specificity required for an accurate prediction of intention to purchase the varieties of PUFA fish, could be used with a number of other variables to discover what is of importance in determining intention to purchase.

The differences in the attitudes between purchasers and non-purchasers of fresh, frozen and tinned fish purchasers could be examined. The types of products purchased by potential PUFA fish buyers could be looked at to find out the most popular format with purchasers of each variety of PUFA fish. The information about the product preference of purchasers of each variety of PUFA fish and the knowledge of the attitudes associated with each product format could be used in devising a marketing

plan, targeting specific PUFA products at specific format purchasers. The attitudes of purchasers of specific species/products could be examined to find out whether there were any attitudinal differences between them. The species purchased by potential buyers of each variety of PUFA fish could be looked at to discover whether there are any they particularly favour. Knowledge of the species/product preference for purchasers of each variety of PUFA fish and the species/product's attitude could be used in the future for devising a marketing plan. The information obtained from these uses of the attitude measure could be used to build up a picture of how potential purchasers of each variety of PUFA fish differ from non-purchasers in terms of their format preference, species/product preference and attitude. By measuring general attitudes to fish it is possible to investigate global attitudinal differences between non-purchasers and potential purchasers of each of the varieties of PUFA fish. It is also possible to examine specific aspects of attitude which differ between non-purchasers and potential purchasers of each variety of PUFA fish. The specific attitudinal differences between purchasers and non-purchasers of each variety of PUFA fish could be utilised in developing a marketing plan.

In this study according to the theories outlined, attitude to fish would not be expected to produce a high correlation with intention to purchase each variety of PUFA fish. The main use of the attitude measure then, would be in building up a picture of how potential PUFA fish buyers' attitudes differ and how the differences could be utilised in the future for targeting specific segments with a marketing plan.

SECTION THREE: THE ROLE OF HEALTHY EATING AND FISH IN THE PRESENT STUDY.

Research has led to the development of PUFA fish, specifically PUFA eel and PUFA sturgeon. These fish have greater concentrations of polyunsaturated fatty acids in their flesh than ordinary fish which contribute to maintaining health and preventing and alleviating disease. It is anticipated that healthy eating will be a major factor in determining the purchase of the varieties of PUFA fish by market initiators. It is essential to be aware of the current official guidelines and the state of the present Great British diet in order to determine how PUFA fish could contribute to achieving the official guidelines and making the Great British diet healthier. In order to gain a greater understanding of the potential consumers of PUFA fish it is important to know the profiles of fish consumers and their attitudes to fish, the different species available and the various presentation forms. This knowledge will aid in effectively identifying and targeting potential market initiators of PUFA fish and developing the presentation forms of any products. It is also important to be aware of the trends in fish products so PUFA fish products which satisfy current and future consumer needs can be developed. If healthy eating is a major factor in defining the market initiators of PUFA eel and PUFA sturgeon then a thorough understanding of the various aspects of healthy eating in addition to an understanding of the profiles of fish consumers and the trends in new products would be required for developing a marketing plan.

THE OFFICIAL GUIDELINES FOR HEALTHY EATING AND THE PRESENT GREAT BRITISH DIET.

A number of official bodies have produced guidelines for eating healthily (N.A.C.N.E. 1983, C.O.M.A. 1984, 1994, W.H.O. 1990). The guidelines state the proportion of each food component that should be contained in a healthy diet (See Table 2). Each source makes a number of further recommendations relating to other dietary components e.g. vitamins and minerals.

The British diet has gradually been undergoing changes and becoming healthier. This has been reflected in the decrease in consumption of red meats, lard and butter and the increase in consumption of poultry, fruit and vegetables, skimmed and semi-skimmed milk, vegetable oils and low fat spreads. These fairly slow and continuous changes show that healthy eating is not a transitory fashion but is being permanently incorporated into the lifestyles of the nation (M.A.F.F. 1991).[1] Although the British diet is gradually changing to become healthier, Table 2 reveals quite a degree of change still has to occur before the British diet can be considered healthy. Sugar, protein and sodium intake were generally in excess of the guidelines and carbohydrate intake was below the recommended guidelines. The average level of fat consumption is also in excess of the official guidelines and the intake needs to be reduced considerably. There are different types of fat, not all of which need to be reduced. Monounsaturated fatty acid and trans-fatty acid consumption meet the official

[1] Some of the factors which have influenced the Great British diet include societal changes (Gershuny 1982, Pahl et al 1983, Hamil and O'Neill 1986, Lawson 1988, Charles and Kerr 1988, Gofton 1989, Marshall 1993, Gofton and Ness 1995), immigrants' cultures (Davis and Sherer 1994), green and ethical consumerism (Fieldhouse 1986, Mintel 1994) and fashion and the media.

requirements. Saturated fatty acid consumption is in excess of the official guidelines and needs to be reduced. The main dietary sources of saturated fatty acids are milk and milk products and meat and meat products (M.A.F.F. 1990, 1994) and consumption of these foodstuffs should be decreased. Polyunsaturated fatty acid consumption is just below the official guidelines and consumption could be increased further. The main dietary sources of polyunsaturated fatty acids are vegetables and fish (M.A.F.F. 1990, 1994) and consumption of these foodstuffs should be increased. Meat and meat products are also a main source of polyunsaturated fatty acids but the consumption of these should not be increased as they would increase saturated fatty acid, protein and sodium intake.

The incorporation of fish, specifically PUFA fish, could contribute to a healthier diet. Generally fish contain relatively little fat, the actual amount varying from species to species e.g. white fleshed fish such as cod, haddock, plaice and whiting contain 1-2% fat, whereas dark fleshed fish such as mackerel, herring, trout and eel may contain 5-20%. The amount of fat within a species varies according to the season, the maturity of the fish, their location and their feed (Drevon 1992, M.A.F.F. 1995). The fat in fish is mainly polyunsaturated fatty acids, n-3. Through using fish as the main component of a meal, the amount of red meat and meat products in the diet would be reduced therefore decreasing the intake of fat and saturated fatty acids and increasing the amount of polyunsaturated fatty acids. This change would contribute to meeting the official guidelines on saturated fatty acid intake and polyunsaturated fatty acid intake and therefore contributing to a healthy diet. It is anticipated that people with an interest in healthy eating will be more inclined to include PUFA fish in their diet.

Table 2: A Picture of the Current British Diet in Relation to the Official Guidelines.

Component	Actual Intake		Recommended Intake	Action
	Men	Women		
Energy	2450 kcal /day	1680 kcal/day	Men 2330-2550 kcal/day depending on age. Women 1900-1940kcal/day depending on age.	Men within guidelines. Women need to increase intake.
Fat Intake	102.3g/day 37.6% of total energy intake	73.5g/day 39.2% of total energy intake	35% of total energy intake	Men and women in excess of guideline.
Saturated Fatty Acid Intake	42.0g/day 15.4% of total energy intake	31.1g/day 16.5% of total energy intake	11% of total energy intake	Men and women in excess of guideline.
Polyunsaturated Fatty Acid Intake	15.7g/day 5.82% of total energy intake	10.5g/day 5.88% of total energy intake	6.5% of total energy intake	Men and women almost achieve guideline.
Trans-Fatty Acid Intake	5.6g/day 2.05% of total energy intake	4.0g/day 2.14% of total energy intake	2% of energy intake	Men and women achieve guideline.
Monounsaturated Fatty Acid Intake	31.4g/day 11.6% of total energy intake	22.1g/day 11.9% of total energy intake	13% of energy intake	Men and women almost achieve guideline.
Carbohydrate Intake	272g/day 44.7% of total energy intake	193g/day 44.2% of total energy intake	50% of total energy intake	Men and women almost achieve guideline.
Fibre Intake	24.1g/day	18.69/day	16-24g/day	Target achieved.
Protein Intake	84.7g/day	62.0g/day	Men aged 19-49 44.4g/day, aged 50+ 42g/day. Women aged 19-49 36.0g/day, aged 50+ 37.2g/day	Men and women in excess of guideline.
Sugar Intake	115g/day 17% of total energy intake	86g/day 18% of total energy intake	10% of total energy intake	Men and women in excess of guideline.
Starch Intake	156g/day 24% of total energy intake	106g/day 23% of total energy intake	37% of total energy intake	Men and women need to increase intake.
Sodium	10.2g/day	7.8g/day	3.2g/day	Reduce intake.

Source M.A.F.F. 1990, 1994, Salmon 1991, W.H.O. 1990, C.O.M.A. 1994

THE ROLE OF POLYUNSATURATED FATTY ACIDS IN THE PREVENTION AND ALLEVIATION OF DISEASE.

Various studies have shown links between degenerative diseases and diet. Regular consumption of polyunsaturated fatty acids which can be divided into n-6 and n-3 fatty acids has been related to the prevention and alleviation of a number of diseases. n-6 fatty acids are mainly found in vegetable oils. n-3 fatty acids are found in liquid vegetable oils, particularly soybean and rapeseed oils, green leafy vegetables, marine plants, shellfish, fish and sea mammals (Connor et al 1992).

Coronary Heart Disease - Coronary heart disease affects two million people in Great Britain and is responsible for 180,000 deaths per annum (C.O.M.A. 1994, Wheelock 1992a). It has been found that there is a close association between the incidence of coronary heart disease and the diet of the population. Studies (Dyerberg et al 1978, Dyerberg 1986, Bang et al 1980) of Eskimos in north west Greenland and of some Japanese fishing communities have shown they have a low incidence of mortality through coronary heart disease. They have a diet with a high total fat intake which is derived from marine foods and is high in n-3 polyunsaturated fatty acids but low in saturated fatty acids (W.H.O. 1990). A twenty year study by Kromhout et al (1985) started in the Netherlands in 1960, found a 50% reduction in coronary mortality in people consuming 30g of fish per day compared to a control group who did not eat fish. This level of fish intake is equivalent to a daily intake of 200-350mg/day of n-3. Burr et al (1989) evaluated the effects of three dietary factors in the secondary prevention of heart attacks. Men who recovered from heart attacks were allocated to receive or not to receive advice on each of three dietary factors. It was found that a

daily intake of approximately 500mg of long chain n-3 from fish or fish oil capsules reduced “all cause” mortality by twenty nine percent.

Inflammatory Diseases - A number of diseases have an inflammatory component which may be alleviated through the consumption of n-3. Patients with rheumatoid arthritis who were treated with fish oil supplements showed an alleviation of symptoms. It had a favourable effect on morning stiffness, the number of tender joints and grip strength (Lancet 1988). The beneficial clinical effects were real although there was no evidence to suggest it would slow the progression of the disease (Kremer et al 1985). Fish oil supplements had a positive effect on psoriasis (Bittiner et al 1988).

Breast Cancer - Fish consumption is correlated with a low incidence of breast cancer in Greenland and Japan. Greenland Eskimos whose calorific intake is almost seventy percent fat, mostly from fish, have a much lower incidence of breast cancer than the Danish who like the Americans obtain about forty percent of their calories from fat, mostly non-fish (Nielsen et al 1980, Gabor 1985).

n-3 Deficiency Disease - A component of n-3, is present in particularly high concentrations in the membranes of certain cells in the retina of the eye and in the synaptic membranes of the brain. Connor et al (1992) have shown in Rhesus monkeys that a deficiency of n-3 leads to visual impairment, relatively chronic excessive thirst and reduced learning. This study provided experimental evidence for a dietary requirement of n-3 fatty acid. Deficiency can be prevented through providing a sufficient amount of n-3 in the diet. However, once the deficiency develops past

infancy an adequate provision of n-3 in the diet may not necessarily restore all the functional defects. In Connor et al (1992) the rhesus monkeys' visual impairment remained.

The Potential Adverse Effects of n-3 on Health.

The main concern about increasing the amount of polyunsaturated fatty acids in the diet is that it may produce an increase in the incidence of cancer. Polyunsaturated fatty acids are more prone to oxidation, leading to the production of free radicals, a high level of which have been linked to causing cancer. Animal models have demonstrated that a high consumption of polyunsaturated fatty acids increases the incidence of tumours. In some animal models this increase occurs when energy intake from polyunsaturated fatty acids is increased to 5% of the total energy intake. This level of energy intake is in the middle of the range of the dietary intake recommended for humans. Studies in humans so far have found little evidence of any association. Further investigation and monitoring needs to be carried out to clarify the relationship (British Medical Journal, Nov. 1995).

There have been concerns that taking n-3 supplements leads to an increase in the time it takes for blood clots to form (Leaf 1992). However, a significant number of studies show no alteration in the time taken for blood clots to form (Hornstra 1989).

n-3 fatty acid supplements have been shown to decrease the number of leukotrienes which are involved with inflammation, interleukines which initiate fever and the immune system response, neutrophils which are essential for killing bacteria and

macrophages which are responsible for removing damaged cells and foreign matter. A decrease in these components may potentially lead to a reduction in the immune status and inflammatory responses. However there is no evidence of increased infections or antibiotic resistance in individuals taking n-3 supplements (Leaf 1992).

Eating fish has proven cardiovascular benefits but there has been concern over the potential danger from toxic heavy metals and hydrocarbons that may accumulate in fish caught in polluted waters. This problem can be overcome by supplements which have the toxic heavy metals and hydrocarbons removed in preparation making them a safe option (Leaf 1992).

At the present time the health benefits to be gained from increasing consumption of the polyunsaturated fatty acid n-3 far out weigh the potential disadvantages. These health benefits could be achieved through increasing the consumption of oily fish or PUFA fish to just once a week. The health benefits of consuming PUFA fish need to be raised in the consumers' awareness so they may be considered when purchasing food.
necessary to state the level of consumption necessary to achieve the benefits claimed.

THE PROFILES OF FISH CONSUMERS.

Goulding (1985) and the Sea Fish Industry Authority (1993) found fish consumers fell into two main attitude and usage categories. The S.F.I.A. defined them as heavy users who bought and served fish at least once a week and light users who bought and served fish less than once a month. These two categories were subdivided into light emotional

and heavy emotional users; heavy emotional users being more positively involved and committed to fish consumption than light emotional users.

Light users did not like buying, cooking and serving food. Light users had a resistance to fresh fish but were more willing to use prepared or processed formats which were easy to use and required minimal cooking skills (Goulding 1985, S.F.I.A. 1993). Light users with low emotional involvement tended to serve fish as a change or when they could not think of anything else. Consumption was declining in this group. Light users with high emotional involvement enjoyed fish but were prevented from consuming more by factors such as a lack of knowledge and a negative family response. This group wanted prepared fish cuts and recipes from manufacturers and retailers (S.F.I.A. 1993). Heavy users with a high emotional involvement may be described as foodies. They were confident enough to be creative and experimental with food and obtained pleasure from buying and cooking food. They were knowledgeable about fish, consumed a wide variety and enjoyed using different cooking methods (Goulding 1985, S.F.I.A. 1993). Heavy users, with a low emotional involvement consumed fish out of habit and used a smaller range of fish in a limited number of ways. This subgroup may be chronologically older and dying out (S.F.I.A. 1993). In terms of encouraging consumption in the future the light users/heavy emotional subgroup and the heavy users/heavy emotional subgroup are the segments to be targeted.

Age and socio-economic class also influence the consumption of fish. Fresh fish is predominantly bought by older consumers who are more accustomed to handling fresh fish products and are aware of its flexibility and ease of preparation. Canned fish and

frozen fish also derive most of their sales from the older consumer. People in the upper socio-economic classes are more likely to purchase fresh fish. Middle class people are more likely to buy frozen fish for its convenience, particularly if they have families (Goulding 1985, LeGrand 1992, Mintel 1995).

It is important to have a certain amount of knowledge about potential consumer segments so that during PUFA fish product development, their product likes and dislikes can be taken into consideration.

CONSUMER PERCEPTIONS OF FISH.

Reasons for Consumption and Non-Consumption of Fish.

There are a number of reasons for consuming fish. Many people have a straightforward preference for fish over other varieties of meats (S.F.I.A. 1996). Fish consumption conveys a number of health benefits but these alone do not encourage the purchase of fish (S.F.I.A. 1996). An ecological reason for consuming fish is that it reduces the exhaustion of the land through farming. Ethically it is perceived to be better to consume an animal which has had a free life rather than an animal which has been reared solely for consumption (S.F.I.A. 1993).

There are a number of reasons for the non-consumption of fish. People are not aware of fish due to the fact that as a food group it receives little promotional support. Pollution of the seas and rivers prevents people from consuming fish. Social factors have influenced fish consumption. Women are employed outside of the home and less time

is available for domestic tasks such as cooking fish which is perceived as needing thought and work to make a tasty meal (Goulding 1985, S.F.I.A. 1993). Changes in the retailing of fish have affected its purchase. The number of high street fishmongers has declined and the number of fishmongers in multiples has increased but these are not perceived favourably (Goulding 1985, Connell 1987, LeGrand 1992, S.F.I.A. 1993). Many of the prepacked and prepared dishes e.g. cod in parsley sauce are conceptually old. Innovative products are required. Traditional fish e.g. cod is perceived as expensive in comparison to other foodstuffs and in comparison to their price in the past (S.F.I.A. 1993). A variety of personal factors prevent the purchase of fish, a dislike of fish, a lack of knowledge about fish and the perceived difficulty of buying, preparing and cooking fish. Fish has a number of negative physical qualities which prevent purchase e.g. the bones, the smell and generally the consumer does not like being confronted with a whole corpse (Goulding 1985, S.F.I.A. 1993, 1996).

The positive reasons for consuming fish are often outweighed by the negative reasons. An intensive educational campaign through various media e.g. magazines, posters and television could be used to inform the consumer about aspects of fish usage including methods of cooking, easy recipes for various species. Innovation in the fish product field is also required. These processes would encourage the consumption of fish including PUFA fish.

Consumers' Attitudes to Different Presentation Forms of Fish.

Fresh fish embodies the strongest negatives and the real positives as described above. There are two major conflicts when using fresh fish. Fish is perceived as going off quickly so it is generally purchased when the consumer fancies it. The consumer may then change their mind or their family may not be in the mood for it but it has to be eaten whilst fresh. Fish is usually fried in batter or butter which conflicts with its healthy image. The outcome of these conflicts may result in the consumer buying fresh fish less often or ceasing to buy fresh fish altogether. Chilled, fresh fish is perceived to be inferior to fresh fish. It generally looks pale and uninteresting and is unimaginatively packaged. The appeal of chilled, fresh fish could be increased by using herb coatings and colourful packaging (S.F.I.A. 1993).

There are three categories of frozen fish. Plain, frozen fish fillets are rejected as they are perceived as grey, lifeless and basic and they are associated with factories and processing. There are two highly processed forms of fish, battered and crumb coated fish and products such as fish in sauce. These products are colourful, convenient, easy to cook and popular but they are often perceived as being made from poor quality fish and unhealthy due to their associated cooking techniques e.g. frying (S.F.I.A. 1993).

Food manufacturers need to be aware of consumers perceptions of the different products and their demands e.g. chilled fish manufacturers need to be innovative in their packaging, frozen fish manufacturers need to be innovative in their product development. The popularity of each type of product and its growth need to be considered during PUFA fish product development.

Consumers' Attitudes to Different Varieties of Fish.

Most consumers acknowledged the expanding range of fish species and their incorporation into the mainstream. Consumers inclusion of these varieties into their diet was influenced by a number of issues including eating out in restaurants, holidays abroad and local promotions.

Fish are segmented by consumers according to a variety of different themes and perceptions. They may be classified as familiar and unknown species. Some consumers prefer to purchase species of fish they are familiar with than unfamiliar fish. Some fish species have attractive names e.g. langoustines sounds French and romantic, whereas other varieties of fish have unappealing names e.g. grouper sounds like groper. Consumers would prefer to try the exotic and interesting named species more than the species which are promoted such as pollack and hoki. Consumers categorise fish into low level varieties e.g. coley, ordinary varieties e.g. cod and up market varieties e.g. salmon and buy them for different purposes. Fish which are large, bright or have personalities e.g. flying fish, sharks are not perceived as being for consumption (S.F.I.A. 1993).

The species of PUFA fish are eels and sturgeon which may be perceived in very different ways by consumers. The majority of consumers will perceive eels as generally being jellied and eaten by Londoners; an image which is not exotic or appealing. Sturgeon are associated with royalty due to an old law which states that any sturgeon caught by anglers must be returned to the water as they are the property of the

monarchy. This royal image, although not exotic may appeal to the consumer. Sturgeon also produce caviar which has a luxurious, rich image. These associations may lead consumers to perceive sturgeon as up market, akin to salmon.

TRENDS IN PRODUCTS.

Fish is the second most important source of protein after chicken, having recently overtaken beef (Key Notes 1996) There are approximately sixty species of fish and shellfish on sale in Great Britain but a few dominate the market place, cod, haddock, plaice and mackerel (Connell 1987).

The appearance and presentation of chilled fish has been enhanced by Modified Atmosphere Packaging (M.A.P.). Modified atmosphere packaging retards bacterial spoilage and extends the shelf life of fish. It has led the retailers, especially the multiples to call for greater product innovation including the development of coatings and sauces (Connell 1987, Goulding 1985).

Manufacturers state that the whole key to frozen seafood in Great Britain is product innovation and value for money. The Sea Fish Industry Authority claim the most important factors for new product development are,

- the three way option - the product must be able to be grilled, fried or oven baked
- convenience - the product must be able to be cooked from frozen without been thawed first.

The growth of the frozen fish market has slowed in recent years due to intense price competition. However companies are attempting to revitalise sales with added value, convenience products. Each food company has a different approach to new product development e.g. Lyons places itself in the speciality seafood sector and perceives room for development at the higher end of the market, Walls cite the growth areas as fish in sauce, recipe fish and coated items (The Grocer 25 February 1995).

The canned and processed fish market is becoming increasingly innovative. Fish in sauce or salad products, mainly using tuna are likely to be applied to other canned species e.g. kippers (Key Notes 1996). Fish products from minced fish flesh are technologically manipulated into high value products e.g. ocean sticks (Connell 1987).

A number of new product trends emerge from the restaurant scene. In America new trends include, surf and turf which combines meat and fish in one meal and dishes which contain more than one type of seafood (Food Arts March 1995, March 1996). The industry has made various attempts to introduce new species as the stocks of popular fish are depleted. Hoki and pollack were both suitable species in terms of their availability, price and the fact they could be used as the basis for products but they had limited success. Earlier it was stated that consumers would prefer to try species with exotic names. Sainsburys and Tesco have had a minor success introducing tilapia to the market (The Grocer 25 February 1995). Across the Atlantic American chefs are using the bycatch which is made up of fish of little commercial value e.g. monkfish, dogfish. By using such fish in appealing recipes the chefs are creating markets for them (Food Arts May 1996). Dark fleshed, oily fish e.g. herring are available in greater amounts at

a cheaper price but their flavour, colour and texture have prevented them from being incorporated into new products (Connell 1987).

It was revealed in the earlier section, Consumer Perceptions of Fish, how consumers perceived the packaging of fish to be unattractive and the number of fish based products to be limited. The fish industry and food manufacturers are aware and responding to consumer demand with new packaging developments and innovations in the types of products being produced. This technology and knowledge would need to be used in the development of PUFA fish products. The fish industry have had limited success encouraging the consumption of a wider variety of species as they have been promoting fish e.g. pollack, hoki that do not have an exotic image which appeals to consumers. Although PUFA eels do not have an exotic image, the regal image of PUFA sturgeon may appeal to consumers.

THE ROLE OF HEALTHY EATING AND FISH IN THE PRESENT STUDY.

The British diet is gradually becoming healthier. However, further changes to the British diet still need to be made to achieve the official recommended guidelines. These changes include a decrease in fat consumption, particularly saturated fatty acid consumption and an increase in polyunsaturated fatty acid consumption. The incorporation of PUFA fish into the diet would contribute to achieving the official guidelines on fat intake and confer a number of health benefits. When considering launching a new fish product such as PUFA fish onto the market it is important to understand the consumers' profiles and their perceptions of fish and the different

product types and different species. With this information it is possible to see approximately how the new product fits in with consumers' perceptions and whether it will appeal to them or not. Prior to reaching the shops, current and future trends in fish products need to be investigated to determine what is currently popular and what is likely to become popular. This information will be required for the development of PUFA fish products. When the market initiators of PUFA fish, specifically PUFA eel and PUFA sturgeon have been identified a thorough understanding of the importance of healthy eating, the fish consumer and new product trends will aid in the development of a marketing plan which will ensure the PUFA fish products' success.

THE AIM OF THE PRESENT STUDY.

PUFA fish is a new concept and one which is potentially appealing to the general public due to the increased interest in healthy eating which has been promoted over the last two decades. The current species of PUFA fish being farmed are eel and sturgeon and the aim of the present study is to find out whether these PUFA species are acceptable to the general public and to identify the various characteristics of the potential market initiators of the species in order to prevent failure of the products should they be launched onto the market.

The effects of three sets of variables will be examined in the current study, demographic, psychological and behavioural. The demographic variables are sex, age, socio-economic class and region and the psychological variables are attitude to fish, involvement in healthy eating and cognitive style. The effects of each of these sets of

variables on a number of fish purchasing behaviours will be examined. The fish purchasing behaviours encompass past and future general fish purchase, past and future fresh, frozen and tinned fish purchase and the purchase of a number of different types of PUFA fish. Different PUFA fish purchase behaviours will be examined to find out whether the concept of PUFA fish in general is acceptable and whether people are prepared to pay extra for the additional health benefits of PUFA fish. People's reactions to different PUFA species will be examined. The species include PUFA salmon, currently not farmed and PUFA eel and PUFA sturgeon which are being farmed. The species vary in their familiarity and popularity with the general public, salmon is familiar and popular, eel is familiar and unpopular and sturgeon is unfamiliar and an unknown quantity.

Past fish purchasing behaviour encompasses the range of fish purchasers from people who never purchase fish to regular purchasers. It is an actual measure of fish buying. Future fish purchasing behaviour encompasses the regular fish purchasers. By examining the effects of each of the sets of variables on past and future fish purchasing would provide a picture of the characteristics of general fish purchasers. Through examining the effects of the sets of variables on past and future purchase of fresh, frozen and tinned fish, comparisons can be made between the characteristics of purchasers and non-purchasers of each type of product and with fish purchasers in general. The effects of the sets of variables on the purchase of each variety of PUFA fish will be observed and compared with general fish purchasers and fresh, frozen and tinned fish purchasers.

The demographic variables are expected to primarily influence the psychological variables which will in turn influence fish purchasing behaviour. Females are expected to have a more positive attitude to fish and be more involved in healthy eating than men. Women's magazines and women's sections in newspapers contain articles on health and food. Women are generally responsible for providing their family with a healthy diet. These two factors mean women will be more interested in healthy eating, more aware of fish's nutritional value and have a more positive attitude to fish. Women are expected to have a more Adaptive cognitive style. This relationship has been found in previous research but it has usually not been significant (Kirton 1987). Previous research has found older people to have a more positive attitude to fish (Goulding 1985, LeGrand 1992, Mintel 1995). It was expected that the same relationship would be found in the current study. Age is not expected to influence healthy eating i.e. people of all ages would be interested/disinterested in the area. As age increases it has been found that people become more Adaptive (Kirton 1987) but the relationship is not expected to be significant. Socio-economic class and region are not expected to influence any of the psychological variables. It is anticipated that within each socio-economic class and region there will be people with a range of attitudes to fish, varying degrees of involvement and different cognitive styles.

The influence of the demographics on each of the fish purchasing behaviours will be examined. Females are expected to be more inclined to purchase each variety of fish than men due to the reasons mentioned previously. Older people are also expected to be more likely to purchase each variety of fish than younger people for the same

reasons as mentioned previously. Socio-economic class and region are not expected to influence any fish purchasing behaviour.

It is expected that the fish purchasing behaviours will be influenced by the psychological variables. People with a positive attitude to fish will be more inclined to buy fish in general, fresh, frozen and tinned fish. These people are also expected to be more prepared to purchase PUFA fish, pay a premium price for PUFA fish and try a variety of PUFA species. Past research into fish purchasers attitudes to different fish products and species was examined in Section Three. It is anticipated that the greater a persons interest in healthy eating the greater the probability of them purchasing fish in general, fresh, frozen and tinned fish. It is also expected that as PUFA fish is a healthy product they would be more likely to purchase it despite the price or the species. It is necessary to be aware of how polyunsaturated fatty acid fed fish would help to achieve a healthy diet so the official guidelines, the current British diet and the evidence for the health benefits were examined in Section Three. Cognitive style was expected to have a mixed effect on each of the fish purchasing behaviours. Both Adaptors and Innovators are expected to purchase fish generally as they will both be able to find a product or species to satisfy them. Innovators are expected to be more likely to purchase fresh fish. As previously described in Section One they seek novelty and prefer to break established frameworks so fresh fish would provide the range of species to prevent boredom and the freedom to be experimental in terms of how they use it. Adaptors prefer order, precision and working within established frameworks therefore they are expected to be more likely to purchase frozen fish as it is made from popular, familiar species and can only be used in a limited number of traditional ways. Both

Adaptors and Innovators are expected to purchase tinned fish. Adaptors would be able to use it in traditional ways e.g. on sandwiches and Innovators would be able to use it experimentally e.g. in creating main meals and snacks. With regard to PUFA fish and premium price PUFA fish, Adaptors and Innovators are both expected to purchase these varieties. Adaptors would expect the generic products to be made from popular species which would satisfy their requirements and Innovators would expect to be made from an uncommon species of fish which would satisfy their requirements. Adaptors are expected to be more likely to purchase PUFA salmon as it is a slightly improved version of a familiar fish which is readily consumed. Innovators are expected to be more likely to purchase PUFA eel and PUFA sturgeon. Eel is familiar but not commonly consumed and sturgeon is unfamiliar and also not commonly consumed so these species would satisfy Innovators' desire for novelty.

It is expected that there may be an interaction between involvement and healthy eating. Past research (Foxall and Bhate 1993) described in Section One found that Adaptors highly involved in healthy eating purchased the greatest number of new, healthy food brands followed by highly involved Innovators, low involved Adaptors and finally low involved Adaptors. In the current study Adaptors who are highly involved in healthy eating are expected to assiduously seek out each variety of fish and PUFA fish because it contributes to meeting official recommendations for fat intake, is nutritious and prevents various diseases. Adaptors would purchase a variety of formats and in greater quantities. These products would be incorporated into a diet dictated by official recommendations. Innovators who are highly involved in healthy eating would seek out fish products for the same reasons as highly involved Adaptors but their healthy

diet may not be as strictly defined by the official guidelines as Adpators' diets. Innovators diets may include their own interpretation of healthy eating as they are less inclined to aim for accuracy and precision in acquiring their dietary information. The fact that Innovators become bored easily may lead them to do a less than rigorous search for fish products and the purchase of a smaller number of species and products. Innovators who are less involved in healthy eating will incorporate fish occasionally in to their diet due to a search for new products producing the chance purchase of a fish product. Adaptors who are less involved in healthy eating may incorporate fish into their diet occasionally for reasons other than health e.g. for a change.

In the descriptive models for the past and future models both the demographics and psychological variables were included in order to find out whether they explained a greater degree of variance than each set of variables alone. The models describing PUFA fish purchasing behaviours will include all three sets of variables, demographic, psychological and behavioural. Past behaviour was found to influence future behaviour (Bentler and Speckart 1979, Ajzen and Madden 1986, East 1992, 1993). These models are expected to be slightly better than the models of the demographic and psychological variables alone in explaining PUFA fish purchase behaviour.

Through examining attitude to fish it may be possible to determine the differences in perceptions between segments which could be used in developing a marketing plan for the species of PUFA fish which are farmed.

Purchasers and non-purchasers attitudes to fish will be examined to assess what attributes of fish are perceived differently between the two groups. The attitudinal differences between fresh, frozen and tinned fish purchasers and non-purchasers will be examined to find out how they differ from general fish purchasers. The product preference of PUFA fish purchasers will be examined to obtain insight into their attitudes and information for a potential marketing plan. The attitudinal differences between species and products will be examined to find out how they differ from general fish purchasers. The species/products preference of PUFA fish purchasers will be examined to gain insight into their attitudes and once again gather information for a potential marketing plan. The attitudes of purchasers and non-purchasers of each variety of PUFA fish will be investigated to find out how they differ from general fish purchasers and to obtain information for the marketing plan.

A marketing plan will be developed if there is a positive reaction to the concept of fish enriched with polyunsaturated fatty acids and the species of fish currently being farmed this way i.e. eel and sturgeon. It will aim to take into account the information identified as significantly contributing to explaining purchase behaviour. It will also incorporate information from Section Three relating to the trends in product development.

SECTION FOUR: METHODOLOGICAL CONSIDERATIONS AND METHOD

METHODOLOGICAL CONSIDERATIONS.

The overall aim of the study was to identify the market initiators of PUFA fish, particularly PUFA eel and PUFA sturgeon and to develop a marketing plan to ensure the products' success. All methodologies have various strengths and weaknesses but through combining methodologies with non-overlapping weaknesses any findings which were convergent could be accepted with a greater degree of confidence (Brewer 1989). Two research methodologies were employed in this study. A quantitative method enabled comparable data to be obtained from a large number of people representative of the population of interest and the use of statistical analysis. The data collected by the quantitative method was dictated by the researchers' frame of reference and the respondents had limited opportunities to express their opinions. The qualitative method provided confirmation of the results obtained from the quantitative method and allowed further exploration of issues without the constraints of the quantitative method. The main weakness of sets of qualitative data is that they are not always comparable which makes analysis difficult.

Quantitative Method.

A quantitative method was required that would enable attitude to fish, involvement in healthy eating and cognitive style to be measured as these have been found to influence food choice and purchase behaviour in past research (Shepherd and Farleigh 1986a, 1986b, Raats et al 1995, Foxall and Bhate 1993, Foxall 1995). The majority of research methodologies, controlled experiments, content analysis and the analysis of existing data, case studies were eliminated. Controlled experiments were eliminated as

these were utilised by an associated research team who were investigating the conceptual and sensory impact of PUFA fish. Controlled experiments generally use only a small sample. The aim of the current study was to identify the market initiators of PUFA fish and whether they were common in the mass market therefore it was essential to obtain as large a sample as possible in order for it to be representative of the population of interest. Content analysis, the examination of documents such as government publications, case studies, comprehensive descriptions of past social situations and analysis of existing data were eliminated. PUFA fish is a new concept to the consumer therefore there would be no documentation, case studies or existing data referring to the concept or to consumers' attitudes or potential behaviour to the concept. Controlled experiments, case studies, and content analysis would not be capable of incorporating measures of attitude to fish, involvement in healthy eating or cognitive style. If these variables which have been used successfully in past research into food choice and market initiators were to be used in the current study the aforementioned methodologies could not be used.

The survey was the one quantitative methodology which enabled a new, hypothetical concept to be investigated, had the capacity to measure attitude to fish, involvement in healthy eating and cognitive style and would allow a large sample to be obtained.

Survey research enables a theory to be clearly and rigorously examined and allows the clarification of cause and affect. In the current study the survey was an appropriate technique because it allowed the incorporation of measures of involvement and cognitive style which were highlighted in previous research as being important in

identifying market initiators (Foxall and Bhate 1993, Foxall 1995). It also enabled attitude, various purchasing behaviours and demographics of the respondents to be recorded as they may also influence purchase decisions. Theory suggested a number of variables were potentially important in determining purchase related decisions so the survey's capacity to measure a large number of variables was advantageous. Survey research is specific, which is where its main weakness is found. Variables are defined and measured by the responses to one or more questions. Researchers may not agree with the definitions or measurements used for certain variables therefore in any research area there may be a number of conflicting definitions and measurements for a single variable (Babbie 1990). In the current study established definitions and reliable and valid psychometric tests were used where possible to avoid this problem.

The careful reporting of survey methodology promotes replication by other researchers to test and re-test the findings. Replication of findings increases the reliability of the theory. However if the findings are not replicated they may still be used in the development of another theory (Babbie 1990).

Survey research is conducted with the aim of understanding the larger population. The current study aimed to identify psychological, behavioural and demographic characteristics of the market initiators of PUFA fish. Surveys allow a large sample to be obtained because they are relatively cheap, enabling them to be completed by a large number of people in a relatively short period of time i.e. a larger sample can be obtained within certain time and budgetary constraints compared to other methodologies. As the current research project required a large sample and had to be

completed within time and budgetary constraints, survey methodology was appropriate. Survey data would also allow segments of the sample to be investigated (Babbie 1990).

A cross sectional survey design was used. This involved the collection of data from a sample at a point in time in order to describe the larger population at the same point in time. A longitudinal study was not employed as the psychological, behavioural and demographic characteristics of the market initiators of PUFA fish which were being investigated were not expected to change over time.

There are two main types of surveys, interview administered and self administered. An interview administered questionnaire involves an interviewer reading the questions and the answer options to the respondent and recording their responses. A self administered questionnaire is completed by the respondent. Interview administered questionnaires can be carried out on the telephone, face to face, in the street, in a hall or in the respondent's own home. Self administered questionnaires can be carried out in a number of ways including by post or in the presence of an interviewer/researcher. Each approach has its advantages and disadvantages.

Interview administered questionnaires and self administered questionnaires where the sample has been recruited, enable a specific sample profile and sample size to be obtained. This would ensure the sample would be representative of the population of interest. A postal self administered questionnaire would be problematic in that the sample obtained may not be as large as required or representative of the target

population. This is because the researcher is unable to control who completes the questionnaire or how many are completed (Babbie 1990). As a large sample representative of the population of Great Britain was required postal, self administered questionnaires were eliminated.

Interview administered questionnaires can be more time consuming and result in a smaller sample size than self administered questionnaires when working within time and budgetary constraints and with limited resources. However the current research project had a budget which allowed the utilisation of an external company with a nationwide network of interviewers to assist with data collection through interview administered questionnaires. This ensured a large sample would be obtained.

Interviewers would be able to eradicate sources of confusion for the respondents. They would be available to provide clarification of the questions and/or the instructions for the correct completion of the questionnaire. This would ensure that all the questions were answered and that they were completed in the correct manner. This would be especially important regarding the psychometric tests as an omitted answer or a series of obviously biased answers would invalidate the test score. Show cards were used to remind the respondents of the answer options available or to enable them to absorb certain information at their own pace. Self administered questionnaires would be unsuitable because the complexity of the psychometric tests may result in a number of questionnaires being returned not completed or completed incorrectly. One section of the questionnaire consisted of a psychometric test to be completed by the respondent. The design of the psychometric test meant self completion was essential. The items

were semantic differentials with an unnumbered seven point scale. Self completion would be preferable to the use of show cards in this instance as it would ensure ambiguous responses and therefore misinterpretation of the data was avoided. Interviewers would be able to minimise neutral and "Don't know" answers which would be important for obtaining a wide range of scores on attitude measures and psychometric tests (Babbie 1990).

A disadvantage of using interview administered questionnaires would be the lack of anonymity and privacy for the respondent. This may be problematic particularly when completing the psychometric tests as they may feel unable to express themselves freely or they may try to give the "right" answer. Inhibition of the respondent's answers or attempts to give correct answers will introduce bias. Self administered questionnaires ensure that the respondent has anonymity which would encourage expression of genuine answers particularly on the psychometric tests.

From the discussion above it is obvious that self administered questionnaires were unsuitable for this study. They did not guarantee a representative sample or the desired sample size. The complexity of the psychometric tests meant that the questionnaires may have been returned with incorrectly completed questions or missing answers which would invalidate the test score. These disadvantages outweighed the advantages of anonymity, security and relative inexpense. Interview administered questionnaires were more appropriate for this study as the interviewer would be able to ensure the questionnaires, particularly the sections containing the psychometric tests, were completed and answered in the correct manner. This methodology also guaranteed a

representative sample and a specific sample size. These advantages outweighed the potential disadvantages of inhibition of responses and a lack of anonymity.

Interview administered questionnaires as previously stated can be carried out over the telephone, face to face in the street, in halls or in the respondents' homes. The following points were considered when deciding which method was the most appropriate. Telephone interview administered questionnaires were unsuitable as it would be difficult to describe the psychometric test for involvement which consists of semantic differentials and a scale. Any difficulties or ambiguities could lead to the respondents' answers been recorded wrongly. Interview administered questionnaires performed on the street were eliminated as the questionnaire was quite long. The interviews were carried out in late February and early March so the weather would have prevented many people from participating. The hiring of halls in town centres in which to carry out the interview administered questionnaires was also unsuitable. Taking into account the cost of hiring a hall and the budgetary constraints, the number of sample points across the country would have been limited which would have led to a less representative sample. Interview administered questionnaires in the respondents' own homes was the most suitable methodology and had a number of advantages. The respondent would be in their own environment which was comfortable and secure which may help them to freely express themselves. The respondent having invited the interviewer into their home would be more likely to spend time filling in the questionnaire correctly and accurately. This was important because the questionnaire was fairly long. This was the most suitable research methodology for the current piece of research.

Questionnaire Design.

Past research has revealed that attitude, involvement, cognitive style and other variables including past behaviour influence consumer behaviour and food choice (Foxall and Bhate 1993, Shepherd and Farleigh 1986a, East 1992, 1993). Therefore these variables were included in designing the questionnaire with the aim of identifying the market initiators of PUFA fish. A list of the required results tables were established so that the questions asked yielded the necessary information.

A screening question was used at the beginning of the questionnaire to obtain respondents who purchased food for their family rather than respondents who consumed fish. The market initiators of a product are the individuals who are first to purchase it. These individuals may not purchase the new product for their own use but for use by a family member i.e. the respondent my not like fish but they may purchase it for a family member who does.

Past and future fish purchasing behaviour was examined. A measure of the frequency of past fish purchasing behaviour was obtained. This measure was explored further by investigating how frequently fresh, frozen and tinned fish were purchased in the past. This information provided a more detailed picture of past fish purchasing behaviour. These measures were obtained as past behaviour influences future behaviour (East 1992,1993). The variety and number of the respondents' purchases were examined via a list of twenty species/products. The list included popular species such as cod and less popular species such as skate and different types of products such as tinned tuna

or salmon and frozen, battered or breaded fillets. Previous research found the number of purchases was influenced by cognitive style (Foxall and Haskins 1987, Foxall 1993, 1995). These measures rely on the respondents' ability to recall the information from their memory. An estimate of the respondents' average purchasing behaviour is required so although recall from memory is not always one hundred percent accurate it is sufficient for these purposes. Time constraints eliminated the possibility of the respondents keeping a diary recording their fish purchasing behaviour.

A general measure of future fish purchasing was obtained. This was examined in more detail by questioning future fresh, frozen and tinned fish purchasing. The variety and number of future fish purchases was investigated through using the same list of twenty species/products. These measures of past and future fish purchasing behaviour were obtained for comparison. The influence of other variables in determining these behaviours e.g. attitude, involvement, cognitive style could also be investigated.

The most popular attitudinal theories state that attitude measurements should relate to a specific behaviour to enable accurate prediction of that behaviour in the future. The product of interest in the current study is PUFA fish which is a new concept to the respondents. It would be nonsensical therefore to attempt to measure an attitude towards purchasing PUFA fish as the respondents will not have received enough information to have formed an attitude. A general measure of attitude towards fish was used. The overall attitude scores would provide a general picture which could be looked at in more detail by examining the responses to each of the attitudinal statements. The general attitude measure would not be used to predict any fish

purchasing behaviours but to examine where and how attitude scores differ between segments of the sample.

A measure of involvement was incorporated into the questionnaire as past research (Foxall and Bhate 1993, Foxall 1995) has found it contributes to identifying market initiators. PUFA fish falls into two product categories, fish and healthy food. The consumption of fish has steadily declined over recent years (C.O.M.A. 1994) and the multiples have had limited success in launching unfamiliar fish onto the market (The Grocer 25th February 1995). Both of these facts suggest people's interest and therefore involvement in fish has declined so marketing PUFA fish as a "new" fish would be limited in its appeal and success. Healthy eating has been promoted by government bodies and by retailers for a number of years and the Great British diet is gradually changing to become more healthy (M.A.F.F. 1991). PUFA fish can contribute to a healthy diet and as healthy eating appeals to a large number of people this aspect could be used as a selling point. Involvement in healthy eating was measured therefore instead of involvement in fish. A reliable and valid psychometric test successfully used in previous consumer research was used.

Respondents would be unfamiliar with the concept of PUFA fish so it was necessary to give them a certain amount of information. The information stated diets high in fat lead to heart disease. It was then stated that saturated fats were responsible for heart disease and polyunsaturated fats prevented heart disease and alleviated certain other conditions. Fish was highlighted as containing a lot of polyunsaturated fats and PUFA fish was described as containing even greater amounts. This information was

presented in a simple, factual manner without making dramatic medical claims. The benefits of consuming PUFA fish were included as they would be stated on the packaging of the product and in the promotional material. The respondents were then asked whether they would purchase PUFA fish. This question indicates the level of acceptance of the concept. The respondents were asked whether they would purchase premium price PUFA fish. This question indicates whether the respondents would be prepared to pay extra for the additional health benefits. It was thought that if a person is familiar with a product they would be more likely to purchase it than an unfamiliar product. The PUFA species currently developed are sturgeon and eel. These species are unfamiliar to many respondents so a question about a hypothetical familiar species of PUFA fish, PUFA salmon, was included. The respondents were asked if they would purchase PUFA salmon, PUFA eel and PUFA sturgeon. Familiarity was also addressed through asking the respondents if they had previously consumed ordinary salmon, eel and sturgeon. It was essential to understand the respondents' reasons for their purchase related decision for each type of PUFA fish. As it was impossible to produce a definitive list of reasons for the purchase and non-purchase decisions for each type of PUFA fish, the respondents were asked for their reasons which were recorded verbatim. This information would reveal the consumers' positive and negative perceptions of each type of PUFA fish.

Past research (Foxall and Haskins 1987, Foxall 1993, 1995) found market initiators were influenced by cognitive style. The Adaption-Innovation Inventory is a valid, reliable psychometric test which has been used successfully in past research on consumer behaviour. A thirteen item version of the Kirton Adaption-Innovation

Inventory was included instead of the thirty two item version to reduce the length of the questionnaire.

The demographic data collected included sex, age and employment status. Other variables were investigated. The number of children in the household and their ages were collected as they were thought to have an influence on fish purchasing behaviour e.g. the parents of young children may not buy fresh fish due to the potential danger from the bones. The number of people in the household was also thought to influence fish purchasing behaviour as the greater the number of people present in the household, the more diverse their experiences outside the household and the greater the probability one or more would like fish. The occupational status of the chief wage earner, the number of staff under their responsibility and their qualifications were required to ascertain socio-economic class. The town and county of the respondent were also recorded in order to assess any regional influences.

The overall plan and flow of the questionnaire were checked to ensure they were logical to both the researcher and the respondents. Items were ordered so the questionnaire started with easy “warm up” questions i.e. patterns of consumption, followed by more difficult items i.e. psychometric tests and ending with easier but more personal questions i.e. the demographics. The ordering of items on the questionnaire was considered carefully in an attempt to reduce the influence any initial questions might have on the answers to later questions. A variety of items were included in the questionnaire to make it interesting e.g. open and closed ended questions, statements, semantic differentials. Items that were not part of a

psychometric test were short, precise and unambiguous. Vague questions, negative questions, complex or double barrelled questions, leading questions and loaded words or phrases were avoided. Instructions for interviewers were clear, unambiguous and easily distinguishable from the actual questionnaire items. Filters were also distinguishable from the questionnaire items and easy to follow. Answer options were meaningful to the respondents and realistic in their range. Whenever the options may not have been exhaustive an “Other” category was included. As a self completion section was included its instructions were also clearly distinguishable from the questions. Examples of how to complete the questions were included to aid the respondents. The layout of the questionnaire was spacious. This avoided squeezing a number of questions on to a page which could cause confusion and a reduction in the amount of space for the open ended questions which would result in a reduction in the detail of the recorded answers to open ended questions. A standard canvassing approach and introduction to the research was included at the beginning. Each subsection of the questionnaire had a standard introductory sentence or two explaining its content and purpose. These were used to aid the respondents in making sense out of the construction of the questionnaire. A word of thanks for participating was included at the end.

Sampling.

The aim of sampling is to represent the population of interest which in this study was adults in Great Britain.

There are two types of sampling, probability and non-probability sampling. The main principle of probability sampling is that a sample will be representative of the population from which it is selected, if all members of the population have an equal chance of being selected. Methods of probability sampling include simple random sampling, systematic sampling, stratified sampling and cluster sampling. Probability samples are more representative than non-probability samples because they eliminate conscious and/or unconscious bias. Probability sampling enables the accuracy and representativeness of the sample to be statistically estimated (Babbie 1990). A definitive list of the population of interest is usually required to carry out probability sampling. A list of adults in Great Britain may be available from Census data but it may not be exhaustive as it would be out of date; people would have died, become adults, emigrated and immigrated. Electoral roles could not be utilised as it would eliminate sixteen and seventeen year olds which need to be included in the survey as they may purchase food for themselves or for their family. Obtaining a definitive list of the population of interest is a major problem with probability sampling. Another major problem is it is expensive. The respondents selected to participate in the study may be geographically widespread incurring excessive travel costs. Both of these problems make it unsuitable for the current piece of research.

Non-probability sampling methods are generally used when probability sampling would be prohibitively expensive, there is no definitive list of the population and/or when precise representativeness of the population is not essential. The main methods of non-probability sampling are purposive or judgmental sampling, reliance on available respondents and quota sampling. Purposive or judgmental sampling entails

the researcher selecting a sample on the basis of their knowledge of the population when no concrete facts are available. Researchers often perform research using a set of respondents who are readily available. Quota sampling entails developing a matrix of the target population's characteristics e.g. the proportion in each age group, socio-economic class etc. In forming a national quota sample it is necessary to form a matrix which covers all possible permutations of the variables e.g. the proportion of females in the 16-24 age group, with a socio-economic class of AB, living in the north. Once a matrix has been created and a relative proportion has been assigned to each cell of the matrix, data are collected from people with the appropriate set of characteristics. The sample should provide a reasonable representation of the population of interest (Babbie 1990). Also effectively the quota sample is a random sample which allows parametric statistical analysis to be performed on it.

In this study the aim was to represent the adult population of Great Britain. As probability sampling has been ruled out the most suitable non-probability method is quota sampling. Quota sampling utilises knowledge about the population with the aim of making the sample representative of the population. As knowledge of the population is available it renders the educated guess of the purposive or judgmental sampling method pointless. The research budget meant an inexpensive, easily available, unrepresentative sampling method could also be avoided. Quota sampling enables the sample to be representative in terms of a number of demographic variables such as age, socio-economic class, occupational status and region. It also allows the incorporation of other information and variables.

Qualitative Method.

Qualitative research embodies a wide range of methods such as group discussions, projective techniques, participant observation etc. A qualitative method was required that examined the areas covered in the quantitative method yet allowed the freedom to explore any salient issues that may arise.

Projective techniques e.g. cartoon balloon filling aim to access the subconscious. These techniques are useful when the research topic is sensitive or when the respondents may be unwilling or unable to articulate their true feelings. As the research topic is not sensitive and does not need to access subconscious feelings, projective techniques would not be necessary.

Participant observation requires the researcher to observe respondents from a distance or through involvement in the situation. Although it would be possible to observe fish purchasing behaviour, PUFA fish is a hypothetical product and therefore it would be impossible to observe purchase behaviour. Even if PUFA fish was an actual product observation would not reveal what variables interact to influence the purchase related decision which is the aim of the research.

Group discussions aim to elicit the respondents' views of a topic. They aim to identify the range of variables associated with the area and the respondents' perceptions of the relationships between them. This method would be suitable for the current study as it could be used to investigate consumers' potential purchase related decisions with regard to a hypothetical product and examine the surrounding issues through.

In order to ensure the issues covered in the quantitative research were examined a discussion schedule was used. This provided some structure to the group discussion but would also allow any areas of interest to be explored. Previous research and the results from the survey defined the structure of the discussion guide used for all the group discussions. Group discussions as well as reiterating certain findings from the survey research, provided a degree of flexibility in that the findings could be explored further and salient issues that arise which may have been omitted by the researcher could be discussed by the respondents. This method produces more standardised sets of data than unstructured group discussions.

Group discussions were utilised as they decrease any power relationships which may have been perceived in one to one situations. Group support may have encouraged full expression of true opinions. However if there were majority but not unanimous views, groups may have had an inhibiting effect on some participants as conformity may have been encouraged. Group discussions allowed a larger number of respondents' opinions to be obtained within the time and budgetary constraints than individual interviews.

As the group discussions provide qualitative data the various approaches to analysis needed to be examined to determine which would be the most appropriate. All of the approaches aim to provide clear categorisations of the concepts and themes and to identify the links between them. Methods of qualitative analysis include cognitive mapping, grounded theory and triangulation amongst others.

Cognitive mapping is used to diagrammatically represent a person's beliefs about a given issue with the aim of identifying and describing their explanations and predictive theories about the issue of interest. The data can be summarised and categorised across individuals and presented in a flow chart format. This process would be difficult to implement in the current research project as a wide range of issues were discussed which were related but not necessarily in a linear manner so complex, large and unwieldy results would be produced.

Grounded theory involves examining the data referring to the phenomenon and placing it into categories and subcategories. The categories and subcategories are linked through the paradigm model which consists of causal conditions, the phenomenon, the context, the intervening conditions, the action/interaction strategies and the consequences. This theory would be suitable as it would allow a broad, fairly detailed picture of PUFA fish purchase behaviour to be accomplished (Strauss and Corbin 1990).

Triangulation involves the use of multiple method data sources and theoretical perspectives to guard against artifactual results due to the biases of a single method approach (Jick 1983). Triangulation was used in the present study. Two very different methods were used, the qualitative method was used generally to confirm some of the findings of the quantitative method and explore the issues in more depth.

Sampling.

The aim of sampling is to represent the population of interest which in this piece of research was adult fish purchasers in Great Britain.

Probability sampling was once again not used for the same reasons stated in the sampling section of the quantitative method. The non-probability sampling technique selected as being the most appropriate was again quota sampling. This method aimed to select a sample representative of the general population, as knowledge of the population was available. Purposive or judgmental sampling and reliance on available subjects were eliminated as they would not produce a representative sample. Once again the sample was to be representative of the population with regard to age, socio-economic class and region. Fish purchasers tend to be mainly in the older age groups and upper socio-economic classes (Goulding 1985, LeGrand 1992). However it was important not to limit the sample to these categories of fish purchasers so the sample took all ages and socio-economic classes into account to ensure a representative sample of fish purchasers. Quota sampling also allows the incorporation of other information and variables.

METHOD

Questionnaire Survey.

Design and Procedure.

The questionnaire layout started with an introduction from the interviewer which explained what the research was about, who was conducting it and asked the person if they would like to participate in the survey. A screening question followed which obtained individuals who purchased food for their family (See Appendix One).

The first section was concerned with past fish purchasing behaviour. The interviewer introduced the topic to the respondent. Instructions for the correct completion of the section followed. This section examined the frequency of general fish purchasing. Five answer options were provided, More Than Once A Week, Once A Week, Once A Fortnight, Once A Month, Less Than Once A Month and Never on a show card. If the respondent answered Never, a filter guided him/her to the next section on future fish purchasing behaviour. Respondents who purchased fish were then asked how frequently in the past they purchased fresh, frozen and tinned fish. These questions had the same answer options as the question on general fish buying and the respondents had the same show card with the same answer options on to refer to. The respondents were then asked which species/products they had purchased from a list of twenty. A show card with the list of species/products was available for the respondent to refer to. Any species/products not included on the list could be mentioned under an open ended “Other” category (See Appendix One).

The second section was concerned with future fish purchasing behaviour. It examined whether the respondents would purchase fish in the next week. The answer options were Yes, Maybe and No. If the respondent answered No, a filter guided him/her to next section on attitudes to fish. Respondents who might or would buy fish in the next week were asked whether they would buy fresh, frozen or tinned fish. These questions had the same answer options as the question on future fish buying. The respondents were then asked which species/products they would buy in the next week from a list of twenty. on a show card. Any species/products not included on the list could be mentioned under an open ended "Other" category (See Appendix One).

The third section measured the respondent's attitude to fish. A sentence from the interviewer introduced the section. Instructions for correct completion of the section followed. It consisted of seventeen attitude statements which had been used in previous research (Mintel 1995). The attitude statements referred to various positive and negative attributes of fish. Respondents indicated their degree of agreement or disagreement with each attitude statement on a seven point scale where one equalled Very Strongly Disagree, two equalled Disagree, three equalled Slightly Disagree, four equalled Neutral, five equalled Slightly Agree, six equalled Agree and seven equalled Very Strongly Agree. A show card was available with the answer options on for the respondents to refer to (See Appendix One).

The fourth section measured the respondent's involvement in healthy eating using Zaichkowsky's Personal Interest Inventory. This section was a self completion section. A sentence introduced the topic and instructions and examples for the correct

completion of the psychometric test followed. Zaichkowsky's Personal Interest Inventory consists of ten pairs of semantic differentials e.g. relevant to me and irrelevant to me. Each semantic differential has one positive adjective and one negative adjective with a seven point scale between the two. The respondent indicated on the scale, one of the adjectives and how strongly it described their feelings in the area of interest which in this case was healthy eating. The extreme ends of the scale indicate a strong feeling towards the adjective. The nearer to the centre of the scale the weaker the feeling to the adjective and the centre of the scale indicates a neutral feeling towards the pair of adjectives. The design of the psychometric test necessitated self completion. Verbal explanations from the interviewer may have been ambiguous leading to misinterpretation and incorrect answers from the respondent and/or the interviewers may have misinterpreted the respondent's answers (See Appendix One).

The fifth section concerned polyunsaturated fatty acid fed fish. It started with a description of the different types of fats and the advantages and disadvantages of consuming each of them with regard to health and continued with a description of PUFA fish and the benefits of consuming it. There was a show card with the description on it which the respondent could read and refer back to. Instructions for the interviewer followed. This section asked whether the respondent would buy PUFA fish, premium price PUFA fish, PUFA salmon, PUFA eel and PUFA sturgeon. The answer options were Yes, Maybe and No. There were open ended questions asking for the respondent's reasons for buying/not buying each PUFA product. The respondents were also asked whether they had eaten salmon, eel and sturgeon before. The answer options for these questions were Yes, Maybe and No (See Appendix One).

The sixth section measured the respondent's cognitive style using a thirteen item version of the Kirton Adaption-Innovation Inventory. Information about the KAI and how to complete it were placed at the beginning of the section. Each of the thirteen items describes a pattern of behaviour. The respondent indicates on a five point scale how hard or easy they would find it to maintain the specified pattern of behaviour over time. The five point scale ranges from Very Hard to Very Easy. A show card with the answer options on was available for the respondents to refer back to (See Appendix One).

The seventh section was concerned with the respondent's demographics. The sex, age, and occupational status of the respondent was collected. The number of people in the household and the number of children in the household and their ages were collected. Also the occupation of the chief wage earner, their qualifications and the number of staff they were responsible for were collected to determine socio-economic class. Once the questionnaire was completed the respondent was thanked for their participation (See Appendix One).

A computer code book was produced for the questionnaire. Statistical analysis was carried out using SPSS for Windows and Limdep.

Questionnaire Distribution.

The field work was undertaken by a company registered with the Market Research Society which guarantees their work is carried out ethically and to a professional

standard. The market research company distributed the questionnaire amongst its network of nationwide interviewers. Each interviewer was sent a package of ten questionnaires with a quota specifying the respondent requirements. The interviews were performed over an eighteen day period, from the 21st February to the 9th March 1996. The interviewers returned the completed questionnaires to the market research company which then sent them to the University.

Sampling.

Quota sampling was used to obtain a sample that would be representative of the general population of Great Britain in terms of age, socio-economic class and region. The sample was also to be representative of male and female responsibility for food purchasing and fish and non fish purchasers.

Both age and socio-economic class were to be representative of the general population. The percentage of the sample within each age group was to be 18% in the 16-24 age group, 19% in the 25-34 age group, 17% in the 35-44 age group, 14% in the 45-54 age group, 13% in the 55-64 age group and 19% in the 65 plus age group (Office of Population Censuses and Surveys 1994). The percentage of the sample in each socio-economic class was 18% in classes A/B, 24% in class C_1, 28% in class C_2 and 30% in classes D/E (National Readership Surveys 1994-95). These figures were to be maintained to within plus or minus two percent of the population norm in order to retain the representativeness of the sample.

In order to be representative of Great Britain it was necessary to have a number of sample points throughout England, Scotland and Wales. Sample points in the majority of television regions in Great Britain were selected as it ensured they were distributed throughout the country (Broadcasters Audience Research Board 1995). The only television region with no sample point selected from it was Border which was due to its sparse population. The sample points are listed below.

North

Granada	Liverpool, Manchester
Tyne Tees	Newcastle upon Tyne, Middlesborough
Yorkshire	Barnsley, Grimsby
Grampian	Aberdeen, Dundee
Scottish TV	Edinburgh, Glasgow

South

West Country	Plymouth, Exeter
Carlton	Romford, Enfield, Chelmsford, Croydon
Carlton/Meridian	Maidstone, Bexley, Reading
Meridian	Brighton, Poole, Farnham

Midlands

Anglia	Norwich
Central/Anglia	Corby

Central	Sutton Coldfield, Birmingham, Redditch, Leicester, Oxford
HTV	Cardiff, Swansea

Research has shown that food shopping for the family is in the main a female task. Eighty percent of women and only twenty percent of men purchased food for the family. This statistic was taken into account when obtaining a sample which would be representative of the general population.

There were no exact figures on the population's fish purchasing behaviour. It was important to include a small number of non fish purchasers in the sample in order to find out whether there were any factors which differed significantly from fish purchasers and explained why they did not purchase fish. It would be possible to see whether these factors explaining non fish purchase were generally unalterable e.g. cognitive style or alterable through various marketing methods e.g. attitude to fish. It was necessary to ensure that heavy and light purchasers of fish were obtained. The percentage of heavy purchasers and light purchasers in the general population is not known so to avoid bias, equal numbers were obtained. The sample was to consist of ten percent who never purchased fish, forty five percent who were light fish purchasers i.e. they purchased fish less than once a week and forty five percent who were heavy fish purchasers i.e. they purchased fish once a week or more.

The method used by the market research company's interviewers to obtain the sample was random call/random preselection. The interviewer had a number of people with

specific profiles to obtain to fulfill their quota. Using local knowledge the interviewer selected an area where people with the broad profile required would be likely to live. Once in the area selected the interviewer randomly picked a road as a starting point. If the interviewer, on knocking at a door received no reply she would have continued to the next house. If a person answered the door but did not fit the interviewer's quota she would have explained about needing to interview a cross section of people, thanked them and continued to the next house. If the interviewer found a person who did fit their quota but did not want to participate they would have continued until she found a person with the required profile who did wish to participate. Once an interview had been completed, on leaving the respondent's house three clear doors were left before the next attempt at obtaining an interviewee was made. These processes were repeated until the interviewer fulfilled her quota.

Qualitative Method.

Design and Procedure.

The same market research company that performed the survey was used to organise the group discussions. They were responsible for recruiting respondents, moderating at the group discussions and providing transcriptions of the group discussions.

A group recruitment questionnaire was used to obtain suitable respondents (See Appendix Two). These included people who were not involved in advertising, public relations, market research, journalism, marketing, television, radio or the retail or wholesale of meat or fish. These people were not included as their profession may affect their attitude which consequently may not be representative of the general

population. The respondents must not have been involved in more than four discussion groups or any discussion group on meat or fish purchasing. People who had attended more than four discussion groups were not included as familiarity with the process may influence their behaviour and answers. People who had attended a group discussion on meat or fish were not included as previous discussions may have affected their attitudes so they may not be representative of the general population. No two people within the group should have known each other as free discussion may have been inhibited and/or the group dynamics may have been upset both of which would affect the results. The respondents had to purchase food for themselves and their family. Information was collected on their sex, age, socio-economic class and fish purchasing behaviour and they were allocated to a discussion group. Participants who were recruited were sent a letter confirming the date and location of the group discussion and were telephoned near to the date to remind them of their participation.

A discussion guide was produced using the quantitative research as a basis and the results as an indication of where further questioning may be informative (See Appendix Three). In designing the group discussion schedule it was important to avoid leading, dichotomous, negative or double barrelled questions and inappropriate language. The discussion was to be initiated with "warm up" questions to help orient the respondent to the topic of interest. Firstly the respondents were asked how often they purchased fish, in what format e.g. fresh, chilled, frozen etc. and what species. The respondents were asked what made them buy fish and a number of prompts e.g. health, taste were used to investigate further. They were questioned as to whether the recent BSE scare had affected their diet or their consumption of fish. Questions on the

ease of preparation of fish were then asked. Barriers to purchase such as difficulty of preparation, expense, the taste, the smell, the bones and the short storage life were all discussed. The qualities of meat and poultry were examined in relation to fish's qualities. Respondents were asked whether they felt more or less confident when choosing, buying, preparing, cooking and serving fish in comparison to meat and poultry. They were then asked the reasons for their answer, what information would help them when purchasing fish and where they would expect to obtain the information. Essentially the aim was to find out people's positive and negative perceptions relating to a number of aspects of fish, the food itself, the different product categories, the purchasing process, preparation, cooking and consumption. An awareness of fish's positive attributes could be used in marketing strategies to emphasise fish's strengths. An awareness of fish's weaknesses could be used to eliminate or reduce fish's negative points or alter people's perceptions of fish's negative points to encourage purchase.

The respondents' knowledge on healthy eating was explored through questions on the amount of fruit and vegetables to be consumed per day, their level of sugar and salt intake, the number of units of alcohol allowed per week, and whether polyunsaturated fatty acids and saturated fatty acids have a positive or negative effect on health. Respondents were asked whether they found the subject of healthy eating interesting, exciting and relevant and whether their diet was as healthy as it could and should be. The respondents' thoughts on the health benefits of eating fish were investigated (See Appendix Three). It was necessary to investigate how interesting and important healthy eating was to people. Healthy eating has been heavily promoted by the

government and the multiples for at least a decade and it was important to find out whether people were still interested and attempting to incorporate changes into their diet or whether people were becoming bored or cynical with the topic. Their knowledge and interest in the general area was examined through questions about various guidelines including a relatively new guideline, old guidelines, an old guideline recently altered and a more complex subdivided guideline. This would provide information on whether people would be interested in another healthy product such as PUFA fish. People's perceptions of fish as a healthy food were discussed in order to find out how accurate and up to date their knowledge was.

A statement clarifying which fats are good for health, which fats are bad for health and an introduction to PUFA fish was given to the respondents. They were asked if they would purchase PUFA fish and the reasons for their decision. At this point people would also have the opportunity to voice concerns over issues surrounding PUFA fish. They were then asked if they would expect PUFA fish to be cheaper, the same price or more expensive than ordinary fish, whether they would purchase it if it was more expensive and the reasons for their decision. Awareness of fish farmed species, the surrounding animal welfare issues and their influence on purchase decisions were investigated. Respondents were asked which farmed species rich in polyunsaturated fatty acids they would purchase and the reasons for their decisions. They were asked what would persuade them to try a new variety of fish (See Appendix Three). The area of PUFA fish and concerns arising from this area enabled assessment of whether the concept of farmed, PUFA fish was acceptable and appealing. It would highlight fears which would need to be allayed in the marketing process through various educational

strategies. As the PUFA fish were unfamiliar species it was necessary to find out how consumers would react to both familiar and unfamiliar PUFA fish species and to find out what strategies would be most useful in encouraging experimentation.

The moderator had a very important role in the group discussions. She was responsible for probing the respondents to obtain full and frank answers, for seeking reasons behind expressed behaviours and attitudes and preventing digressions. It was also necessary for her to appear neutral and non-judgmental as the introduction of personal biases would affect the respondents answers.

Each group discussion lasted approximately sixty to seventy five minutes and was recorded on cassette tape. Tape recording the discussions allowed the moderator to concentrate on the conversation and probe to obtain full explanations of opinions. If only a written account of the group discussions was taken bias may have been introduced through selective recording by the moderator. Tape recording the discussions eliminated this potential problem as it allowed the whole group discussion to be recorded verbatim. Tape recording also allowed the discussion to flow freely as the moderator did not have to ask respondents to repeat themselves. The group discussions were held in comfortable, informal surroundings so the respondents would feel relaxed and able to express themselves freely. The group discussions took place between the 23rd and 29th of July 1996. The participants were each given fifteen pounds to reimburse their costs incurred whilst attending.

The tapes of the discussions were transcribed by the market research company. Both the tapes and the transcriptions were sent to the University. The transcriptions were analysed using aspects of grounded theory (Strauss and Corbin 1990). The qualitative data was compared to the quantitative data obtained in the same area to validate the findings. The qualitative data provided further depth and understanding to some quantitative results.

Sampling.

Sixty four individuals participated in one of eight discussion groups. The discussion groups were fairly small, they each consisted of eight individuals. It was important to capture everyone's opinions so a fairly small number was used to avoid sections of the group splintering off and holding separate discussions which may not be clearly picked up by the tape recorder. The groups in terms of their respondents' sex, age, socio-economic class, fish consumption and location are described in Table 3 below.

Table 3: The Discussion Group Respondents in terms of Sex, Age, Socio-economic Class, Fish Consumption and Location.

Discussion Group No.	No. of each Sex	Socio-economic Class	Age	Fish Consumption	Location
1	8 Male	C_1 / C_2	18-34	Light	North
2	8 Female	D / E	55+	Heavy	North
3	8 Female	C_1 / C_2	18-34	Heavy	Midlands
4	4 Female 5 Male	D / E	35-54	Mixed	Midlands
5	8 Male	C_1 / C_2	35-54	Heavy	Midlands
6	4 Female 3 Male	A / B	18-34	Light	Midlands
7	8 Female	A / B	35-54	Mixed	South
8	4 Female 4 Male	C_1 / C_2	55+	Light	South

Thirty seven percent of the population fall into the 18-34 age group. Thirty seven and a half percent of the respondents fell into this age group so they were accurately represented. Thirty one percent of the population fall into the 35-54 age group. Thirty seven and a half percent of the respondents fall into this age group so they are slightly over represented. Thirty two percent of the population fall into the 55+ age group. However only twenty five percent of the respondents fall into this age group so they are slightly under represented.

Eighteen percent of the population falls into classes A and B and twenty five percent of the respondents fell into classes A and B so they were slightly over represented. Fifty eight percent of the general population fall into classes C_1 and C_2 and fifty percent of the discussion groups' respondents were C_1 and C_2 so they were slightly under represented. Thirty percent of the population falls into classes D and E and twenty five percent of the respondents fell into classes D and E so they are slightly under represented.

The North and the South were represented by respondents in two group discussions each. The Midlands were over represented with respondents in four group discussions.

The discussion group sample consisted of 56.3% females and 43.7% males. Ideally the sample should have consisted of eighty percent females and twenty percent males to reflect the number of females and males in the population who purchase food for their family. Males were over represented in the discussion group in order to prevent them

being outnumbered by women in the discussion groups and therefore reluctant to voice their true opinions.

Light fish eaters i.e. people who consume fish once a fortnight or less and heavy fish eaters i.e. people who consume fish once a week or more were equally represented in four discussion groups each.

People were recruited to participate in the group discussions in the following way. The recruiter had a certain number of people to obtain with specific profiles. Using local knowledge the recruiter would select an area where people with the appropriate profile would live. A road would be selected randomly as a starting point. The recruiter would knock at a door and if the respondent did not fit the profile required the recruiter would explain that a variety of people were required for the discussion group, thank the person and continue to the next house. If the respondent fitted the profile but did not want to participate the recruiter continued to the next house. If the recruiter did not receive a reply they would continue to the next house. Once a person of the required profile was obtained three clear doors were left before attempting to recruit the next participant.

SECTION FIVE: RESULTS

The Respondents.

The sample consisted of three hundred and eleven people. Two hundred and forty nine, eighty percent were female and sixty two, twenty percent, were male.

Table 4: The Number of Respondents in Each Age Group.

Age Group	Frequency	Percentage
16 - 24	52	16.7
25 - 34	67	21.5
35 - 44	52	16.7
45 - 54	42	13.5
55 - 64	44	14.1
65 and over	54	17.5
Total	311	100

The median age group was 35 - 44 and the modal age group was 25 - 34.

Table 5: The Respondents' Employment Status.

Employment Status	Frequency	Percentage
Student	15	4.8
Retired	57	18.6
Housewife/husband	72	23.4
Unemployed	12	3.9
Working Part Time	66	21.7
Working Full Time	85	27.6
Total	307	100

The modal employment status was working full time.

Table 6: The Respondents' Socio-economic Class.

Socio-economic Class	Frequency	Percentage
AB	50	16.5
C_1	86	28.4
C_2	83	27.4
DE	84	27.7
Total	303	100

The median socio-economic class was C_2 and the modal socio-economic class was C_1.

Table 7: The Number of People in the Respondents' Household.

Number of People in the Household	Frequency	Percentage
1	49	15.8
2	88	28.3
3	72	23.1
4	54	17.4
5	35	11.2
6	9	2.9
7	3	1.0
8	1	0.3
Total	311	100 (n=311)

The median number of people in the household was three and the modal number of people in the household was two.

Table 8: The Number of Children in the Respondents' Household.

Number of Children	Frequency	Percentage
0	164	52.7
1	67	21.5
2	49	15.8
3	22	7.1
4	8	2.6
5	1	0.3
Total	311	100 (n=311)

The median number of children was zero and the modal number of children was zero.

Table 9: The Number of Respondents in Each Region.

Region	Frequency
North	101
Midlands	82
South	128
Total	311

FISH PURCHASING BEHAVIOUR

Past Fish Purchasing Behaviour.

The percentage of people in each frequency of purchase category for general fish purchasing, fresh, frozen and tinned fish purchasing is detailed in Table 10 below and graphically represented in Figure 6.

Table 10: The Frequency of Purchase of Each Type of Fish Product.

Frequency	General Fish Purchasing (n=311)	Fresh Fish Purchasing (n=281)	Frozen Fish Purchasing (n=281)	Tinned Fish Purchasing (n=281)
Never	9.6%	20.6%	11.4%	11.4%
Less Than Once A Month	9.3%	27.4%	19.2%	16.7%
Once A Month	33.1%	19.6%	27.0%	23.1%
Once A Fortnight	4.9%	12.8%	18.5%	17.8%
Once A Week	33.1%	16.4%	21.4%	28.5%
More Than Once A Week	10.0%	3.2%	2.5%	2.5%

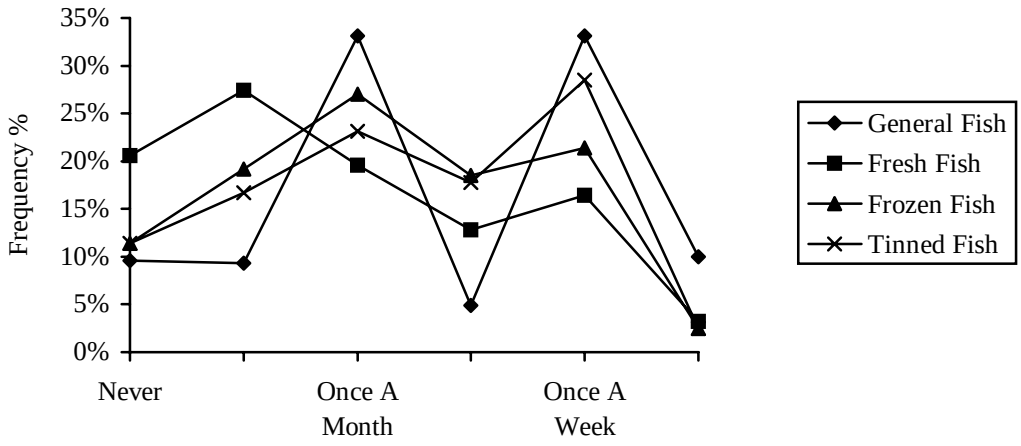
It can be observed from Table 10 above that 90.4% of the sample purchase fish with the most popular frequencies of purchase being Once A Month and Once A Week, both with 33.1% of the sample.

Of the people that purchased fish 79.4% purchased fresh fish. The most popular frequency of fresh fish purchase was Less Than Once A Month with 27.4%.

Of the people that purchased fish 88.6% purchased frozen fish. The most popular frequency of frozen fish purchase was Once A Month with 27.0%.

Of the people that purchased fish 88.6% purchased tinned fish. The most popular frequency of tinned fish purchase was Once A Week with 28.5%.

Figure 6: Frequency of Past Fish Purchase



It can be observed from Table 11 that the most popular species was cod with 81.9% of the sample having purchased it in the past. In addition to the prespecified fish named in the table above, thirty two other species/products were mentioned including pilchards, mussels, crab, scampi, whiting, hoki, coley, herrings, anchovies, Dover sole, fried fish, lobster, oysters, shark and squid.

Table 11: The Percentage of Respondents Who Have Previously Purchased Each Species/Product.

Species/Product	% Purchase (n=211)
Cod	81.9
Tinned Tuna/Salmon	77.6
Haddock	63.3
Prawns	58.4
Fish Fingers	55.5
Breaded/Battered Fillets	40.6
Sardines	40.6
Plaice	39.1
Kippers	38.4
Salmon	36.7
Smoked Mackerel	30.6
Crab Sticks	25.1
Trout	24.9
Fish In Sauce	23.8
Smoked Salmon	22.8
Fish Pies	19.6
Skate	8.2
Monkfish	5.0
Mullet	2.0
Carp	0.4

The mean number of species/products purchased in the past was seven with a standard deviation of 3.9. The median number of species/products was seven and the modal number was six. The minimum number purchased was one and the maximum number purchased was twenty two.

Future Fish Purchasing Behaviour.

The percentage of people who will, may and will not purchase fish in general, fresh, frozen and tinned fish in the next week is detailed in Table 12 below and graphically represented in Figure 7.

Table 12: The Percentage of Respondents Intending to Purchase Fish in the Next Week.

	General Fish Purchasing (n=311)	Fresh Fish Purchasing (n=198)	Frozen Fish Purchasing (n=198)	Tinned Fish Purchasing (n=198)
No	36.3%	46.5%	31.8%	32.8%
Maybe	16.1%	19.2%	23.3%	21.7%
Yes	47.6%	34.3%	44.9%	45.5%

It can be observed from Table 12 above that 63.7% of the sample might or would purchase fish within the next week. It can be observed from the table above that tinned fish was the most popular intended purchase followed by frozen fish then fresh fish.

Figure 7: Frequency of Future Fish Purchase Decisions

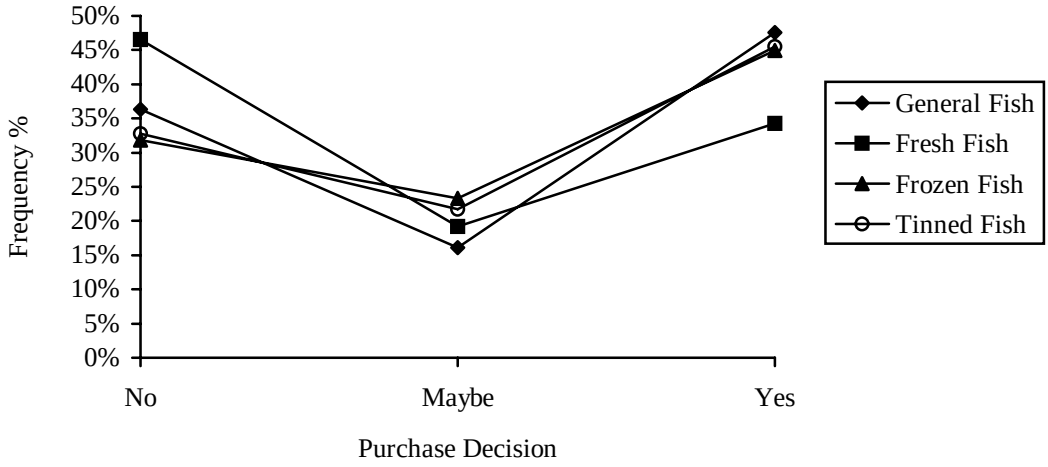


Table 13: The Percentage of Respondents Who Will Purchase These Species/Products In The Next Week.

Species/Product	% Will Purchase
Tinned Tuna/Salmon	49.0%
Cod	42.9%
Haddock	23.7%
Fish Fingers	20.2%
Breaded/Battered Fillets	11.6%
Prawns	10.6%
Salmon	8.1%
Sardines	8.1%
Plaice	5.6%
Crab Sticks	5.1%
Kippers	5.1%
Smoked Mackerel	5.1%
Fish Pies	4.5%
Trout	4.5%
Fish In Sauce	4.0%
Smoked Salmon	3.5%
Mullet	0.5%
Skate	0.5%

From Table 13 above it can be observed that tinned tuna/salmon was the most popular intended purchase. In addition to the prespecified fish named in the table above, fourteen other species/products were mentioned including scampi, whiting, coley, fried fish, pilchards and herrings.

The mean number of species/products to be purchased in the following week was two with a standard deviation of 1.4. The median number of species/products to be purchased in the future was two and the modal number was one. The minimum number to be purchased was one and the maximum number was eight.

Ninety point four percent of the sample had purchased fish in the past but only 63.7% were intending to purchase fish in the following week. Tinned and frozen fish were equally popular purchases both in the past and in the future with 88.6% buying frozen and/or tinned fish in the past and approximately 68% buying frozen and/or tinned fish in the future. Fresh fish was the least popular purchase in the past with 79.4% purchasing it and in the future with 53.5% intending to purchase it. The number of people generally purchasing fish in the future decreased by 31.3% compared with the past. The number of people purchasing fresh, frozen or tinned fish in the future dropped 20-26% compared with the past. The popularity of the species purchased in the past and future did not alter radically. The three most popular species in the past and the future consisted of cod, tinned tuna/salmon and haddock.

PUFA Fish Purchase Behaviour.

General Polyunsaturated Fatty Acid Fed Fish Purchase Decisions.

Table 14: The Respondents' PUFA Fish Purchase Decisions.

Would you buy PUFA fish?	% (n=311)
No	20.9%
Maybe	29.6%
Yes	49.5%

It can be observed from Table 14 above that 79.1% of the sample would purchase or would consider purchasing PUFA fish.

The reasons the respondents gave for their purchase decision could are listed in Table 15 below.

Table 15: The Respondents' Reasons For Their PUFA Fish Purchase Decisions.

Positive (n=154)		Considering (n=92)		Negative (n=65)	
Health	42.8%	Try It	12.9%	Dislike Fish	9.6%
Disease Prevention	3.2%	Taste	11.6%	Uninterested In Healthy Eating	3.9%
Fats	2.2%	Need Information	6.4%	Buy What I Like	3.2%
		Type of Product	4.2%	Physical Characteristics	1.3%
		Price	3.9%		
		Fish Species	3.2%		

POSITIVE REASONS FOR PUFA FISH PURCHASE

1. Health - Reasons referring to the generic health and well being of the individual or family were included in this category e.g.

"That's a good idea. It's better for you and a healthier diet for the family."

2. Disease Prevention - This category contained reasons with specific reference to a medical condition, either preventing one from occurring or alleviating one already present e.g.

"Because it helps prevent arthritis and I think anything you can eat that helps that is good."

3. Fats - Some respondents' reasons referred to the desirability of incorporating polyunsaturated fats into their diet and reducing the amount of saturated fats e.g.

"If it does what it says it will do, I would buy it for health reasons. It's healthier than fish with saturated fats."

REASONS FOR CONSIDERING PUFA FISH PURCHASE

1. Try It - Some respondents stated they would be prepared to try the product out in order to see if it was generally to their liking e.g.

"I would buy it to try it, if it was something new that was particularly good for you but the taste of it and whether the family enjoyed it would be more important than the fact it was healthy."

2. Taste - These respondents specifically required one physical property i.e. taste to be to their liking.

3. Need Information - These respondents exhibited signs of confusion about which kind of fats contributed to a healthy diet and which kinds of fats contributed to a less healthy diet e.g. *"I don't know, I just buy it if I fancy it. Can't understand all this about polyunsaturated fat and things"*

and

"It's a lot of rubbish, a fad and I don't really understand it. We all managed before all this polyunsaturated food thing".

There were also some respondents who felt that producing PUFA fish would entail genetic alteration or a degree of tampering e.g.

"I might try it but it would depend on what it was exactly. I try not to eat things which have been greatly processed. I prefer natural to artificial."

4. Type of Product - Many respondents expressed a preference for the type of PUFA product they would purchase e.g.

"Well it would depend upon other factors, whether it was attractively presented, if it was the sort of fish I liked anyway and if it was time consuming to prepare."

and

"If it looks okay and its got batter on it and its from Findus I'll buy it."

5. Price - These respondents stated that cost would be a determining factor.

6. Fish Species - These respondents expressed a preference for a particular species of fish.

REASONS FOR NOT PURCHASING PUFA FISH

1. Dislike Fish - The respondents stated they did not like fish.

2. Uninterested In Healthy Eating - Some respondents were not interested in ensuring they have a healthy diet e.g.

"I'm not into healthy eating. I eat fats for energy."

3. Buy What I Like - These people stated that they would not buy PUFA fish because they only buy specific species or they only buy what they like i.e. tried and tested dishes.

4. Physical Characteristics - These respondents mentioned a dislike of the physicality of preparing fish or some specific physical property such as the smell or the bones.

Premium Price PUFA Fish Purchase Decisions.

It can be observed from Table 16 below that 60.5% of the sample would buy or would consider buying premium price PUFA fish.

Table 16: The Respondents' Premium Price PUFA Fish Purchase Decisions.

	% Purchase (n=311)
No	39.5%
Maybe	29.9%
Yes	30.6%

Table 17: The Respondents' Reasons For Their Premium Price PUFA Fish Purchase Decisions.

Positive (n=95)		Considering (n=93)		Negative (n=123)	
Health	28.4%	If We Liked It	15.5%	Expensive	19.7%
Worth Paying Extra	11.9%	Depends on Cost	10.3%	Dislike Fish	7.1%
Disease Prevention	1.9%	Type of Product	2.6%	Ordinary Fish Contain PUFA	5.5%
		Need Information	2.3%	Uninterested In Healthy Eating	2.6%

POSITIVE REASONS FOR PREMIUM PRICE PUFA PURCHASE

1. Health - Many respondents felt their own and their family's health was of primary importance e.g.

"Just because it's healthier. I don't mind spending a bit more if it's healthier."

and

"Healthier eating habits may cost more but the benefits outweigh the costs".

2. Worth Paying Extra - This category encompassed the feeling of “you get what you pay for”. These respondents expect to get a high quality, healthy, wholesome product for their money.

3. Disease Prevention - These respondents were prepared to pay extra either to prevent a certain medical condition occurring or to alleviate one which was already present.

REASONS FOR CONSIDERING PREMIUM PRICE PUFA FISH PURCHASE

1. If We Liked It - The product would need to be accepted generally by the individual and the family in terms of taste, appearance and presentation before being regularly purchased,

“It would depend on the quality and the taste, if it was excellent I’d be willing to pay more”.

2. Depends on Cost - These respondents were prepared to pay a little bit extra for a healthy, high quality product but not too much,

“Depends how much more expensive it is. If it was a lot more I wouldn’t buy it very often”.

3. Type of Product - Some people would be prepared to pay more if it was a product or species they liked,

“If it was to my taste, like plaice, cod, prawn, haddock, crab sticks or lobster”.

4. Need Information - These respondents were not accurately informed on which types of fats should be incorporated into the diet and which should be decreased. There were instances where a respondent may have confused the two types of fat and believed polyunsaturated fats were unhealthy and another respondent dismissed the health claims as false.

REASONS FOR NOT PURCHASING PREMIUM PRICE PUFA FISH

1. Expensive - Many respondents claimed they would not be able to afford a premium price PUFA fish. Their reasons included being on a tight budget and the belief that fish was already an expensive food e.g.

"I find fish expensive now so I don't see the need to charge any more for it".

2. Dislike Fish - Some respondents said they would not be prepared to pay more for a product they did not really like or did not like.

3. Ordinary Fish Contain PUFA - A number of people knew that ordinary fish contain polyunsaturated fatty acids and were not willing to pay extra for something that was already present in ordinary fish e.g.

"If normal fish is already giving you the polyunsaturated fats then what would be the point of paying extra?".

4. Uninterested In Healthy Eating - These respondents were not concerned about the fat content of their diet.

PUFA Salmon Purchase Decisions.

Seventy eight point five percent of the sample had tried salmon and from Table 18 it can be observed that 49.5% of the sample would buy or would consider buying PUFA salmon.

Table 18: The Respondents' PUFA Salmon Purchase Decisions.

	% Purchase (n=311)
No	50.5%
Maybe	22.5%
Yes	27.0%

Table 19: The Respondents' Reasons For Their PUFA Salmon Purchase Decisions.

Positive (n=84)		Considering (n=70)		Negative (n=157)	
Health	18.1%	Try It	4.8%	Dislike Salmon	23.9%
Like Salmon	17.1%	Taste	3.9%	Expensive	21.6%
Treat	2.9%			Dislike Fish	5.8%
Eat It Out	1.3%			Do Not Buy Salmon	4.2%
Disease Prevention	1.3%			Prefer Tinned Salmon	3.9%

POSITIVE REASONS FOR PUFA SALMON PURCHASE

1. Health - Many respondents gave a generic health reason for purchasing PUFA salmon or stated polyunsaturated fats were beneficial for health e.g.

"Because it's good for you and delicious".

2. Like Salmon - Salmon was quite a popular fish within the sample with respondents stating they would buy it simply because they liked it e.g.

"It's simply a delicious fish"

and

"I'd buy fresh salmon every day if I could afford it because I love the taste of red salmon".

3. Treat - Some people would buy PUFA salmon occasionally for a special event or as a treat.

4. Eat It Out - Some respondents only tended to purchase it when they were dining out e.g.

"I never buy fresh salmon, it's a bit of a luxury. I only eat it if it's available when I go out".

5. Disease Prevention - A few respondents would buy PUFA salmon in order to prevent or alleviate medical conditions.

REASONS FOR CONSIDERING PUFA SALMON PURCHASE

1. Taste - A variety of reasons relating to taste were mentioned. Some respondents would buy it if they liked the taste or if it tasted the same whereas others were able to specify a preference for a fish that tasted like wild salmon rather than farmed salmon.

2. Try It - Some respondents would buy it in order to find out whether it was generally to their liking.

REASONS FOR NOT PURCHASING PUFA SALMON

1. Dislike Salmon - Many people would not buy PUFA salmon because they do not like a physical property of salmon such as the taste or the bones e.g.

"I don't buy fresh salmon, don't like the bones in it".

2. Expensive - Salmon was believed to be too expensive and unaffordable by a number of people. Many of these people were on a limited budget.

3. Dislike Fish - Some people did not like fish generally.

4. Do Not Buy Salmon - These respondents tended to buy the items they usually buy and are familiar with.

5. Prefer Tinned Salmon - Some respondents believed tinned salmon to taste preferable to fresh salmon e.g.

"Because I don't particularly like it. I prefer tinned or smoked salmon".

PUFA Eel Purchase Decisions.

Eel was not a commonly consumed fish with only 18.1% of the sample having tasted it. It can be observed from the table below that 10.0% would purchase or would consider purchasing PUFA eel.

Table 20: The Respondents' PUFA Eel Purchase Decisions.

	% Purchase (n=311)
No	90.0%
Maybe	4.5%
Yes	5.5%

Table 21: The Respondents' Reasons For Their PUFA Eel Purchase Decisions.

Positive (n=17)		Considering (n=14)		Negative (n=280)	
Health	4.2%	Try It	4.2%	Do Not Fancy It	50.0%
Like It	1.9%			Appearance	27.4%
Positive Physical Properties	1.3%			Dislike Eel	24.8%
				Stick To What I Know	7.1%

POSITIVE REASONS FOR PUFA EEL PURCHASE

1. Health - This category included generic health reasons, the prevention and alleviation of certain medical conditions and the alteration or reduction of fat content in the diet.

2. Like It - Eel was liked by some respondents.

3. Positive Physical Properties - Certain specific physical properties of eel were found to be appealing to some respondents e.g.

"It's a lovely flavour and texture, gorgeous smoked".

REASONS FOR CONSIDERING PUFA EEL PURCHASE

1. Try It - Some respondents were prepared to try eel in order to find out whether it was to their liking.

REASONS FOR NOT PURCHASING PUFA EEL

1. Do Not Fancy It - These people did not find the consumption of eel appealing e.g.

"Oh God no, the very idea makes me feel ill"

2. Appearance - The appearance of the eel deterred many respondents from considering trying it e.g.

"It sounds disgusting, looks disgusting and I'd rather die than eat an eel"

and

"No the very thought of eel, no, I wouldn't buy it. I can just see this thing wriggle around like a worm. The very thought of it repulses me".

3. Dislike Eel - A number of people who had tried it did not like it e.g.

"It just don't do anything for me, I used to catch it as a boy. It has the river taste"

and

"Because it tasted horrible, like jelly, rubber and I'd never buy it again".

4. Stick To What I Know - Many respondents would prefer to purchase fish species/products that they are familiar with.

PUFA Sturgeon Purchase Decisions.

Sturgeon was not a commonly consumed fish with only 9.0% of the sample having tried it. From Table 22 below it can be observed that 26.4% of the sample would buy or would consider buying PUFA sturgeon.

Table 22: The Respondents' PUFA Sturgeon Purchase Decisions.

	% Purchase (n=310)
No	73.6%
Maybe	20.3%
Yes	6.1%

POSITIVE REASONS FOR PURCHASING PUFA STURGEON

1. Health - Respondents gave general health reasons, reasons relating to fat intake and also reasons relating to the prevention of disease or alleviation of a medical condition.

2. Positive Physical Properties - People gave a specific physical property such as taste which they found appealing in sturgeon.

Table 23: The Respondents' Reasons For Their PUFA Sturgeon Purchase Decisions.

Positive (n=19)		Considering (n=63)		Negative (n=228)	
Health	6.5%	Try It	11.9%	Need Information	18.7%
Physical Positive	1.3%	Taste	5.5%	Stick With What I Know	17.4%
		Price	2.9%	Do Not Fancy It	16.1%
				Expensive	11.9%
				Physical Properties	5.8%
				Dislike Fish	5.5%
				Unavailable	3.9%
				Prefer Something Else Fishy	2.8%
				Dislike It	1.9%

REASONS FOR CONSIDERING PUFA STURGEON PURCHASE

1. Try It - These respondents would be prepared to try sturgeon in order to find out whether it was to their liking.

2. Taste - If the respondents' liked the taste they would purchase it e.g.

"*Don't really know what it tastes like, I'd have to try it first*".

3. Price - People would be prepared to buy sturgeon if it was not too expensive.

REASONS FOR NOT PURCHASING PUFA STURGEON

1. Need Information - There would seem to be a distinct lack of knowledge regarding the sturgeon's existence e.g.

“What’s a sturgeon?”.

2. Stick With What I Know - Many respondents prefer to purchase familiar fish species/products.

3. Do Not Fancy It - Many people do not find the idea of consuming sturgeon appealing.

4. Expensive - Amongst these people sturgeon had an image of being an expensive fish e.g.

“Because it would be too expensive. I’ve only had sturgeon before because it was served at a function which I attended”

and

“I think it’s too expensive. No, never fancied it. It’s just for the royal family isn’t it?”

5. Physical Properties - Certain specific physical properties which were found particularly unappealing were mentioned by respondents e.g.

“Just doesn’t appeal to me. It’s got lots of teeth and it’s not an appealing fish.”

and

“If I remember right, sturgeon is quite an ugly fish, I don’t fancy it at all”.

6. Dislike Fish - Some respondents did not like fish.

7. Unavailable - A few people said they would not be able to buy it because they had not seen it in the shops e.g.

“For one thing it’s not something I’ve come across in the shops at all and also if you did get it it would be pretty expensive I’d imagine”.

8. Prefer Something Else Fishy - A few respondents would prefer another kind of fish to sturgeon.

9. Dislike It - Of the people who had tried sturgeon before some did not like it and would not repeat buy.

Most people (79.1%) were at least willing to consider purchasing PUFA fish and the majority were also willing to consider purchasing premium price PUFA fish (60.5%). Amongst the specific PUFA species mentioned PUFA salmon was the most popular (49.5%) and PUFA eel was the least popular (10.0%). The respondents' reasons for their decision were examined to provide further insight.

CORRELATIONS BETWEEN FISH PURCHASING BEHAVIOURS AND THE PSYCHOLOGICAL AND DEMOGRAPHIC VARIABLES.

Table 24: Correlations of Psychological and Demographic Variables.

	Attitude	Involvement	Cog Style	Sex	Age	Class	Region
Attitude	1.0000 310	.3509 309 p=.000	-.0186 309 p=.744	-.0106 310 p=.853	.1869 310 p=.001	-.0992 302 p=.085	-.0528 310 p=.355
Involvement		1.0000 310	-.0357 309 p=.531	-.0842 310 p=.139	.0884 310 p=.121	-.0490 303 p=.395	-.0176 310 p=.758
Cog Style			1.0000 310	.0534 310 p=.349	-.2456 310 p=.000	.0734 302 p=.203	-.0063 310 p=.912
Sex				1.0000 311	.1203 311 p=.034	.0355 303 p=.539	.0061 311 p=.915
Age					1.0000 311	.0085 303 p=.882	-.0103 311 p=.0857
Class						1.0000 303	-.0150 303 p=.759
Region							1.0000 311

It can be observed from Table 24 that attitude and involvement are significantly correlated i.e. as attitudes to fish become more positive there is a corresponding increase in involvement in healthy eating. There is a significant relationship between attitude to fish and age i.e. as attitude to fish becomes more positive there is an increase in the age of the person. There is a significant relationship between cognitive style and age, as people grow older they are more likely to be Adaptors.

Table 25: Correlations of Psychological and Demographic Variables with Past and Future Fish Purchasing Behaviours.

	Attitude	Involvement	Cog Style	Sex	Age	Class	Region
General fish buying	.4642 310 p=.000	.1209 310 p=.033	.0356 310 p=.532	-.0208 311 p=.715	.1425 311 p=.012	-.0726 303 p=.207	.0224 311 p=.694
Future fish buying	.4070 310 p=.000	.1497 310 p=.008	.0388 310 p=.496	-.0087 311 p=.879	.0825 311 p=.147	-.0411 303 p=.476	.0215 311 p=.705
Fresh fish buying	.4789 310 p=.000	.1569 310 p=.006	.0803 310 p=.159	-.0715 311 p=.209	.2765 311 p=.000	-.0654 303 p=.257	-.0699 311 p=.219
Future fresh fish buying	.4210 310 p=.000	.1652 310 p=.004	.1164 310 p=.041	-.0011 311 p=.984	.1765 311 p=.002	-.0186 303 p=.784	-.0182 311 p=.984
Frozen fish buying	.3040 310 p=.000	.0592 310 p=.299	-.0607 310 p=.287	-.0100 311 p=.860	-.0429 311 p=.451	-.0607 303 p=.293	.0620 311 p=.276
Future frozen fish buying	.3055 310 p=.000	.1168 310 p=.040	-.0029 310 p=.959	-.0334 311 p=.557	-.0288 311 p=.613	-.0085 303 p=.884	.0522 311 p=.359
Tinned fish buying	.3265 310 p=.000	.1845 310 p=.001	.0434 310 p=.447	-.0085 311 p=.091	.0236 311 p=.678	-.1131 303 p=.049	-.0085 311 p=.882
Future tinned fish buying	.3001 310 p=.000	.1110 310 p=.051	.0753 310 p=.186	-.0320 311 p=.574	.0048 311 p=.933	-.0373 303 p=.518	.0269 311 p=.636

General past fish purchasers are associated with a positive attitude to fish, being involved in healthy eating and as belonging to the older age groups. Future general fish purchasers are also associated with having a positive attitude to fish and being involved in healthy eating. The directions of the correlations indicate that fish purchasers in general are likely to have an Innovative cognitive style, be female, of a higher socio-economic class and living in the south, however these associations are not significant.

Past fresh fish purchasers were associated with an increasingly positive attitude to fish and as being involved in healthy eating. Future fresh fish purchasers were also associated with a more positive attitude and as being involved in healthy eating but in addition they were associated with an Innovative cognitive style and as belonging to the older age groups. Fresh fish purchasers were also associated, although not significantly, with being female, in a higher socio-economic class and as living in the north.

Past frozen fish purchasers were more likely to have a positive attitude to fish. Future frozen fish purchasers were more likely to have a positive attitude to fish and also to be involved in healthy eating. The correlations indicate that frozen fish purchasers are more likely to be Adaptive, female, in the younger age groups, of a higher socio-economic class and living in the south, although these relationships were not significant.

Past tinned fish purchasers were associated with a more positive attitude to fish, as being involved in healthy eating and as being in a higher socio-economic class. Future tinned fish purchasers were also associated with having a positive attitude to fish and as being involved in healthy eating. The correlations indicate that tinned fish purchasers are Innovators, female and in the older age groups, although these relationships are not significant.

Table 26: Correlations of Psychological and Demographic Variables with PUFA Fish Purchasing Behaviours.

	Attitude	Involvement	Cog Style	Sex	Age	Class	Region
PUFA fish	.3882 310 p=.000	.2543 310 p=.000	-.0490 310 p=.390	.0128 311 p=.026	.08333 311 p=.143	-.1275 303 p=.026	-.0086 311 p=.879
Premium price PUFA fish	.2893 310 p=.000	.2544 310 p=.000	-.0120 310 p=.833	.0367 311 p=.519	.1237 311 p=.029	-.0894 303 p=.120	-.0213 311 p=.708
PUFA salmon	.2879 310 p=.000	.1556 310 p=.006	-.0224 310 p=.625	.0147 311 p=.796	.1235 311 p=.029	-.1226 303 p=.033	.1132 311 p=.046
PUFA eel	.1642 309 p=.004	.1062 309 p=.062	.0373 309 p=.514	.1052 310 p=.064	.0585 310 p=.305	-.1113 302 p=.053	.0147 310 p=.797
PUFA sturgeon	.1492 309 p=.009	.0903 309 p=.113	-.0374 309 p=.512	.0937 310 p=.099	.0569 310 p=.318	-.2188 302 p=.000	-.0189 310 p=.740

PUFA fish purchasers are more likely to have a positive attitude to fish, be involved in healthy eating, be male and in a higher socio-economic class. Premium price PUFA fish purchasers are more likely to have a positive attitude to fish, be involved in healthy eating and be in the older age groups. PUFA salmon purchasers were more likely to have a positive attitude to fish, be involved in healthy eating, in the older age groups, in a higher socio-economic class and living in the south. PUFA eel purchasers had a positive attitude to fish and were more likely to be in a higher socio-economic class. PUFA sturgeon purchasers are likely to have a positive attitude to fish and be in the higher socio-economic classes.

THE INFLUENCE OF THE DEMOGRAPHICS ON FISH PURCHASING BEHAVIOUR

Multiple regressions i.e. ordered probits were performed on Limdep to investigate the influence of the demographics on each of the fish purchasing behaviours.

Table 27: Past Fish Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	1.33	0.00000*
Sex	-0.104	0.512
Age	0.0824	0.0282*
Class	-0.0846	0.129
Region	-0.0282	0.707
Log Likelihood	-469.49	
Pseudo R^2	0.00839	
% Correct Predictions	34.4%	
Sample Size	302	

It can be observed from Table 27 that older people are more likely to have purchased fish in the past.

Table 28: Past Fresh Fish Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	0.926	0.00042*
Sex	-0.268	0.852
Age	0.171	0.00001*
Class	-0.0856	0.128
Region	-0.0696	0.315
Log Likelihood	-539.09	
Pseudo R^2	0.0257	
% Correct Predictions	25.7%	
Sample Size	302	

Older people were more likely to purchase fresh fish in the past.

Table 29: Past Frozen Fish Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	1.59	0.00000*
Sex	0.0169	0.913
Age	-0.101	0.00689*
Class	0.0481	0.465
Region	-0.0764	0.329
Log Likelihood	-444.35	
Pseudo R^2	0.00999	
% Correct Predictions	30.4%	
Sample Size	272	

Younger people were found to be more likely to purchase frozen fish in the past.

Table 30: Past Tinned Fish Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	1.44	0.00000*
Sex	-0.331	0.0436*
Age	-0.0318	0.424
Class	-0.0389	0.507
Region	0.0328	0.652
Log Likelihood	-446.09	
Pseudo R^2	0.00700	
% Correct Predictions	28.6%	
Sample Size	272	

Women were found to be more likely to purchase tinned fish in the past.

Table 31: Future Fish Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	0.324	0.247
Sex	-0.0122	0.943
Age	0.0533	0.176
Class	-0.0477	0.456
Region	-0.0123	0.883
Log Likelihood	-307.70	
Pseudo R^2	0.00397	
% Correct Predictions	48.2%	
Sample Size	302	

None of the demographic variables influenced future fish purchasing.

Table 32: Future Fresh Fish Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	0.0431	0.861
Sex	-0.0400	0.802
Age	0.102	0.00622*
Class	-0.0266	0.652
Region	0.0241	0.750
Log Likelihood	-396.0	
Pseudo R^2	0.00997	
% Correct Predictions	36.6%	
Sample Size	302	

Older people were more likely to purchase fresh fish in the future.

Table 33: Future Frozen Fish Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	0.513	0.0597
Sex	-0.0541	0.743
Age	-0.00716	0.850
Class	-0.00419	0.947
Region	-0.0589	0.449
Log Likelihood	-404.19	
Pseudo R^2	0.000975	
% Correct Predictions	36.3%	
Sample Size	302	

None of the demographic variables were found to influence future frozen fish purchasing.

Table 34: Future Tinned Fish Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	0.492	0.0641
Sex	-0.0521	0.750
Age	0.0153	0.690
Class	-0.0346	0.572
Region	-0.0464	0.555
Log Likelihood	-402.75	
Pseudo R^2	0.0012	
% Correct Predictions	36.0%	
Sample Size	302	

None of the demographic variables were found to influence future tinned fish purchasing.

Table 35: PUFA Fish Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	1.039	0.00019*
Sex	0.00604	0.972
Age	0.0557	0.134
Class	-0.143	0.0183*
Region	-0.0172	0.829
Log Likelihood	-311.9	
Pseudo R^2	0.0115	
% Correct Predictions	48.5%	
Sample Size	302	

People in higher socio-economic classes were found to be more likely to purchase PUFA fish.

Table 36: Premium Price PUFA Fish Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	0.227	0.396
Sex	0.0657	0.690
Age	0.0887	0.0165*
Class	-0.103	0.0967
Region	-0.0137	0.860
Log Likelihood	-325.21	
Pseudo R^2	0.0127	
% Correct Predictions	41.9%	
Sample Size	302	

Older people were ore prepared to pay a premium price for PUFA fish.

Table 37: PUFA Salmon Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	0.403	0.153
Sex	0.0388	0.821
Age	0.0846	0.0296*
Class	-0.139	0.0277*
Region	-0.180	0.0272*
Log Likelihood	-305.32	
Pseudo R^2	0.0230	
% Correct Predictions	51.8%	
Sample Size	302	

People who were older, in higher socio-economic classes and/or living in the south were found to be more willing to purchase PUFA salmon.

Table 38: PUFA Eel Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	-1.028	0.00782*
Sex	0.447	0.0579
Age	0.0332	0.572*
Class	-0.186	0.0403*
Region	-0.00783	0.949
Log Likelihood	-114.09	
Pseudo R^2	0.0353	
% Correct Predictions	90.1%	
Sample Size	301	

Older people who were in the higher socio-economic classes were more prepared to purchase PUFA eel.

Table 39: PUFA Sturgeon Purchasing Predicted by Demographics.

	B	Sig. of B
Constant	-0.314	0.315
Sex	0.300	0.114
Age	0.0524	0.240
Class	-0.268	0.00024*
Region	0.0732	0.414
Log Likelihood	-210.62	
Pseudo R^2	0.0414	
% Correct Predictions	73.2%	
Sample Size	301	

PUFA sturgeon purchasers were more likely to be in the higher socio-economic classes.

The Pseudo R^2 values for the demographic models were very small indicating that the demographics do not explain much of the variance.

ATTITUDES

The Affect of Attitude to Fish on the Frequency of Purchase of Fish and Different Fish Products in the Past.

The sample's mean attitude score was 80.3 with a standard deviation of 12.1 (n=310). The median score was 81.0 and the modal score was 84.0. The minimum attitude score was 43.0, the maximum score was 110.0 and the range of scores was 67. Theoretically the minimum attitude score was 17, the maximum score was 119 and the range of scores was 112. The greater the score the more positive the attitude towards fish.

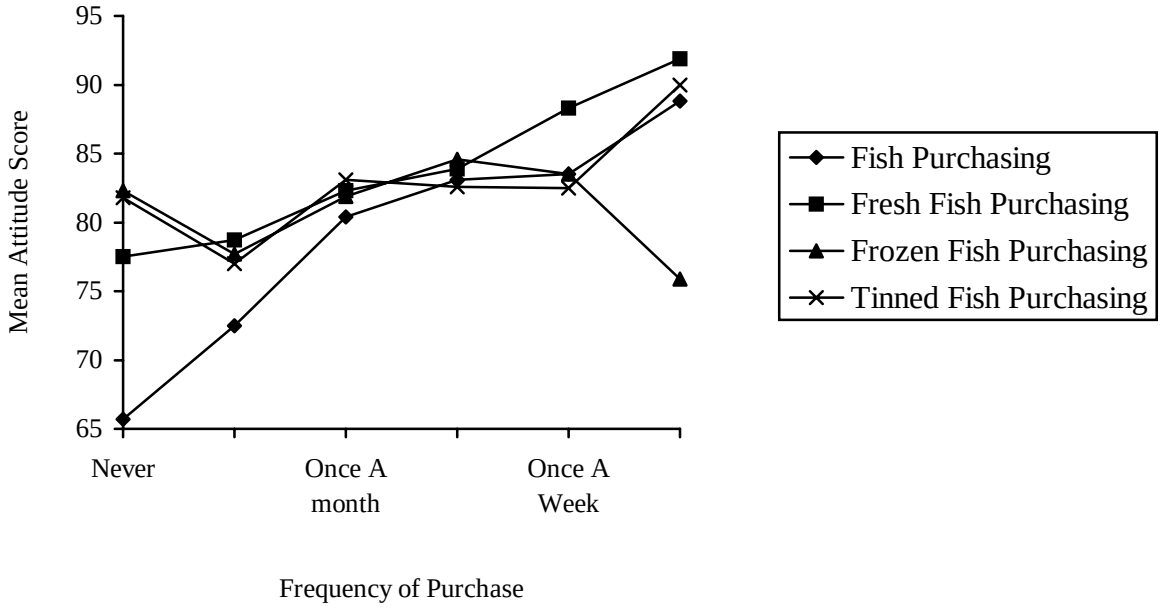
Table 40: The Mean Attitude Scores of Past General Fish Purchasers, Fresh, Frozen and Tinned Fish Purchasers.

Frequency of Purchase	Fish Purchasing n=310	Fresh Fish n=280	Frozen Fish n=280	Tinned fish n=280
Never	65.7 SD 12.0 n=30	77.5 SD 11.7 n=58	82.3 SD 11.8 n=32	81.8 SD 10.9 n=31
Less than once a month	72.5 SD 12.6 n=28	78.7 SD 11.2 n=76	77.7 SD 11.7 n=53	77.0 SD 11.4 n=47
Once a month	80.4 SD 9.9 n=103	82.3 SD 8.0 n=55	81.9 SD 10.3 n=76	83.1 SD 10.1 n=65
Once a fortnight	83.1 SD 7.2 n=15	83.9 SD 8.1 n=36	84.6 SD 9.5 n=52	82.6 SD 12.4 n=50
Once a week	83.5 SD 10.5 n=103	88.3 SD 11.0 n=46	83.5 SD 11.4 n=60	82.5 SD 9.5 n=80
More than once a week	88.8 SD 10.4 n=31	91.9 SD 9.3 n=9	75.9 SD 9.4 n=7	90.0 SF 14.9 n=7

It can be seen from Table 40 above and Figure 8 below that as the purchasing frequency of fish increased so did the attitude score. As the frequency of purchase of fresh fish increased the attitude scores also increased. There was no straightforward relationship between frequency of frozen fish purchase and attitude score. The most

frequent purchasers of frozen fish actually have a very low attitude score. There was an increase in attitudinal score from the least frequent to the quite frequent buyers of frozen fish. People who never purchased frozen fish had a higher attitudinal score than the least and most frequent frozen fish buyers. Tinned fish purchasers attitude scores increased with increasing frequency of purchase. People who never purchased tinned fish have a higher attitude score than the least frequent purchasers.

Figure 8: The Mean Attitude Scores of Past Fish Purchasers



The Affect of Attitude to Fish on Intention to Purchase Fish and Different Fish Products in the Next Week.

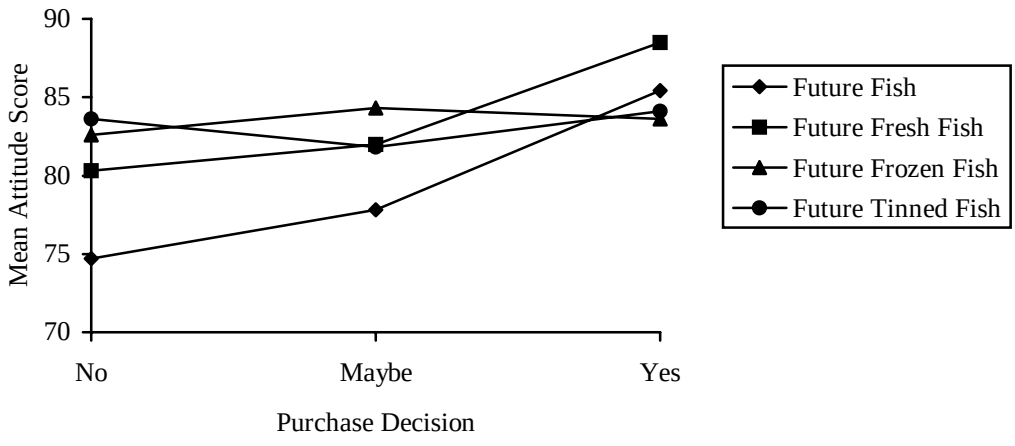
The mean attitude scores for the frequency of purchase of each type of fish are presented in Table 41 below and graphically represented in Figure 9.

Table 41: The Mean Attitude Scores for Future Fish Purchasing Behaviours.

Will you purchase in the next week?	Future Fish (n=310)	Future Fresh Fish (n=198)	Future Frozen Fish (n=198)	Future Tinned Fish (n=198)
No	74.7 SD 12.3 n=112	80.3 SD 11.0 n=92	82.6 SD 11.0 n=63	83.6 SD 12.3 n=65
Maybe	77.8 SD 10.9 n=50	82.0 SD 9.6 n=38	84.3 SD 11.1 n=46	81.8 SD 10.6 n=43
Yes	85.4 SD 12.1 n=148	88.5 SD 9.3 n=68	83.6 SD 10.5 n=89	84.1 SD 9.6 n=90

As the purchase of fish in the future became more definite, attitudinal scores increased. This pattern was repeated in the future purchase of fresh fish also. In future frozen fish purchasing, people who might buy frozen products had the highest attitude score. In future tinned purchasing, people who might buy tinned fish products had the lowest attitude score.

Figure 9: The Mean Attitude Scores for Future Fish Purchase



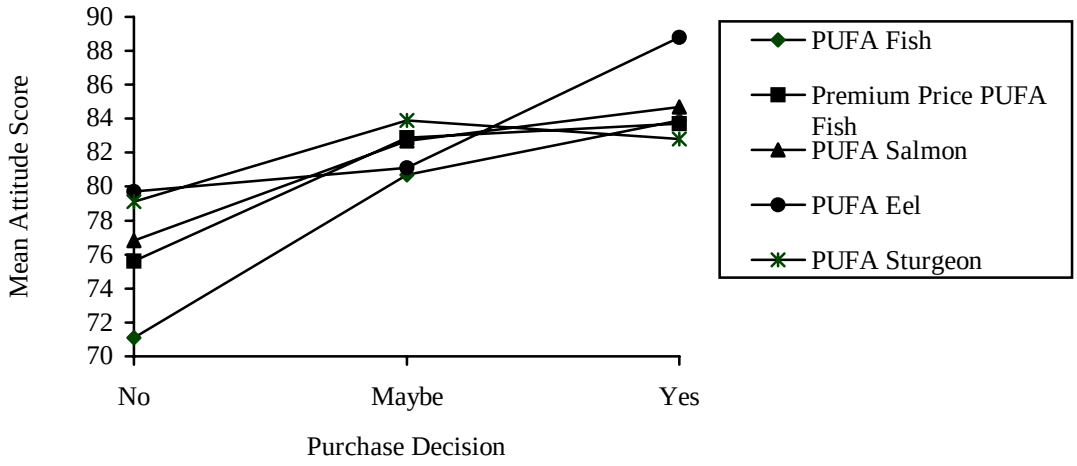
The Affect of Attitude to Fish on PUFA Fish Purchasing Behaviour.

Table 42: The Mean Attitude Scores for PUFA Fish Purchase Behaviour.

Will you purchase?	PUFA Fish n=310	Premium PUFA Fish	PUFA Salmon	PUFA Eel	PUFA Sturgeon
No	71.1 SD 13.7 n=64	75.6 SD 12.6 n=122	76.8 SD 12.5 n=156	79.7 SD 12.0 n=278	79.1 SD 12.3 n=227
Maybe	80.7 SD 9.8 n=92	82.9 SD 10.3 n=94	82.7 SD 10.9 n=70	81.1 SD 11.1 n=14	83.9 SD 8.9 n=63
Yes	83.9 SD 10.6 n=154	83.7 SD 11.1 n=94	84.7 SD 10.2 n=84	88.8 SD 11.2 n=17	82.8 SD 12.2 n=19

Generally as the purchasing of PUFA fish, premium price PUFA fish, PUFA salmon or PUFA eel became more definite, attitude towards fish consumption became increasingly positive. Respondents who would or would consider buying PUFA sturgeon had higher attitude scores than non-purchasers. However the people who might purchase PUFA sturgeon had a higher attitude score than the people who would purchase PUFA sturgeon. These relationships can be observed in Figure 10 below.

Figure 10: The Mean Attitude Scores for PUFA Fish Purchase Decisions



INVOLVEMENT IN HEALTHY EATING

The sample's mean involvement in healthy eating score was 50.3 with a standard deviation of 12.9 (n=311). The median score was 51.5 and the modal score was 50.0. The minimum score was 10.0, the maximum score was 70 and the range of scores was 60. Theoretically the lowest score was 10.0 and the highest score was 70.0 and the range of scores was 60. The reliability and factor structure of the Personal Interest Inventory can be observed in Appendix Four.

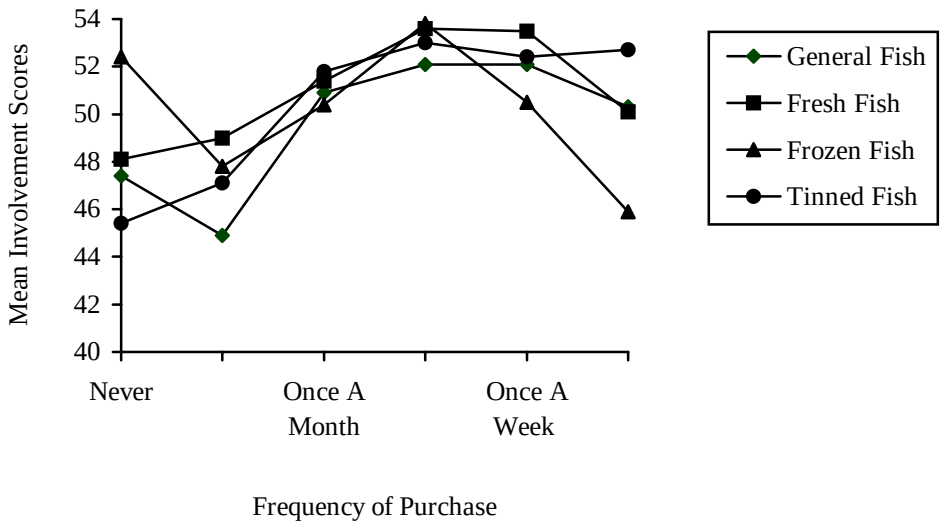
Past Fish Purchasing Behaviours and the Influence of Involvement in Healthy Eating.

It can be observed from Table 43 below that involvement in healthy eating for general fish purchasing increased from the Less Than Once A Month fish purchasers to the Once A Week purchasers. The involvement score dropped slightly for respondents eating fish more than once a week. It can also be observed from Table 43 below that involvement in healthy eating increased with the frequency of purchase of fresh fish but decreased slightly with the two groups of heaviest consumers. There appears to be a u-shaped relationship between frozen fish purchasers and involvement in healthy eating. The least and most frequent purchasers of frozen fish had the lowest involvement scores and fairly frequent purchasers of frozen fish had the highest involvement scores. Respondents who never purchased frozen fish had a high involvement in healthy eating score. Involvement in healthy eating increased with increasing frequency of tinned fish purchase. These relationships can be observed in Figure 11.

Table 43: The Mean Involvement in Healthy Eating Scores for Past General Fish Purchasing Behaviour, Fresh, Frozen and Tinned Fish Purchasing Behaviour.

Frequency of Purchase	Fish Purchasing n=310	Fresh Fish n=280	Frozen Fish n=282	Tinned fish n=280
Never	47.4 SD 16.6 n=30	48.1 SD 13.7 n=57	52.4 SD 10.8 n=32	45.4 SD 15.2 n=32
Less than once a month	44.9 SD 16.9 n=29	49.0 SD 12.4 n=77	47.8 SD 14.5 n=54	47.1 SD 13.6 n=47
Once a month	50.9 SD 12.0 n=103	51.4 SD 13.1 n=55	50.4 SD 13.3 n=76	51.8 SD 11.7 n=65
Once a fortnight	52.1 SD 9.1 n=15	53.6 SD 8.7 n=36	53.8 SD 10.3 n=52	53.0 SD 10.8 n=50
Once a week	52.1 SD 11.8 n=102	53.5 SD 11.4 n=46	50.5 SD 11.9 n=59	52.4 SD 11.3 n=79
More than once a week	50.3 SD 11.3 n=31	50.1 SD 15.4 n=9	45.9 SD 6.9 n=9	52.7 SF 12.9 n=7

Figure 11: Mean Involvement In Healthy Eating Scores for Past Fish Purchase Behaviour



Future Fish Purchase Behaviour and the Influence of Involvement in Healthy Eating

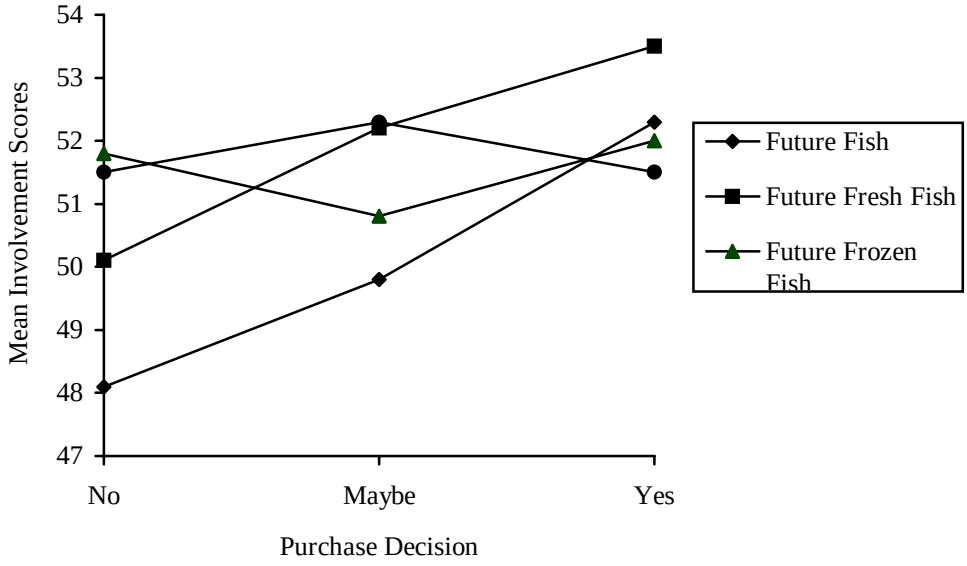
The relationships between involvement and the future purchase decisions for each type of fish can be observed in Table 44 and Figure 12 below.

Table 44: The Mean Involvement in Healthy Eating Scores for Future General, Fresh, Frozen and Tinned Fish Purchasing Behaviours.

Will you purchase in the next week?	Future Fish n=310	Future Fresh Fish n=197	Future Frozen Fish n=197	Future Tinned Fish n=197
No	48.1 SD 14.0 n=113	50.1 SD 13.6 n=91	51.8 SD 12.8 n=63	51.5 SD 12.8 n=65
Maybe	49.8 SD 11.9 n=50	52.2 SD 9.1 n=38	50.8 SD 11.6 n=46	52.3 SD 10.6 n=43
Yes	52.3 SD 12.1 n=147	53.5 SD 11.2 n=68	52.0 SD 11.9 n=88	51.5 SD 12.3 n=89

Involvement in healthy eating increased with the increasing probability of fish in general being purchased in the future. Involvement in healthy eating increased with the increasing probability of fresh fish being purchased in the future. People who might purchase frozen fish in the next week had lowest score for involvement in healthy eating. People who might buy tinned fish in the next week had the highest score for involvement in healthy eating.

Figure 12: Mean Involvement in Healthy Eating for Future Fish Purchase Decisions.



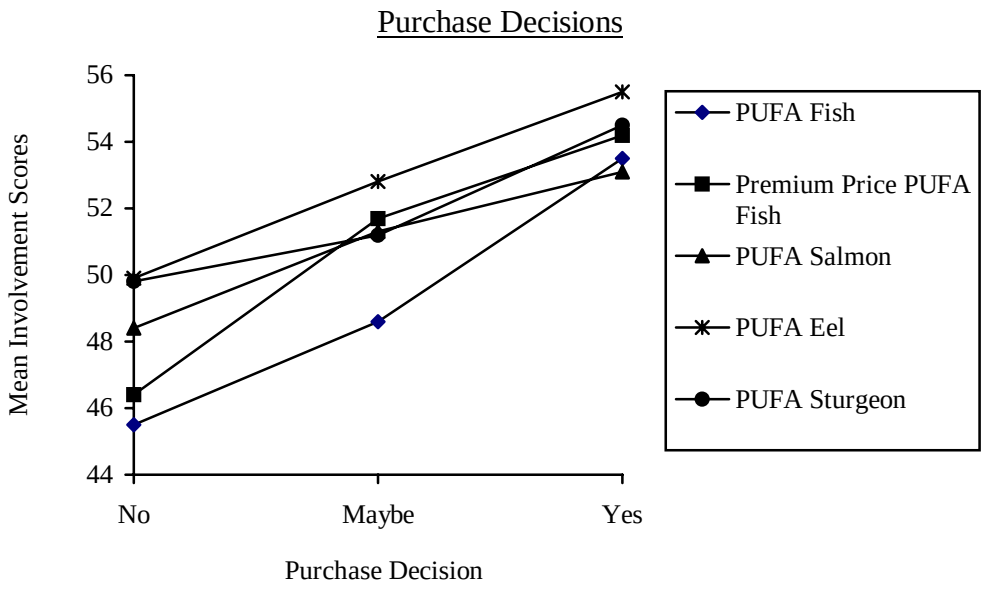
PUFA Fish Purchase Behaviour and the Influence of Involvement in Healthy Eating.

Table 45: The Mean Involvement in Healthy Eating Scores for PUFA Fish Purchase Behaviours.

Will you purchase?	PUFA Fish n=310	Premium PUFA Fish n=311	PUFA Salmon n=310	PUFA Eel n=309	PUFA Sturgeon n=309
No	45.4 SD 15.9 n=65	46.4 SD 14.0 n=123	48.4 SD 12.8 n=156	49.9 SD 13.1 n=278	49.8 SD 13.0 n=227
Maybe	48.6 SD 11.4 n=92	51.7 SD 10.9 n=94	51.3 SD 14.1 n=70	52.8 SD 8.1 n=14	51.2 SD 12.7 n=63
Yes	53.5 SD 11.5 n=153	54.2 SD 11.9 n=94	53.1 SD 11.6 n=84	55.5 SD 12.0 n=17	54.5 SD 12.0 n=19

The relationship between involvement in healthy eating and the purchase decisions for each type of PUFA fish can be observed in Table 45 and Figure 13 below. Generally as the probability of purchasing PUFA fish, premium price PUFA fish, PUFA salmon, PUFA eel and PUFA sturgeon became more definite involvement in healthy eating scores increased.

Figure 13: Mean Involvement Scores for PUFAFish



COGNITIVE STYLE

Past Fish Purchasing Behaviours and the Influence of Cognitive Style.

The sample's mean KAI was 36.97 with a standard deviation of 5.1 (n=310). The median score was 37.0 and the modal score was 35.0. The minimum score was 25, the maximum score was 56.0 and the range of scores was 31. The theoretical mean score for the thirteen item KAI was 36.5, the minimum score was 13.0, the maximum score was 60.0 and the range of scores was 47. The theoretical mean for the thirteen item KAI is 36.5, scores below this are Adaptive scores and above this are Innovative scores. The reliability and factor structure of the thirteen item KAI can be observed in Appendix Four.

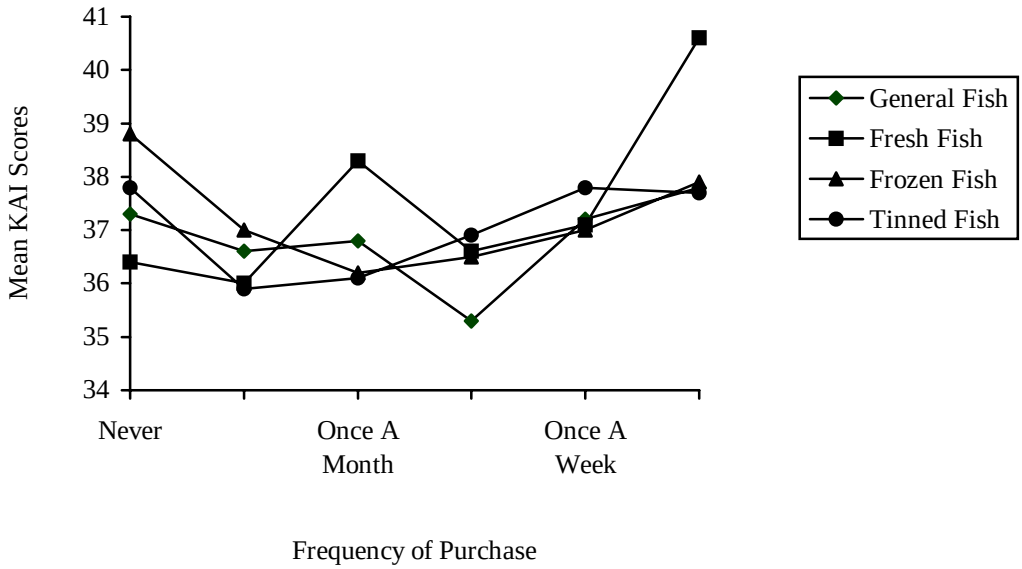
The relationships between cognitive style and past fish purchasing decisions can be observed in Table 46 and Figure 14 below.

Table 46: The Mean KAI Scores for Past General, Fresh, Frozen and Tinned Fish Purchasing Behaviours.

Frequency of Purchase	Fish Purchasing n=310	Fresh Fish n=280	Frozen Fish n=282	Tinned fish n=280
Never	37.3 SD 4.1 n=30	36.4 SD 3.7 n=58	38.8 SD 6.7 n=32	37.8 SD 4.8 n=32
Less than once a month	36.6 SD 5.5 n=29	36.0 SD 5.6 n=77	37.0 SD 5.8 n=54	35.9 SD 4.5 n=47
Once a month	36.8 SD 5.4 n=102	38.3 SD 5.8 n=55	36.2 SD 5.1 n=76	36.1 SD 6.3 n=65
Once a fortnight	35.3 SD 6.1 n=15	36.6 SD 4.9 n=35	36.5 SD 4.8 n=51	36.9 SD 4.7 n=49
Once a week	37.2 SD 4.9 n=103	37.1 SD 5.1 n=46	37.0 SD 4.4 n=60	37.8 SD 5.2 n=80
More than once a week	37.8 SD 5.1 n=31	40.6 SD 6.8 n=9	37.9 SD 2.8 n=7	37.7 SF 4.1 n=7

Most of the KAI scores for past fish purchasing were very close together near the Adaptive/Innovative division. As fish purchasing increased the respondents became slightly more Innovative. Respondents who purchased fortnightly were Adaptive. From Table 47 above it can be observed that people who did not buy fresh fish and the least frequent fresh fish purchasers were Adaptive. As frequency of purchase increased the respondents generally became more Innovative. As frozen fish purchase became more frequent the respondents became slightly more Innovative. People who never purchased frozen fish were the most Innovative The least frequent frozen fish purchasers were also quite Innovative. The least frequent tinned fish purchasers were Adaptive. As frequency of purchase increased the tinned fish purchasers became slightly more Innovative.

Figure 14: Mean KAI Scores for Past Fish Purchase Decisions



Future Fish Purchasing Behaviours and the Influence of Cognitive Style.

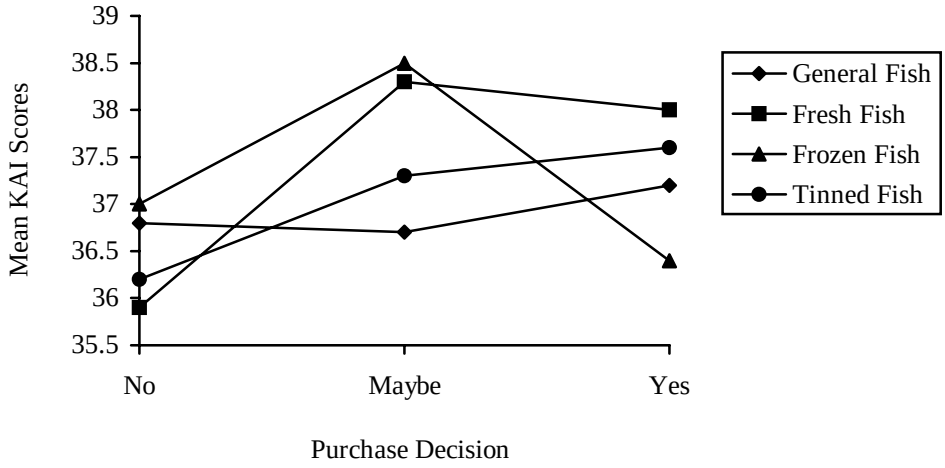
The theoretical mean KAI score is 36.5, scores above this are Innovative and scores below this are Adaptive. All the future fish purchasing scores were close to the theoretical mean and therefore the Adaptive/Innovative border.

Table 47: The Mean KAI Scores for Future General, Fresh, Frozen and Tinned Fish Purchasing Behaviours.

Will you purchase in the next week?	Future Fish n=310	Future Fresh Fish n=198	Future Frozen Fish n=198	Future Tinned Fish n=198
No	36.8 SD 5.2 n=112	35.9 SD 4.1 n=92	37.0 SD 5.5 n=63	36.2 SD 4.3 n=65
Maybe	36.7 SD 4.9 n=50	38.3 SD 5.5 n=38	38.5 SD 5.6 n=46	37.3 SD 5.5 n=43
Yes	37.2 SD 5.2 n=148	38.0 SD 5.7 n=68	36.4 SD 4.4 n=89	37.6 SD 5.4 n=90

It can be observed from Table 47 above and Figure 15 below that as future fish purchase becomes more definite the scores become slightly more Innovative. It can be observed from Table 47 above that respondents who will not buy fresh fish in the next week are Adaptive whereas respondents who might or will buy fresh fish are Innovative. Frozen fish purchasers are Adaptive whereas people who will not buy frozen fish or are only considering purchasing frozen fish are Innovative. Respondents who will not purchase tinned fish are Adaptive whereas respondents who will consider or will buy tinned fish are Innovative.

Figure 15: Mean KAI Scores and Future Fish Purchase Decisions



PUFA Fish Purchasing Behaviours and the Influence of Cognitive Style.

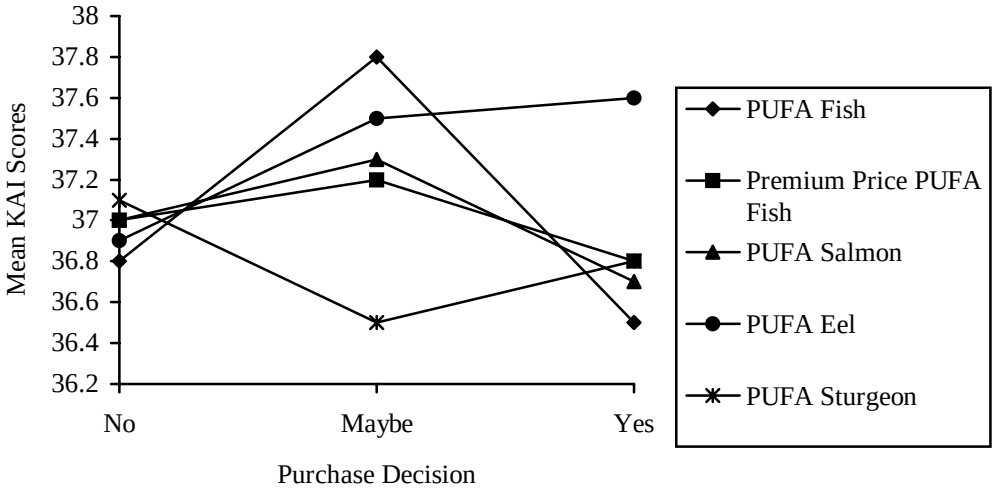
The relationship between cognitive style and PUFA fish purchase decisions can be observed from Table 48 and Figure 16 below.

Table 48: The Mean KAI Scores for PUFA Fish Purchasing Behaviours.

Will you purchase?	PUFA Fish n=310	Premium PUFA Fish n=311	PUFA Salmon n=310	PUFA Eel n=309	PUFA Sturgeon n=309
No	36.8 SD 4.8 n=65	37.0 SD 4.8 n=123	37.0 SD 4.5 n=157	36.9 SD 5.2 n=278	37.1 SD 4.3 n=227
Maybe	37.8 SD 5.1 n=92	37.2 SD 5.5 n=94	37.3 SD 6.1 n=70	37.5 SD 4.2 n=14	36.5 SD 5.8 n=63
Yes	36.5 SD 5.3 n=153	36.8 SD 5.2 n=94	36.7 SD 5.4 n=83	37.6 SD 5.3 n=17	36.8 SD 5.4 n=19

The theoretical mean KAI score is 36.5, scores below this are Adaptive and scores above this are Innovative. The majority of PUFA fish purchasers have Innovative scores but they are very close to the Adaptive/Innovative divide. There are no relationships between KAI scores and PUFA fish purchasing behaviours.

Figure 16: Mean KAI Scores and PUFA Fish Purchase Decisions.



ATTITUDE, INVOLVEMENT IN HEALTHY EATING AND COGNITIVE STYLE

Past Fish Purchasing Behaviour and the Influence of Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

Simple factorial analyses of variance and multiple regressions were performed to find out whether attitude, involvement in healthy eating and cognitive style influenced fish purchasing behaviour or interacted. For the simple factorial ANOVAs each of the psychological variables were divided into two groups. Attitude to fish was divided into negative (scores 17-67) and positive (scores 68-119). Involvement in healthy eating was divided into low involvement (scores 10-40) and high involvement (scores 41-70). Cognitive style was divided into Adaptors (scores 13-36.5) and Innovators (scores 36.6-65).

Table 49: Simple Factorial ANOVAs for Attitude to Fish, Involvement in Healthy Eating and KAI and Past Fish Purchasing Behaviours.

	Main Effects	2-Way Interactions	3-Way Interactions
General Fish Purchasing (n=307)	F=11.70 Sig of F=0.000 Att. F=33.46 Sig of F=0.000	Non Significant	Non Significant
Fresh Fish Purchasing (n=307)	F=7.27 Sig of F=0.000 Att. F=18.79 Sig of F=0.000	Att.-Inv. F=5.34 Sig. of F=0.021	Non Significant
Frozen Fish Purchasing (n=307)	F=6.82 Sig. of F=0.000	Non Significant	Non Significant
Tinned Fish Purchasing (n=307)	F=5.06 Sig of F=0.002 Att. F=10.53 Sig of F=0.001	F=3.01 Sig. of F=0.031 Att.-Inv. F=6.94 Sig. of F=0.009	Non Significant

It can be observed from Table 49 above that attitude to fish influenced general fish purchasing, fresh fish purchasing and tinned fish purchasing. For fresh fish and tinned fish purchasing there was a significant interaction between attitude to fish and involvement in healthy eating. Involvement in healthy eating and cognitive style did not influence any fish purchasing behaviours in the past.

Table 50: Past General Fish Purchasing Behaviour Predicted by Attitude, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	-2.67	0.00005*
Attitude	0.0505	0.00000*
Involvement	-0.00577	0.216
KAI	0.0118	0.344
Log-Likelihood	-434.52	
Pseudo R^2	0.084	
Percent Correct Predictions	36.7%	
Sample size	305	

It can be observed from Table 50 above that past general fish purchasing was significantly predicted from attitude to fish.

Table 51: Past Fresh Fish Purchasing Behaviour Predicted by Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	-2.99	0.00000*
Attitude	0.0494	0.00000*
Involvement	-0.00247	0.621
KAI	0.0176	0.175
Log-Likelihood	-513.01	
Pseudo R^2	0.0754	
Percent Correct Predictions	29.8%	
Sample size	304	

It can be observed from Table 51 above that past fresh fish purchasing was significantly predicted by attitude to fish.

Table 52: Past Frozen Fish Purchasing Behaviour Predicted by Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	0.976	0.144
Attitude	0.00857	0.173
Involvement	-0.00155	0.800
KAI	-0.0107	0.380
Log-Likelihood	-453.20	
Pseudo R^2	0.0032	
Percent Correct Predictions	28.0%	
Sample size	275	

Frozen fish purchase was not predicted by attitude to fish, involvement in healthy eating or cognitive style. A truncated sample was used for this analyses.

Table 53: Past Tinned Fish Purchasing Behaviour Predicted by Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	-0.864	0.229
Attitude	0.00958	0.132
Involvement	0.0125	0.0190*
KAI	0.0200	0.153
Log-Likelihood	-443..56	
Pseudo R^2	0.015	
Percent Correct Predictions	28.0%	
Sample size	275	

Past tinned fish purchase was predicted by involvement in healthy eating, i.e. a person who was more involved in health eating was more likely to have purchased tinned fish. A truncated sample was used for this analyses.

The results from the simple factorial ANOVA and multiple regression were the same for general fish purchasing, fresh fish purchasing and frozen fish purchasing. Tinned fish purchasing differed between the two statistical methods the ANOVA found attitude to fish to be an influence but the multiple regression predicted involvement in healthy eating to be an influence. The pseudo R^2 for past fish purchasing behaviour were quite small, ranging from 0.015-0.084 indicating that there are other factors which were important in determining purchases.

Future Fish Purchasing Behaviour and Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

Simple factorial ANOVAs and multiple regression were performed in order to find out whether attitude, involvement in healthy eating and KAI influenced future fish purchasing behaviour and whether there were any interactions. Each of the psychological variables were divided in the same way as above.

Table 54: Simple Factorial ANOVAs of Attitude to Fish, Involvement in Healthy Eating and Cognitive Style on Future Fish Purchasing Behaviours.

	Main Effects	2-Way Interactions	3-Way Interactions
Future Fish Purchasing (n=307)	F=6.49 Sig of F=0.000 Att. F=18.62 Sig of F=0.000	Non Significant	Non Significant
Future Fresh Fish Purchasing (n=307)	F=3.91 Sig of F=0.009 Att. F=11.16 Sig of F=0.001	Att.-Inv. F=5.16 Sig. of F=0.024	Non Significant
Future Frozen Fish Purchasing (n=307)	F=4.07 Sig. of F=0.007 Att. F=12.06 Sig of F=0.001	Non Significant	Non Significant
Future Tinned Fish Purchasing (n=307)	F=2.83 Sig. of F=0.039 Att. F=8.16 Sig of F=0.005	Att.-Inv. F=3.92 Sig. of F=0.049	Non Significant

It can be observed from Table 54 above that attitude to fish influenced future fish purchase, future fresh, frozen and tinned fish purchase. A significant interaction between attitude to fish and involvement in healthy eating was found for future fresh and tinned fish purchasing.

Table 55: Future Fish Purchase Predicted by Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	-3.84	0.00000*
Attitude	0.0459	0.00000*
Involvement	0.00121	0.836
KAI	0.0138	0.319
Log-Likelihood	-281.24	
Pseudo R^2	0.094	
Percent Correct Predictions	58.4%	
Sample size	305	

It can be observed from Table 55 above that attitude to fish significantly predicted future fish purchasing.

Table 56: Future Fresh Fish Purchasing Behaviour Predicted by Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	-4.35	0.00000*
Attitude	0.0448	0.00000*
Involvement	0.00280	0.634
KAI	0.0278	0.0255*
Log-Likelihood	-368.94	
Pseudo R^2	0.083	
Percent Correct Predictions	43.0%	
Sample size	304	

It can be seen from Table 56 that fresh fish purchasing was affected by attitude i.e. the more positive the attitude to fish the more likely the person was to purchase fresh fish in the future. Future fresh fish purchasing was also influenced by KAI scores i.e. the

greater the person's KAI score, i.e. the more Innovative they were the more likely they would purchase fresh fish in the future.

Table 57: Future Frozen Fish Purchasing Behaviour Predicted by Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	-2.22	0.0034*
Attitude	0.0315	0.00000*
Involvement	0.00120	0.823
KAI	0.000179	0.990
Log-Likelihood	-390.11	
Pseudo R^2	0.0410	
Percent Correct Predictions	28.2%	
Sample size	305	

It can be observed from Table 57 above that future frozen fish purchase was predicted by attitude to fish.

Table 58: Future Tinned Fish Purchasing Behaviour Predicted by Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	-3.01	0.00001*
Attitude	0.0326	0.00000*
Involvement	0.0000625	0.581
KAI	0.0209	0.0952
Log-Likelihood	-387.44	
Pseudo R^2	0.0451	
Percent Correct Predictions	43.0%	
Sample size	304	

It can be observed from Table 58 that future tinned fish purchasing was influenced by attitude to fish.

The two statistical methods both found attitude to fish to predict future fish purchase and future frozen and tinned fish purchase. Both the simple factorial ANOVA and the multiple regression found attitude to fish influenced fresh fish purchase but the multiple regression also found cognitive style to influence purchase. There was a two way interaction between attitude to fish and involvement in healthy eating for fresh and tinned fish purchasing. The pseudo R^2 values were generally slightly larger than those obtained for past fish purchasing but they were still quite small, ranging from 0.04-0.094 once again indicating there are other factors important in determining purchases.

Both past and future general fish purchase were influenced by attitude to fish. Past fresh fish purchase was influenced by attitude to fish. The multiple regression also found cognitive style influenced future fresh fish purchase. Past frozen fish purchase was not significantly influenced by any psychological variables. However future frozen fish purchase was influenced by attitude to fish. Past and future tinned fish purchase was influenced by attitude to fish. Past tinned fish purchase was found to be influenced by involvement in healthy eating according to the multiple regression.

PUFA Fish Purchasing Behaviours and the Influence of Attitude to Fish, Involvement in Healthy Eating and KAI Score.

Simple factorial analyses of variance and multiple regressions were performed to find out whether attitude, involvement in healthy eating and KAI scores influenced PUFA

fish purchasing behaviour. The simple factorial ANOVAs entailed dividing each of the psychological variables into two groups as described previously.

Table 59: Simple Factorial ANOVAs of Attitude to Fish, Involvement in Healthy Eating and Cognitive Style with PUFA Fish Purchase Behaviours.

	Main Effects	2-Way Interactions	3-Way Interactions
PUFA Fish Purchasing (n=307)	F=4.60 Sig of F=0.004 Att. F=8.40 Sig of F=0.004 Inv. F=3.08 Sig of F=0.080	Non Significant	Non Significant
Premium Price PUFA Fish Purchasing (n=307)	F=3.05 Sig of F=0.029	F=2.89 Sig. of F=0.036 Att.-Inv. F=4.68 Sig. of F=0.031	Non Significant
PUFA Salmon Purchasing (n=307)	Non Significant	Non Significant	Non Significant
PUFA Eel Purchasing (n=307)	Non Significant	Non Significant	Non Significant
PUFA Sturgeon Purchasing (n=307)	F=3.66 Sig of F=0.013 Att. F=9.66 Sig of F=0.002	Non Significant	Non Significant

It can be observed from Table 59 above that PUFA fish purchase was influenced by attitude to fish and involvement in healthy eating. PUFA sturgeon purchase was influenced by attitude to fish. Premium price PUFA fish, PUFA salmon and PUFA eel purchase were not influenced by any of the psychological variables. There was a two

way interaction between attitude to fish and involvement in healthy eating for premium price PUFA fish purchase.

Table 60: PUFA Fish Purchase Predicted by Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	-2.216	0.00075*
Attitude	0.0347	0.00000*
Involvement	0.00141	0.00868*
KAI	-0.0102	0.458
Log-Likelihood	-290.27	
Pseudo R^2	0.084	
Percent Correct Predictions	53.8%	
Sample size	305	

It can be observed from Table 60 above that PUFA fish purchasing was influenced by attitude to fish and involvement in healthy eating.

Table 61: Premium Price PUFA Fish Predicted by Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	-2.304	0.00047*
Attitude	0.0220	0.00061*
Involvement	0.0180	0.00068*
KAI	-0.00289	0.828
Log-Likelihood	-314.47	
Pseudo R^2	0.053	
Percent Correct Predictions	46.2%	
Sample size	305	

Premium price PUFA fish purchase was influenced by attitude to fish and involvement in healthy eating. The more positive a person's attitude to fish the more likely they were to purchase premium price PUFA fish. The more involved in healthy eating a person was the more likely they were to purchase premium price PUFA fish.

Table 62: PUFA Salmon Purchase Predicted by Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	-2.305	0.00146*
Attitude	0.0269	0.00003*
Involvement	0.00655	0.261
KAI	-0.00564	0.669
Log-Likelihood	-301.37	
Pseudo R^2	0.043	
Percent Correct Predictions	53.11%	
Sample size	305	

PUFA salmon purchase was influenced by attitude to fish.

Table 63: PUFA Eel Purchase Predicted by Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	-3.21	0.00568*
Attitude	0.0149	0.108
Involvement	0.0141	0.226
KAI	-0.00146	0.952
Log-Likelihood	-112.08	
Pseudo R^2	0.032	
Percent Correct Predictions	90.5%	
Sample size	304	

PUFA eel purchase was not influenced by attitude to fish, involvement in healthy eating or cognitive style.

Table 64: PUFA Sturgeon Purchase Predicted by Attitude to Fish, Involvement in Healthy Eating and Cognitive Style.

	B	Sig.
Constant	-1.78	0.0376*
Attitude	0.0172	0.0247*
Involvement	0.00298	0.650
KAI	-0.0106	0.450
Log-Likelihood	-214.79	
Pseudo R^2	0.020	
Percent Correct Predictions	73.4%	
Sample size	304	

It can be observed from Table 64 that PUFA sturgeon purchase was influenced by attitude to fish.

Both statistical methods found that attitude and involvement influenced PUFA fish and premium price PUFA fish purchasing. Both statistical methods found attitude influenced PUFA sturgeon purchase and none of the psychological variables influenced PUFA eel purchase behaviour. However the multiple regression found premium price PUFA fish was influenced by attitude to fish and involvement in healthy eating and PUFA salmon was influenced by attitude to fish where the simple factorial ANOVA had found none of the psychological variables to influence these behaviours. The pseudo R^2 values were quite small ranging from 0.02 to 0.084 indicating that there are other factors of importance in determining the purchase of

PUFA fish. The pseudo R^2 values for the psychological models were higher than the corresponding values for the demographic models.

THE DESCRIPTIVE MODELS OF FISH PURCHASING.

Multiple regressions were carried out on Limdep to find out what variables significantly contributed to explaining the purchase of each type of PUFA fish. The samples consisted of people who had purchased fish both in the past and in the future.

The Descriptive Models of Past Fish Purchase.

Demographic and psychological variables were entered into the descriptive models. The demographic variables included sex, age, socio-economic class, employment status, area inhabited, the number of people living in the respondent's house and the number of children the respondent had. The psychological variables included attitude to fish, involvement in healthy eating and cognitive style.

It can be observed from Table 65 that people who lived in the Midlands were more likely to have purchased fish in the past. People who had a positive attitude to fish were also more likely to have purchased fish. This model accounted for only 11% of the variance.

Table 65: The Descriptive Model for General Past Fish Purchase.

-

	B	Sig.
Constant	-2.941	0.00041*
Sex Male	-0.0771	0.679
Age 16-24	-0.665	0.0774
Age 25-34	-0.375	0.305
Age 35-44	-0.125	0.736
Age 44-54	-0.128	0.737
Age 55-64	-0.221	0.518
People	0.0728	0.362
Children	0.0920	0.386
Student	0.479	0.132
Retired	-0.0296	0.930
Housewife/husband	0.0937	0.666
Unemployed	0.248	0.484
Part Time	-0.133	0.561
Classes AB	0.125	0.583
Class C_1	-0.105	0.580
Class C_2	0.0476	0.790
South	0.212	0.202
Midlands	0.398	0.0382*
Attitude	0.0504	0.00000*
Involve	-0.00746	0.141
KAI	0.0163	0.256
MU(1)	0.518	0.00000*
MU(2)	1.664	0.00000*
MU(3)	1..814	0.00000*
MU(4)	3.118	0.00000*
Log Likelihood	-410.464	
Pseudo R^2	0.111	
% Correct Predictions	38.18	
Sample Size	296	

Table 66: The Descriptive Model for Past Fresh Fish Purchase.

	B	Sig.
Constant	-1.737	0.0681
Sex Male	-0.246	0.227
Age 16-24	-1.334	0.00079*
Age 25-34	-1.091	0.00490*
Age 35-44	-0.716	0.0688
Age 44-54	-0.594	0.104
Age 55-64	-0.311	0.340
People	0.0625	0.516
Children	-0.0827	0.518
Student	0.368	0.394
Retired	-0.664	0.0527
Housewife/husband	-0.157	0.525
Unemployed	-0.489	0.296
Part Time	-0.255	0.240
Classes AB	0.0871	0.711
Class C_1	-0.160	0.445
Class C_2	0.172	0.418
South	-0.203	0.238
Midlands	-0.335	0.0808
Attitude	0.0310	0.00002*
Involve	0.00121	0.856
KAI	0.0300	0.0805
MU(1)	0.909	0.00000*
MU(2)	1.518	0.00000*
MU(3)	1.97	0.00000*
MU(4)	3.170	0.00000*
Log Likelihood	-403.656	
Pseudo R^2	0.0860	
% Correct Predictions	33.46	
Sample Size	266	

The 16-24 age group and the 25-34 age group were less likely to have purchased fresh fish in the past. People who had a positive attitude to fish were more likely to have purchased fresh fish. This model only accounted for 9% of the variance.

Table 67: The Descriptive Model for Past Frozen Fish Purchase.

	B	Sig.
Constant	-0.542	0.539
Sex Male	0.115	0.565
Age 16-24	0.959	0.0161*
Age 25-34	0.459	0.216
Age 35-44	0.674	0.0813
Age 44-54	0.517	0.159
Age 55-64	0.0792	0.825
People	0.0759	0.378
Children	0.188	0.119
Student	-0.700	0.0646
Retired	0.661	0.0594
Housewife/husband	0.464	0.0461
Unemployed	0.500	0.219
Part Time	0.326	0.155
Classes AB	-0.171	0.476
Class C_1	-0.161	0.394
Class C_2	-0.0597	0.760
South	0.187	0.280
Midlands	0.366	0.0628
Attitude	0.0161	0.0302*
Involve	-0.000801	0.902
KAI	-0.0159	0.348
MU(1)	0.806	0.00000*
MU(2)	1.624	0.00000*
MU(3)	2.195	0.00000*
MU(4)	3.658	0.00000*
Log Likelihood	-404.099	
Pseudo R^2	0.0752	
% Correct Predictions	32.71	
Sample Size	266	

People in the 16-24 age group were more likely to have purchased frozen fish in the past. People with a positive attitude were more likely to have purchased frozen fish in the past. This model accounted for only 8% of the variance.

Table 68: The Descriptive Model for Past Tinned Fish Purchase.

	B	Sig.
Constant	-1.301	0.165
Sex Male	-0.0761	0.706
Age 16-24	0.234	0.584
Age 25-34	0.555	0.205
Age 35-44	0.697	0.124
Age 44-54	0.784	0.0606
Age 55-64	0.422	0.300
People	0.188	0.0217*
Children	-0.162	0.127
Student	0.321	0.421
Retired	0.0592	0.880
Housewife/husband	0.295	0.209
Unemployed	-0.782	0.0374*
Part Time	-0.0395	0.862
Classes AB	-0.0512	0.820
Class C_1	-0.266	0.211
Class C_2	0.0203	0.926
South	-0.116	0.486
Midlands	-0.0304	0.886
Attitude	0.00796	0.292
Involve	0.0137	0.0237*
KAI	0.0156	0.334
MU(1)	0.722	0.00000*
MU(2)	1.427	0.00000*
MU(3)	1.938	0.00000*
MU (4)	3.504	0.00000*
Log Likelihood	-411.241	
Pseudo R^2	0.0587	
% Correct Predictions	35.34	
Sample Size	266	

The greater the number of people in the respondent's house the greater the probability they have purchased tinned fish in the past. The more involved a person was with healthy eating the more likely they were to have purchased tinned fish. People who were unemployed were less likely to have purchased tinned fish in the past. This model only accounted for 6% of the variance.

A stepwise multiple regression was performed using SPSS to explain the number of species/products purchased in the past.

Table 69: The Descriptive Model for the Number of Species/Products Purchased in the Past.

No. Species/Products Purchased (n=276)	Adj. R^2	B	Sig.
	0.0885		
Attitude		0.0673	0.0026
Involvement		0.0397	0.0424
People		0.360	0.0234
Northerners		-1.301	0.0085

The number of species/products purchased increased as attitude scores increased and involvement in healthy eating increased. As the number of people in the household increased the number of species/products purchased also increased. Northerners were less likely to purchase a large number of species/products.

The models containing both the psychological and demographic variables explain slightly more variance than the models containing either demographic or psychological variables, the pseudo R^2 ranged from 0.0587 to 0.111.

The Descriptive Models of Future Fish Purchasing Behaviour.

The variables entered for the following types of behaviour were demographic and psychological. The demographic variables included sex, age, socio-economic class, employment status, area inhabited, the number of people living in the respondent's house and the number of children the respondent has.

Table 70: The Descriptive Model for Future General Fish Purchase.

	B	Sig.
Constant	-4.704	0.00001*
Sex Male	0.164	0.431
Age 16-24	0.273	0.545
Age 24-34	0.362	0.389
Age 35-44	0.655	0.149
Age 45-54	0.430	0.310
Age 55-64	0.840	0.0367*
People	0.0922	0.274
Children	0.0453	0.702
Student	0.788	0.0574
Retired	0.708	0.0848
Housewife/husband	0.314	0.174
Unemployed	0.178	0.723
Part Time	0.145	0.523
Classes AB	0.189	0.502
Class C_1	-0.273	0.178
Class C_2	0.0873	0.668
South	0.173	0.352
Midlands	-0.0762	0.700
Attitude	0.0445	0.00000*
Involve	0.00289	0.637
KAI	0.0104	0.524
MU(1)	0.524	0.00000*
Log Likelihood	-262.705	
Pseudo R^2	0.133	
% Correct Predictions	60.14	
Sample Size	296	

People in the 55-64 age group were more likely to purchase fish in the future. People with a positive attitude to fish were more likely to purchase fish in the future. This model accounted for 13% of the variance.

Table 71: The Descriptive Model for Future Fresh Fish Purchase.

	B	Sig.
Constant	-2.558	0.0534
Sex Male	0.0707	0.815
Age 16-24	-2.336	0.00014*
Age 25-34	-1.521	0.00965*
Age 35-44	-1.698	0.00401*
Age 45-54	-1.678	0.00164*
Age 55-64	-0.916	0.106
People	0.0609	0.635
Children	-0.177	0.263
Student	0.594	0.318
Retired	-1.631	0.00188*
Housewife/husband	-0.297	0.396
Unemployed	-0.0935	0.882
Part Time	-0.329	0.325
Classes AB	0.215	0.512
Class C_1	-0.414	0.242
Class C_2	-0.0197	0.947
South	-0.166	0.501
Midlands	-0.593	0.0322*
Attitude	0.0393	0.00051*
Involve	-0.00418	0.662
KAI	0.0446	0.0789
MU(1)	0.636	0.00000*
Log Likelihood	-165.365	
Pseudo R^2	0.159	
% Correct Predictions	62.96	
Sample Size	189	

People in the age groups 16-24, 25-34, 35-44 and 45-54 were less likely to purchase fresh fish in the future. People who were retired were also less likely to purchase fish. People who lived in the Midlands were less likely to purchase fresh fish in the future. People who had a positive attitude to fish were more likely to purchase fresh fish in the future. This model accounted for 16% of the variance.

Table 72: The Descriptive Model for Future Frozen Fish Purchase.

	B	Sig.
Constant	-0.538	0.668
Sex Male	-0.229	0.369
Age 16-24	1.190	0.0346*
Age 24-34	0.937	0.0929
Age 35-44	1.100	0.0530
Age 45-54	0.885	0.0908
Age 55-64	0.149	0.749
People	0.0424	0.723
Children	0.203	0.184
Student	-0.536	0.290
Retired	0.340	0.493
Housewife/husband	-0.488	0.124
Unemployed	-0.549	0.309
Part Time	-0.481	0.152
Classes AB	-0.652	0.0347*
Class C_1	0.0285	0.913
Class C_2	-0.183	0.483
South	0.157	0.498
Midlands	0.213	0.378
Attitude	0.0139	0.153
Involve	0.00600	0.484
KAI	-0.0308	0.198
MU(1)	0.683	0.00000*
Log Likelihood	-182.90	
Pseudo R^2	0.0925	
% Correct Predictions	52.91	
Sample Size	189	

People in classes A and B were less likely to purchase frozen fish in the future. People in the 16-24 age group were more likely to purchase frozen fish in the future. This model only accounted for 9% of the variance.

Table 73: The Descriptive Model for Future Tinned Fish Purchase.

	B	Sig.
Constant	-2.044	0.0884
Sex Male	-0.0606	0.820
Age 16-24	0.660	0.188
Age 24-34	1.239	0.0136*
Age 35-44	0.887	0.0905
Age 45-54	1.139	0.0191*
Age 55-64	0.768	0.0797
People	0.210	0.0820
Children	-0.0931	0.520
Student	0.287	0.577
Retired	0.446	0.332
Housewife/husband	0.0357	0.904
Unemployed	-0.318	0.542
Part Time	-0.400	0.177
Classes AB	-0.301	0.311
Class C_1	-0.219	0.414
Class C_2	-0.100	0.695
South	0.00914	0.968
Midlands	0.272	0.274
Attitude	0.0102	0.267
Involve	-0.00266	0.740
KAI	0.0145	0.512
MU(1)	0.625	0.00000*
Log Likelihood	-187.853	
Pseudo R^2	0.0631	
% Correct Predictions	54.50	
Sample Size	189	

People in the 24-34 or 45-54 age groups were more likely to purchase tinned fish in the future. This model only accounted for 6% of the variance.

Future Number of Species/Products Purchase.

A stepwise multiple regression was performed on SPSS to investigate what variables would explain the future number of species/products purchased. None of the

demographic or psychological variables contributed significantly to explaining the number of species/products that would be purchased in the future.

The pseudo R^2 values for these models ranged from 0.0631-0.159 and were higher than the figures for the models containing either the demographic or the psychological variables; they were also higher than the figures obtained for the past descriptive models.

The Descriptive Models for the Purchase of Each Variety of PUFA Fish.

Demographic, psychological and behavioural variables were entered into the predictive models. The demographic variables covered sex, age, class, employment status, area inhabited, the number of people living in the respondent's house and the number of children the respondent had. The psychological variables included attitude to fish, involvement in healthy eating and cognitive style. The behavioural variables included past and future purchase of fresh frozen and tinned fish, the past and future purchase of twenty species and products and the number of species and products purchased in the past and future.

Two models were investigated. In model one the respondents' answers to whether they had purchased a certain species in the past and whether they would purchase it in the future were added and this was performed for each species/product. Two species, mullet and carp, were omitted from the analyses as nobody stated they would purchase them in the future.

In model two both past and future purchase of each of the twenty species/products were entered separately. Limdep omitted certain variables either because there was a lack of variation or due to collinearity.

Table 74: The Descriptive Model for PUFA Fish Purchase (Model One).

Model 1	B	Sig.	Model 1	B	Sig.
Constant	-2.147	0.266	Salmon	0.0649	0.807
Attitude	0.062	0.0892	Prawns	0.0854	0.737
Involve	0.00292	0.811	Bre/Bat Fillets	0.0665	0.780
KAI	-0.00782	0.809	Trout	0.118	0.720
Fresh	-0.133	0.729	Sardines	-0.846	0.725
Frozen	-0.210	0.644	Sex Male	-0.0171	0.960
Tinned	0.779	0.0908	Age 16-24	0.171	0.815
Future Fresh	0.0886	0.793	Age 25-34	-0.167	0.820
Future Frozen	0.409	0.242	Age 35-44	-0.208	0.762
Future Tinned	-0.428	0.286	Age 45-54	0.159	0.822
No. of Fish Bought	0.0334	0.707	Age 55-64	-0.298	0.622
Fut. No. Bought	-0.0755	0.649	People	0.283	0.121
Cod	0.146	0.408	Children	-0.273	0.238
Haddock	0.116	0.534	Student	-0.266	0.689
Fish Fingers	-0.0594	0.792	Retired	0.135	0.826
Smoked Salmon	-0.372	0.333	Housewife	-0.0502	0.901
Monkfish	-0.736	0.181	Unemployed	0.784	0.338
Kippers	0.443	0.0716	Part Time	-0.273	0.506
Crab Sticks	0.198	0.480	Classes AB	0.357	0.183
Smoked Mackerel	0.226	0.443	Class C_1	0.193	0.616
Plaice	-0.227	0.327	Class C_2	-0.0728	0.823
Fish Pies	-0.133	0.656	South	-0.194	0.577
Tin Tuna Salmon	0.0976	0.705	Midlands	-0.469	0.162
Fish In Sauce	0.570	0.0822	MU (1)	1.426	0.00000*
Skate	0.372	0.477			
Log likelihood		-142.005			
Pseudo R^2		0.190			
% Correct Predictions		61.83			
Sample Size		186			

No variables made a significant contribution to predicting PUFA fish in model one. This model only accounted for 19% of the variance.

Two variables made a significant contribution to predicting PUFA fish purchase in model two. People who had purchased tinned fish or fish in sauce in the past were more likely to purchase PUFA fish. This model accounted for 28% of the variance.

Table 75: The Descriptive Model for PUFA Fish Purchase (Model Two).

Model 2	B	Sig.		B	Sig.
Constant	-4.514	0.0582	Future Smoked Salmon	-1.458	0.263
Attitude	0.0313	0.0947	Future Monkfish	-4.836	0.997
Involve	0.0134	0.425	Future Kippers	0.349	0.706
KAI	0.0102	0.829	Future Crab Sticks	-0.776	0.556
Fresh	-0.0211	0.968	Future Smoked Mackerel	-0.338	0.694
Frozen	-0.312	0.599	Future Plaice	-0.457	0.578
Tinned	1.588	0.0298*	Future Fish Pies	-0.715	0.591
Future Fresh	0.149	0.760	Future Tin Tuna Salmon	0.00870	0.991
Future Frozen	0.446	0.321	Future Fish in Sauce	-1.565	0.298
Future Tinned	-0.879	0.151	Future Salmon	0.134	0.886
No. of Fish Bought	-0.869	0.645	Future Prawns	-1.204	0.175
Future No. Bought	0.585	0.358	Future Breaded/Battered Fillets	-0.615	0.527
Cod	-0.0631	0.908	Future Trout	-1.785	0.120
Haddock	0.523	0.275	Future Sardines	-0.0707	0.935
Fish Fingers	0.121	0.797	Sex Male	-0.128	0.786
Smoked Salmon	-0.0656	0.917	Age 16-24	0.639	0.531
Monkfish	-1.040	0.221	Age 25-34	-0.0948	0.922
Kippers	0.696	0.108	Age 35-44	0.0402	0.965
Mullet	1.556	0.314	Age 45-54	0.316	0.745
Crab Sticks	0.515	0.302	Age 55-64	-0.336	0.697
Smoked Mackerel	0.333	0.509	People	0.312	0.147
Plaice	-0.206	0.618	Children	-0.234	0.401
Fish Pies	-0.337	0.543	South	-0.0414	0.935
Tin Tuna Salmon	-0.266	0.663	Midlands	-0.726	0.0997
Fish In Sauce	1.747	0.0176*	Student	-0.186	0.845
Skate	-0.147	0.867	Retired	0.533	0.516
Salmon	-0.132	0.762	Housewife/husband	-0.211	0.729
Prawns	0.385	0.406	Unemployed	1.313	0.161
Breaded/Battered Fillets	0.248	0.589	Part Time	-0.395	0.477
Trout	0.158	0.728	Classes AB	0.238	0.615
Carp	-2.380	0.995	Class C_1	0.324	0.503
Sardines	-0.120	0.779	Class C_2	-0.00342	0.994
Future Cod	-0.0299	0.964	MU (1)	1.599	0.00000*
Future Haddock	-0.430	0.579			
Future Fish Fingers	-1.169	0.204			
Log Likelihood		-126.784			
Pseudo R^2		0.277			
% Correct Predictions		67.20			
Sample Size		186			

Table 76: The Descriptive Model for Premium Price PUFA Fish Purchase (Model One).

Model 1	B	Sig.	Model 1	B	Sig.
Constant	-0.902	0.222	Salmon	0.199	0.914
Attitude	0.0103	0.423	Prawns	-0.0257	0.914
Involve	0.0225	0.0412*	Bre/Bat Fillets	0.113	0.580
KAI	-0.00883	0.712	Trout	-0.0698	0.796
Fresh	0.118	0.761	Sardines	0.0510	0.786
Frozen	0.108	0.818	Sex Male	0.367	0.273
Tinned	0.121	0.777	Age 16-24	0.136	0.835
Future Fresh	0.0164	0.954	Age 25-34	-0.109	0.863
Future Frozen	0.321	0.283	Age 35-44	-0.317	0.609
Future Tinned	-0.215	0.537	Age 45-54	-0.146	0.816
No. of Fish Bought	-0.0341	0.687	Age 55-64	0.0865	0.874
Fut. No. Bought	-0.153	0.906	People	0.162	0.232
Cod	-0.113	0.529	Children	-0.104	0.518
Haddock	0.0690	0.710	Student	0.247	0.686
Fish Fingers	-0.193	0.265	Retired	0.0350	0.945
Smoked Salmon	-0.148	0.603	Housewife	-0.310	0.335
Monkfish	-0.247	0.638	Unemployed	-1.110	0.116
Kippers	0.481	0.0162*	Part Time	-0.149	0.702
Crab Sticks	0.535	0.0433*	Classes AB	0.0616	0.862
Smoked Mackerel	0.0937	0.703	Class C_1	0.272	0.376
Plaice	-0.173	0.408	Class C_2	-0.0172	0.952
Fish Pies	-0.132	0.605	South	0.0636	0.830
Tin Tuna Salmon	-0.0686	0.766	Midlands	-0.0426	0.890
Fish In Sauce	0.578	0.0356*	MU (1)	1.138	0.00000
Skate	0.609	0.275			
Log likelihood		-174.237			
Pseudo R^2		0.146			
% Correct Predictions		51.61			
Sample Size		186			

Four variables in model one significantly contributed to predicting premium price PUFA fish purchase. The more a person was involved in healthy eating the more likely they were to purchase premium price PUFA fish. If a person purchased kippers, crab sticks or fish in sauce they were also more likely to purchase premium price PUFA fish. This model accounted for only 15% of the variance.

In model two (See Table 77) three variables were found to significantly contribute to predicting premium price PUFA fish purchase. People who were involved in healthy eating were more likely to purchase premium price PUFA fish. People who had purchased crab sticks or fish in sauce in the past were also more likely to purchase premium price PUFA fish. This model accounted for 21% of the variance, more than model one.

Table 77: The Descriptive Model for Premium Price PUFA Fish Purchase (Model Two).

Model 2	B	Sig.		B	Sig.
Constant	-2.979	0.145	Future Smoked Salmon	0.234	0.802
Attitude	0.0101	0.507	Future Monkfish	-4.414	0.999
Involve	0.0265	0.0367*	Future Kippers	1.029	0.186
KAI	-0.0182	0.573			
Fresh	0.499	0.291	Future Crab Sticks	-0.498	0.681
Frozen	0.0955	0.854	Future Smoked Mackerel	-0.743	0.291
Tinned	0.717	0.224	Future Plaice	0.298	0.693
Future Fresh	-0.0907	0.804	Future Fish Pies	0.416	0.682
Future Frozen	0.462	0.218	Future Tin Tuna Salmon	0.233	0.708
Future Tinned	-0.712	0.178	Future Fish in Sauce	0.497	0.647
No. of Fish Bought	-0.0755	0.576			
Future No. Bought	-0.00885	0.986	Future Salmon	1.194	0.189
Cod	0.0829	0.835	Future Prawns	-0.267	0.715
Haddock	0.0526	0.897	Future Breaded/Battered Fillets	0.513	0.477
Fish Fingers	0.0868	0.817	Future Trout	-0.764	0.308
Smoked Salmon	-0.305	0.458			
Monkfish	-0.00370	0.997	Future Sardines	0.0905	0.886
Kippers	0.411	0.182	Sex Male	0.698	0.109
Mullet	0.576	0.607	Age 16-24	0.355	0.651
Crab Sticks	0.872	0.0204*	Age 25-34	0.210	0.781
Smoked Mackerel	0.474	0.224	Age 35-44	0.0368	0.961
Plaice	-0.396	0.267	Age 45-54	0.0635	0.930
Fish Pies	-0.735	0.0829	Age 55-64	0.161	0.815
Tin Tuna Salmon	-0.0386	0.943	People	0.207	0.207
Fish In Sauce	1.096	0.0130*	Children	-0.0706	0.707
Skate	0.334	0.611	South	0.257	0.515
Salmon	0.00820	0.981	Midlands	-0.344	0.378
Prawns	0.233	0.538	Student	0.872	0.318
Breaded/Battered Fillets	-0.0887	0.816	Retired	0.274	0.668
Trout	-0.000968	0.998	Housewife/husband	-0.239	0.596
Carp	-5.709	0.999	Unemployed	-0.950	0.197
Sardines	0.150	0.641	Part Time	-0.253	0.600
Future Cod	-0.0457	0.930	Classes AB	-0.314	0.492
Future Haddock	0.207	0.717	Class C_1	0.112	0.775
Future Fish Fingers	-0.819	0.225	Class C_2	-0.0108	0.975
			MU(1)	1.242	0.00000*
Log Likelihood		-161.505			
Pseudo R^2		0.209			
% Correct Predictions		58.06			
Sample Size		186			

Table 78: The Descriptive Model for PUFA Salmon Purchase (Model One).

Model 1	B	Sig.	Model 1	B	Sig.
Constant	-0.786	0.681	Salmon	0.528	0.0565
Attitude	0.00844	0.560	Prawns	-0.323	0.264
Involve	0.00261	0.809	Bre/Bat Fillets	-0.0167	0.953
KAI	-0.0254	0.377	Trout	0.456	0.211
Fresh	0.979	0.00775*	Sardines	-0.0827	0.735
Frozen	0.240	0.632	Tried Salmon	0.124	0.576
Tinned	-0.357	0.450	Sex Male	0.0776	0.816
Future Fresh	-0.401	0.218	Age 16-24	0.689	0.351
Future Frozen	-0.179	0.599	Age 25-34	0.391	0.565
Future Tinned	-0.525	0.148	Age 35-44	0.565	0.361
No. of Fish Bought	-0.0371	0.802	Age 45-54	0.415	0.526
Fut. No. Bought	0.0190	0.919	Age 55-64	0.290	0.621
Cod	-0.0460	0.842	People	0.232	0.101
Haddock	-0.0762	0.765	Children	-0.397	0.0469*
Fish Fingers	-0.196	0.455	Student	0.0143	0.986
Smoked Salmon	0.104	0.778	Retired	0.116	0.826
Monkfish	0.383	0.401	Housewife	-0.0202	0.961
Kippers	-0.188	0.488	Unemployed	0.258	0.742
Crab Sticks	0.426	0.0952	Part Time	0.134	0.752
Smoked Mackerel	0.161	0.552	Classes AB	0.181	0.631
Plaice	0.0983	0.677	Class C_1	-0.430	0.251
Fish Pies	-0.0520	0.863	Class C_2	-0.260	0.447
Tin Tuna Salmon	0.333	0.217	South	0.108	0.730
Fish In Sauce	0.405	0.201	Midlands	-0.423	0.225
Skate	-0.0347	0.954	MU (1)	0.808	0.00000*
Log likelihood		-161.109			
Pseudo R^2		0.189			
% Correct Predictions		63.44			
Sample Size		186			

Two variables significantly contributed to explaining PUFA salmon purchase. People who had purchased fresh fish in the past were more likely to purchase PUFA salmon. People who had children were less likely to purchase PUFA salmon. One variable, salmon, was nearly significant 0.0565. People who purchased salmon would be more likely to purchase PUFA salmon. This model accounted for 19% of the variance.

Six variables were found to significantly contribute to predicting PUFA salmon purchase in model two (See Table 79). People who bought fresh fish in the past were more likely to buy PUFA salmon but people who were going to buy fresh fish in the future were less likely to purchase PUFA salmon. People who were going to purchase tinned fish in the future were also less likely to purchase PUFA salmon. People who purchased monkfish were more likely to purchase PUFA salmon. The greater the number of people in the house the greater the probability of PUFA salmon being purchased. The greater the number of children in the house the less likely it was that PUFA salmon would be purchased. This model accounted for 69% of the variance.

Table 79: The Descriptive Model for PUFA Salmon Purchase (Model Two).

Model 2	B	Sig.		B	Sig.
Constant	-2.507	0.286	Future Smoked Salmon	-0.564	0.570
Attitude	0.0227	0.218	Future Monkfish	-6.626	0.995
Involve	0.000651	0.961	Future Kippers	-0.205	0.843
KAI	-0.0120	0.734	Future Crab Sticks	1.458	0.0739
Fresh	1.246	0.00866*	Future Smoked Mackerel	-0.420	0.620
Frozen	0.427	0.452	Future Plaice	-0.638	0.497
Tinned	-0.817	0.196	Future Fish Pies	1.325	0.228
Future Fresh	-0.848	0.0492*	Future Tin Tuna Salmon	0.606	0.406
Future Frozen	-0.575	0.185	Future Fish in Sauce	2.057	0.0905
Future Tinned	-1.143	0.0225*	Future Salmon	1.601	0.0841
No. of Fish Bought	-0.0747	0.746	Future Prawns	-1.024	0.243
Future No. Bought	0.112	0.835	Future Breaded/Battered	0.544	0.492
Cod	0.225	0.694	Future Trout	-0.0812	0.940
Haddock	0.387	0.475	Future Sardine	-0.753	0.311
Fish Fingers	-0.477	0.393	Tried Salmon	0.244	0.395
Smoked Salmon	0.203	0.678	Sex Male	0.0714	0.864
Monkfish	2.136	0.0254*	Age 16-24	0.617	0.508
Kippers	0.152	0.722	Age 25-34	1.156	0.189
Mullet	-1.309	0.370	Age 35-44	0.600	0.470
Crab Sticks	0.334	0.399	Age 45-54	0.555	0.501
Smoked Mackerel	0.546	0.295	Age 55-64	0.183	0.811
Plaice	0.256	0.542	People	0.399	0.0401*
Fish Pies	-0.995	0.105	Children	-0.610	0.0202*
Tin Tuna Salmon	0.713	0.264	South	0.0158	0.971
Fish In Sauce	0.362	0.509	Midlands	-0.823	0.107
Skate	-0.362	0.639	Student	-0.616	0.580
Salmon	0.241	0.580	Retired	0.0218	0.974
Prawns	-0.311	0.496	Housewife/husband	-0.0435	0.934
Breaded/Battered Fillets	-0.541	0.235	Unemployed	0.433	0.664
Trout	0.828	0.106	Part Time	-0.0973	0.852
Sardines	0.245	0.584	Classes AB	0.179	0.724
Future Cod	-0.387	0.508	Class C_1	-0.520	0.349
Future Haddock	-0.576	0.401	Class C_2	-0.187	0.652
Future Fish Fingers	-0.167	0.813	MU(1)	0.982	0.00000*
Log Likelihood		-137.599			
Pseudo R^2		0.692			
% Correct Predictions		63.44			
Sample Size		186			

Table 80: The Descriptive Model for PUFA Eel Purchase (Model One).

Model 1	B	Sig.	Model 1	B	Sig.
Constant	-3.464	0.729	Salmon	-0.723	0.499
Attitude	-0.0332	0.651	Prawns	0.964	0.610
Involve	0.0238	0.678	Bre/Bat Fillets	-0.862	0.592
KAI	0.0153	0.941	Trout	0.316	0.787
Fresh	-1.516	0.519	Sardines	-0.116	0.932
Frozen	-1.160	0.522	Tried Eel	0.952	0.338
Tinned	-1.072	0.657	Sex Male	0.699	0.674
Future Fresh	1.242	0.544	Age 16-24	0.169	0.962
Future Frozen	1.058	0.467	Age 25-34	1.419	0.719
Future Tinned	-0.717	0.789	Age 35-44	0.687	0.835
No. of Fish Bought	0.0281	0.949	Age 45-54	1.037	0.745
Fut. No. Bought	-0.308	0.781	Age 55-64	0.839	0.807
Cod	-0.155	0.892	People	0.816	0.260
Haddock	-0.131	0.898	Children	-0.868	0.324
Fish Fingers	0.458	0.593	Student	1.887	0.535
Smoked Salmon	0.215	0.920	Retired	2.179	0.478
Monkfish	0.203	0.957	Housewife	0.688	0.788
Kippers	-0.433	0.801	Unemployed	0.195	0.972
Crab Sticks	-0.101	0.939	Part Time	-0.907	0.699
Smoked Mackerel	0.191	0.914	Classes AB	2.856	0.191
Plaice	0.0275	0.979	Class C_1	-0.437	0.858
Fish Pies	0.654	0.791	Class C_2	1.947	0.348
Tin Tuna Salmon	0.0826	0.948	South	-0.564	0.726
Fish In Sauce	-0.477	0.847	Midlands	1.107	0.608
Skate	1.517	0.574	MU (1)	0.557	0.387
Log likelihood		-47.609			
Pseudo R^2		0.439			
% Correct Predictions		89.73			
Sample Size		185			

No variables were found that contributed significantly to explaining PUFA eel purchase. However the model did account for 44% of the variance.

No results were produced for model two with regard to the purchase of PUFA eel.

Table 81: The Descriptive Model for PUFA Sturgeon Purchase (Model One).

Model 1	B	Sig.	Model 1	B	Sig.
Constant	-2.212	0.433	Salmon	-0.599	0.127
Attitude	-0.000277	0.988	Prawns	0.564	0.147
Involve	-0.0179	0.174	Bre/Bat Fillets	0.0644	0.849
KAI	0.0342	0.424	Trout	0.500	0.271
Fresh	-0.770	0.204	Sardines	-0.118	0.747
Frozen	0.412	0.664	Tried Sturgeon	0.256	0.338
Tinned	1.242	0.152	Sex Male	-0.0948	0.882
Future Fresh	0.392	0.395	Age 16-24	-0.269	0.771
Future Frozen	0.291	0.516	Age 25-34	-0.433	0.693
Future Tinned	-0.562	0.238	Age 35-44	-0.165	0.863
No. of Fish Bought	0.130	0.331	Age 45-54	-0.660	0.526
Fut. No. Bought	-0.0403	0.861	Age 55-64	-0.0120	0.983
Cod	-0.0490	0.878	People	0.113	0.659
Haddock	0.00788	0.979	Children	-0.241	0.433
Fish Fingers	0.00364	0.990	Student	-0.00744	0.993
Smoked Salmon	-0.518	0.303	Retired	0.192	0.812
Monkfish	0.687	0.457	Housewife	-0.0843	0.882
Kippers	-0.179	0.607	Unemployed	0.347	0.783
Crab Sticks	-0.214	0.571	Part Time	0.408	0.462
Smoked Mackerel	-0.0726	0.826	Classes AB	1.317	0.0314*
Plaice	0.115	0.733	Class C_1	-0.307	0.663
Fish Pies	-0.265	0.568	Class C_2	-0.321	0.516
Tin Tuna Salmon	-0.249	0.499	South	-0.254	0.605
Fish In Sauce	-0.292	0.597	Midlands	-0.406	0.391
Skate	-0.475	0.586	MU (1)	1.375	0.000028
Log likelihood		-102.487			
Pseudo R^2		0.276			
% Correct Predictions		74.59			
Sample Size		185			

Only one variable was found to significantly contribute to explaining PUFA sturgeon purchase. Classes A and B were more likely to purchase PUFA sturgeon than any other classes. This model accounted for 28% of the variance. No model two was performed for explaining the purchase of PUFA sturgeon.

The model which did not combine past and future species/product purchase (model two) explained more variance than the model which did combine past and future species/product purchase (model one) therefore these results will be used where available in the discussion. The pseudo R^2 values for the these models explaining PUFA fish purchasing behaviours were higher than those obtained from either the demographic or the psychological model.

ATTITUDINAL DIFFERENCES BETWEEN FISH PURCHASERS AND NON-PURCHASERS.

The Attitudinal Differences between Past Fish Purchasers and Non Fish Purchasers.

It can be observed from Table 82 below that the majority of purchasers and non-purchasers thought fish was healthy, nutritious and had lots of different varieties. Non-purchasers were more likely to find fish difficult to prepare and less likely to think fish is versatile and can be used in many different recipes. The majority of purchasers and non-purchasers thought fish made a good family meal but non-purchasers were less inclined to think so. Non-purchasers were more likely to find serving fish to guests unenjoyable than purchasers. Purchasers were a lot more likely to think fish is value for money but they were also more likely to think it is expensive. The majority of purchasers and non-purchasers thought fish went off quickly, has an unpleasant smell and were put off by the bones but non-purchasers were deterred more by these negative aspects. There was a considerable degree of uncertainty over whether there was a danger of food poisoning with approximately 80.0% of non-purchasers and 50.0% of purchasers agreeing or being neutral about the danger of food poisoning. The majority of purchasers and non-purchasers agreed fish was readily available but purchasers agreed more. Most non-purchasers preferred poultry to fish whereas purchasers were more inclined to prefer fish. The majority of purchasers and non-purchasers saw fish as an alternative to red meat but non-purchasers were less inclined to perceive it that way.

Table 82: Past Purchasers' (P. (n=281)) and Non-Purchasers' (N.P.(n=30)) Responses to the Individual Attitude Statements.

Attitude Statement	Agree		Neutral		Disagree	
	P.	N.P.	P.	N.P.	P.	N.P.
It is a healthy food.	98.9%	86.7%	0.7%	10.0%	0.4%	3.3%
It is difficult to prepare.	16.7%	33.3%	10.3%	26.7%	73.0%	40.0%
It makes a good family meal.	87.9%	46.7%	6.4%	33.3%	5.7%	20.0%
It provides an alternative to red meat.	85.1%	63.3%	6.0%	13.3%	8.9%	23.4%
It goes off quickly.	56.3%	63.3%	23.8%	23.4%	19.9%	13.3%
It can be used in many different recipes.	80.8%	60.0%	11.4%	23.3%	7.8%	16.7%
The bones in fish are off putting.	75.4%	90.0%	7.5%	3.3%	17.1%	6.7%
It is readily available in the shops.	90.4%	73.3%	3.9%	23.4%	5.7%	3.3%
It provides good value for money.	75.3%	36.7%	11.3%	40.0%	13.4%	23.3%
I prefer poultry.	44.8%	70.0%	24.2%	10.0%	31.0%	20.0%
It is versatile.	70.5%	43.3%	19.9%	40.0%	9.6%	16.7%
I like to serve fish when I have guests.	28.8%	3.3%	24.2%	10.0%	47.0%	86.7%
It is expensive.	62.4%	43.3%	15.8%	50.0%	21.8%	6.7%
There are lots of different varieties of fish.	97.9%	83.4%	1.4%	13.3%	0.7%	3.3%
There is a danger of food poisoning.	29.3%	33.3%	28.2%	50.0%	42.5%	16.7%
It is a nutritious food.	98.2%	80.0%	1.1%	16.7%	0.7%	3.3%
It has an unpleasant smell.	64.1%	83.3%	12.1%	3.3%	23.8%	13.4%

Cross tabulations, chi-square tests and correlations were also performed on each of the seventeen attitude statements in order to establish whether there were any significant differences between purchasers' and non-purchasers' attitudes.

In order to produce valid chi-squares the seven categories on the attitude statements were condensed into three categories, agree, neutral and disagree and the frequencies

of consumption was reduced from six categories to three, Never, Less Than Once A Fortnight and Once A Week Or More. A significant chi-square result was produced for four statements.

Table 83: A Cross Tabulation of Frequency of Past Fish Purchasing with "I prefer poultry".

Frequency of Past Fish Purchase	Agree	Neutral	Disagree
Never (n=30)	70.0%	10.0%	20.0%
Less Than Once A Fortnight (n=147)	53.7%	19.1%	27.2%
More Than Once A Week (n=134)	35.1%	29.9%	35.0%

The chi-square value was 17.31, p=0.00168. This result demonstrates that as the frequency of fish consumption increased the likelihood of preferring poultry decreased. The correlation coefficient was 0.2505, p=0.000.

Table 84: A Cross Tabulation of Frequency of Past Fish Purchasing with "I like to serve guests fish".

Frequency of Past Fish Purchase	Agree	Neutral	Disagree
Never (n=30)	3.3%	10.0%	86.7%
Less Than Once A Fortnight (n=147)	25.2%	28.6%	46.2%
Once A Week Or More (n=134)	32.8%	19.4%	47.8%

The chi-square was 21.65, p=0.00023. The more frequently an individual consumed fish the greater their inclination was to serve guests fish. The correlation coefficient was 0.2614, p=0.000.

Table 85: A Cross Tabulation of Frequency of Past Fish Purchasing with “Fish is expensive”.

Frequency of Past Fish Purchase	Agree	Neutral	Disagree
Never (n=30)	43.3%	50.0%	6.7%
Once A Fortnight Or Less (n=147)	64.6%	19.8%	15.6%
Once A Week Or More (n=134)	59.7%	11.2%	29.1%

The chi-square value was 30.72, p=0.0000. As frequency of consumption increased less individuals remained neutral over the issue of expense. The majority of fish purchasers regarded fish as expensive but the more frequently fish was consumed the less likely it was to be regarded as expensive. The correlation coefficient was 0.1493, p=0.008.

Table 86: A Cross Tabulation of Frequency of Past Fish Purchase with “There is a danger of food poisoning”.

Frequency of Past Fish Purchase	Agree	Neutral	Disagree
Never (n=30)	33.3%	50.0%	16.7%
Once A Fortnight Or Less (n=146)	33.6%	30.8%	35.6%
Once A Week Or More (n=134)	24.6%	25.4%	50.0%

The chi-square value was 15.09, p=0.00452. As frequency of consumption increased the number of people perceiving food poisoning to be a danger decreased. The correlation coefficient was 0.2119, p=0.000.

A number of other attitude statements correlated with fish purchasing. Fish purchasers were more likely to agree fish was healthy and agree more strongly (r=0.3289,

p=0.000). Fish purchasers were more likely to think fish made a good family meal (r=0.3888, p=0.000), were more likely to perceive fish as an alternative to red meat (r=0.2631, p=0.000), as being value for money (r=0.2966, p=0.000), as versatile (r=0.2855, p=0.000) and as nutritious (r=0.2993, p=0.000). Fish purchasers were also less likely to think fish had an unpleasant smell (r=0.2604, p=0.000).

The Attitudinal Differences between Future Fish Purchasers and Non Fish Purchasers.

The majority of purchasers and non-purchasers thought fish was healthy, nutritious, readily available, had lots of varieties and can be used in lots of different recipes. Both purchasers and non-purchasers thought fish was easy to prepare. Purchasers and non-purchasers both thought fish was expensive but purchasers were more inclined to think so. Both groups of respondents thought fish provided value for money. The majority of purchasers and non-purchasers were deterred by the bones and unpleasant smell of fish, non-purchasers more so than purchasers. Also although the majority thought fish went off quickly, non-purchasers were more likely to think so than purchasers. Purchasers and non-purchasers perceived fish as versatile but purchasers were more likely to perceive this. Purchasers were a lot more likely to see fish as a family meal and as suitable for guests than non-purchasers. There was a degree of uncertainty over whether there is a danger of food poisoning, approximately 69% of non-purchasers and 54% of purchasers were neutral or agreed that there was a danger of food poisoning from fish. Both purchasers and non-purchasers perceived fish as an alternative to red meat but when it came to poultry, although the purchasers preferred fish, the non-purchasers preferred poultry.

Table 87: Purchasers' (P. (n=198)) and Non-Purchasers' (N.P. (n=113)) Responses to Individual Attitude Statements.

Attitude Statement	Agree		Neutral		Disagree	
	P.	N.P.	P.	N.P.	P.	N.P.
It is a healthy food.	99.5%	94.7%	0.5%	3.5%	0.0%	1.8%
It is difficult to prepare.	18.2%	18.6%	10.1%	15.0%	71.7%	66.4%
It makes a good family meal.	91.9%	69.9%	4.5%	16.8%	3.6%	13.3%
It provides an alternative to red meat.	87.4%	75.3%	5.5%	8.8%	7.1%	15.9%
It goes off quickly.	52.0%	65.5%	24.8%	22.1%	23.2%	12.4%
It can be used in many different recipes.	79.8%	77.0%	13.6%	10.6%	6.6%	12.4%
The bones in fish are off putting.	74.2%	81.4%	7.6%	6.2%	18.2%	12.4%
It is readily available in the shops.	90.4%	85.8%	4.5%	8.0%	5.1%	6.2%
It provides good value for money.	76.3%	62.8%	10.6%	20.4%	13.1%	16.8%
I prefer poultry.	37.4%	64.6%	28.8%	12.4%	33.8%	23.0%
It is versatile.	72.2%	60.2%	20.7%	23.9%	7.1%	15.9%
I like to serve fish when I have guests.	33.3%	14.2%	25.8%	17.7%	40.9%	68.1%
It is expensive.	61.1%	59.3%	14.2%	27.4%	24.7%	13.3%
There are lots of different varieties of fish.	98.0%	93.8%	1.0%	5.3%	1.0%	0.9%
There is a danger of food poisoning.	23.2%	41.1%	31.3%	28.6%	45.5%	30.3%
It is a nutritious food.	98.0%	93.8%	1.0%	5.3%	1.0%	0.9%
It has an unpleasant smell.	60.6%	73.5%	14.1%	8.0%	25.3%	18.5%

Cross tabulations, chi-squares and correlations were performed with the seventeen attitude statements to examine whether there were any differences between future purchasers and future non-purchasers. Five statements produced a significant chi-square result.

Table 88: A Cross Tabulation of Future Fish Purchasing with "Fish provides good value for money".

Will you buy any type of fish in the next week?	Agree	Neutral	Disagree
No (n=113)	62.9%	20.3%	16.8%
Maybe (n=50)	66.0%	18.0%	16.0%
Yes (n=148)	79.7%	8.1%	12.2%

The chi-square value was 11.28, p=0.02363. Although the majority of people thought fish was good value for money, the people who will buy fish were more likely to think so. The correlation coefficient was 0.2125, p=0.000.

Table 89: A Cross Tabulation of Future Fish Purchasing with "I prefer poultry".

Will you buy any type of fish next week?	Agree	Neutral	Disagree
No (n=113)	64.6%	12.4%	23.0%
Maybe (n=50)	48.0%	24.0%	28.0%
Yes (n=148)	33.8%	30.4%	35.8%

The chi-square value was 25.61, p= 0.00004. People who would or might buy fish in the next week were more likely to prefer fish to poultry. People who would not buy fish in the next week were more likely to state a preference for poultry. The correlation coefficient was 0.2581, p=0.000.

Table 90: A Cross Tabulation of Future Fish Purchasing with “I like to serve fish when I have guests”.

Will you buy any type of fish next week?	Agree	Neutral	Disagree
No (n=113)	14.2%	17.7%	68.1%
Maybe (n=50)	24.0%	30.0%	46.0%
Yes (n=148)	36.5%	24.3%	39.2%

The chi-square value was 25.66, p=0.00004. The greater the probability of a person purchasing fish in the next week the greater the likelihood of them enjoying serving guests fish. The correlation coefficient was 0.3247, p=0.000.

Table 91: A Cross Tabulation of Future Fish Purchasing with “Fish is expensive”.

Will you buy any type of fish next week?	Agree	Neutral	Disagree
No (n=113)	59.3%	27.4%	13.3%
Maybe (n=50)	72.0%	10.0%	18.0%
Yes (n=148)	57.4%	15.6%	27.0%

The chi-square value was 14.74, p=0.00528. There was a u-shaped relationship. Individuals who might purchase fish in the next week perceived fish to be more expensive than individuals who would buy fish in the next week or would not buy fish in the next week. The correlation coefficient was 0.1212, p=0.042.

Table 92: A Cross Tabulation of Future Fish Purchase with "There is a danger of food poisoning".

Will you buy any type of fish next week?	Agree	Neutral	Disagree
No (n=112)	41%	28.6%	30.4%
Maybe (n=50)	26.0%	48.0%	26.0%
Yes (n=148)	22.3%	25.7%	52.0%

The chi-square value was 24.57, p=0.00006. People who would buy fish were less likely to believe there was a danger of food poisoning from fish. People who would not buy fish were more likely to believe there was a danger of food poisoning. People who might buy fish were uncertain about the possibility of food poisoning from fish. The correlation coefficient was 0.2208, p=0.000.

A number of other attitude statements correlated with future fish purchasing behaviour. Future fish purchasers were more likely to strongly agree that fish was healthy (r=0.2548, p=0.000), makes a good family meal (r=0.3233, p=0.0000, was an alternative to red meat (r=0.2488, p=0.000), was versatile (r=0.2315, p=0.000) and was nutritious (r=0.2127, p=0.000).

Past and future fish purchasers are both more likely to prefer fish to poultry and to perceive fish as an alternative to red meat. They are more likely to think fish provides good value for money and think of it as expensive unless they consume it frequently. Both past and future fish purchasers perceive fish to be healthy, nutritious and versatile. They are less likely to think there is a danger of food poisoning from fish. It is believed to make a good family meal and past and future purchasers are more likely

to enjoy serving it to guests. Past purchasers were less likely to think fish had an unpleasant smell. Purchasers, past and future generally have more positive attitudes to fish and slightly less negative views of its physical attributes than past and future non-purchasers.

ATTITUDINAL DIFFERENCES BETWEEN PRODUCT TYPE PURCHASERS AND NON-PURCHASERS.

Cross tabulations, chi-square tests and correlations were performed on each of the seventeen attitude statements in order to establish whether there were any significant differences between the attitudes of purchasers' and non-purchasers' of different types of products. In order to produce valid chi-squares the seven categories on the attitude statements were condensed into three categories, agree, neutral and disagree and the frequencies of consumption were reduced from six categories to three, Never, Less Than Once A Fortnight and Once A Week Or More.

The Attitudinal Differences Between Purchasers and Non-Purchasers of Fresh Fish.

Past Fresh Fish Purchasers.

Four attitude statements produced a significant chi-square result.

Table 93: A Cross Tabulation of Frequency of Past Fresh Fish Purchase with "I prefer poultry".

Past Fresh Fish Purchase	Agree	Neutral	Disagree
Never (n= 58)	62.1%	13.8%	24.1%
Once A Fortnight Or Less (n=168)	42.9%	25.0%	32.1%
Once A Week Or More (n=55)	32.7%	32.7%	34.6%

The chi-square value was 11.26, p=0.02384. As consumption of fresh fish increased the number of people preferring poultry decreased. The correlation coefficient was 0.2154, p=0.000.

Table 94: A Cross Tabulation of Frequency of Past Fresh Fish Purchase with "I like to serve guests fish".

Past Fresh Fish Purchase	Agree	Neutral	Disagree
Never (n=58)	17.2%	27.6%	55.2%
Once A Fortnight Or Less (n=168)	26.8%	24.4%	48.8%
Once A Week Or More (n=55)	47.3%	20.0%	32.7%

The chi-square value was 13.44, p=0.00931. As the frequency of consumption of fresh fish increased the likelihood of enjoying serving guests fish increased. The correlation coefficient was 0.2226, p=0.000.

Table 95: A Cross Tabulation of Frequency of Past Fresh Fish Purchase with "Fish is expensive".

Past Fresh Fish Purchase	Agree	Neutral	Disagree
Never (n=58)	56.9%	15.5%	27.6%
Once A Fortnight Or Less (n=168)	66.7%	18.5%	14.8%
Once A Week Or More (n=55)	54.5%	7.3%	38.2%

The chi-square value was 15.83, p=0.00325. There was a u-shaped relationship, the people who infrequently bought fresh fish were more likely to think it was expensive than people who never bought it or bought it frequently. The correlation coefficient was 0.1212, p=0.042.

A number of other attitude statements correlated with fresh fish purchasing behaviour. Fresh fish purchasers were more likely to strongly agree fish was healthy (r=0.2521,

p=0.000), was a good family meal (r=0.2710, p=0.000), provided value for money (r=0.2281, p=0.000), was versatile (r=0.2514, p=0.000) and was a nutritious food (r=0.2117, p=0.000) and they were less likely to find the bones off putting (r=0.2705, p=0.000).

Future Fresh Purchasers.

Two attitude statements produced significant chi-square results.

Table 96: A Cross Tabulation of Future Fresh Fish Purchase with "I prefer poultry".

Will you buy fresh fish in the next week?	Agree	Neutral	Disagree
No (n=92)	50.0%	23.9%	26.1%
Maybe (n=38)	26.4%	36.8%	36.8%
Yes (n=68)	26.5%	30.9%	42.6%

The chi-square value was 12.34, p=0.01497. As the probability of the individual buying fresh fish increased the likelihood that they would prefer poultry decreased. The correlation coefficient was 0.2310, p=0.001.

Table 97: A Cross Tabulation of Future Fresh Fish Purchase with "Fish is expensive".

Will you buy fresh fish in the next week?	Agree	Neutral	Disagree
No (n=92)	60.9%	16.3%	22.8%
Maybe (n=38)	73.7%	18.4%	7.9%
Yes (n=68)	54.4%	8.8%	36.8%

The chi-square value was 12.11, p=0.01658. The majority of people thought fish was expensive. However, future fresh fish buyers were least likely to think it was expensive, followed by people who would not buy fresh fish and finally by people who might buy fresh fish.

A number of other attitude statements had significant correlations with future fresh fish buying. Fresh fish purchasers were more likely to strongly agree that fish is healthy (r=0.2871, p=0.000) and makes a good family meal (r=0.2107, p=0.003). Fresh fish purchasers were less likely to think fish is difficult to prepare (r= 0.2178, p=0.002) and less likely to be put off by the bones (r=0.2460, p=0.000).

The Attitudinal Differences between Purchaser and Non-Purchasers of Frozen Fish.

Past Frozen Fish Purchasers.

None of the attitude statements produced a significant result.

Future Frozen Fish Purchasers.

Two attitude statements produced significant chi-squares results.

Table 98: A Cross Tabulation of Future Frozen Fish Purchasers with "I prefer poultry".

Will you buy frozen fish in the next week?	Agree	Neutral	Disagree
No (n=63)	34.9%	12.7%	52.4%
Maybe (n=46)	37.0%	41.3%	21.7%
Yes (n=89)	30.3%	27.0%	42.7%

The chi-square value was 16.21, p=0.00276. As the probability of buying frozen fish increased there was an increase in the likelihood of preferring poultry to fish.

Table 99: A Cross Tabulation of Future Frozen Fish purchasers with "I like to serve fish when I have guests".

Will you buy frozen fish in the next week?	Agree	Neutral	Disagree
No (n=63)	44.4%	17.5%	38.1%
Maybe (n=46)	30.5%	47.8%	21.7%
Yes (n=89)	28.1%	27.0%	44.9%

The chi-square value was 15.24, p=0.00424. People who purchased frozen fish were the least willing to serve guests fish, followed by people who would not buy frozen fish and finally by people who might buy frozen fish.

The Attitudinal Differences between Purchasers and Non-Purchasers of Tinned Fish.

Past Tinned Fish Purchasers.

None of the attitude statements produced a significant result.

Future Tinned Fish Purchasers.

No attitude statements produced a significant result.

Past and future fresh fish purchasers had a very positive attitude to fish generally. They perceived fish as being healthy, nutritious, versatile, easy to prepare, value for

money and as making a good family meal. As frequency of past purchase increased and the probability of future purchase increased individuals were more likely to prefer fish to poultry and more likely to enjoy serving guests fish. Frequent past purchasers and definite future purchasers did not think fish was expensive whereas infrequent past purchasers and possible future purchasers were more likely to think fish was expensive. Past and future non-purchasers did not necessarily think fish was expensive. Frozen fish purchasers were not particularly distinguishable from other product purchasers. The two distinguishing attitude statements portrayed frozen fish purchasers slightly negatively. Future definite and possible frozen fish purchasers were less likely to prefer fish to poultry than non-purchasers. They were also less likely to enjoy serving guests fish. Tinned fish purchasers were not distinguishable from other product purchasers.

PUFA Purchasers' Product Category Preference.

From Table 100 below it can be seen that people who would or would consider purchasing PUFA fish tend to buy frozen and tinned fish slightly more than fresh fish. People who would or would consider purchasing premium price PUFA fish also tend to buy frozen and tinned fish slightly more than fresh fish. Potential PUFA salmon purchasers have bought all three types equally in the past but will tend to buy frozen and tinned fish slightly more than fresh fish in the future. Potential PUFA eel purchasers in the past tended to purchase tinned fish more than frozen and fresh fish and in the future will tend to purchase fresh fish more so than frozen or tinned fish. PUFA sturgeon purchasers in the past have purchased tinned fish more than frozen and fresh fish and in the future will tend to purchase frozen fish more than fresh and

tinned fish. This data shows that there is no clear product category preference for potential PUFA fish purchasers.

Table 100: PUFA Purchasers' Product Category Preference by Past and Future Product Category Purchase.

PUFA Fish Product	Fresh Fish	Frozen Fish	Tinned Fish
PUFA Fish			
Past (n=238)	83.2%	88.7%	90.8%
Future (n=176)	55.7%	71.6%	70.5%
Premium Price PUFA Fish			
Past (n=185)	84.9%	88.1%	90.8%
Future (n=135)	57.0%	71.1%	69.6%
PUFA Salmon			
Past (n=150)	89.3%	86.7%	88.7%
Future (n=113)	60.2%	66.4%	64.6%
PUFA Eel			
Past (n=31)	80.6%	83.9%	90.3%
Future (n=27)	74.1%	66.7%	51.9%
PUFA Sturgeon			
Past (n=79)	82.3%	89.9%	93.7%
Future (n=77)	46.8%	51.9%	45.5%

As a way of finding out what product type would be preferred by PUFA fish buyers multiple regressions were performed using Limdep. Three models were used.

Model one included both past and future product types. The answers regarding the past frequency of fresh, frozen and tinned fish purchasing were condensed from six categories into two categories, 0=Did Not Purchase That Product Format and 1=Did Purchase That Product Format. The answers regarding future fresh, frozen and tinned fish purchasing were also condensed from three categories into two, 0=Will Not Purchase That Product Format and 1=Will Purchase That Product Format. The sample

consisted of people who had purchased fish in the past and would purchase fish in the future i.e. the following week.

Model two consisted of purely past product types and the answers remained in their original form i.e. 0=Never, 1=Less Than Once A Month, 2=Once A Month, 3=Once A Fortnight, 4=Once A Week and 5=More Than Once A Week. The sample consisted of all the people who had purchased fish in the past.

Model three consisted of purely future product types and the answers remained in their original form, 0=Never, 1=Maybe and 2=Yes. The sample consisted of people who would purchase fish in the future.

Table 101: Predicting PUFA Fish Purchase from Past and Future Product Type Purchases (Model 1).

	1	
	B	Sig.
Constant	0.125	0.741
Fresh	0.0679	0.790
Frozen	0.191	0.523
Tinned	0.712	0.0313*
Future Fresh	0.220	0.327
Future Frozen	0.444	0.0405*
Future Tinned	-0.152	0.458
MU(1)	1.144	0.00000*
Log Likelihood	-174.3472	
Pseudo R^2	0.040	
% Correct Predictions	59.18	
Sample Size	196	

It can be observed from the table above that people who bought tinned fish in the past were more likely to purchase PUFA fish. Also people who would buy frozen fish in the future were more likely to purchase PUFA fish.

Table 102: Predicting PUFA Fish Purchase from Past Product Types Purchased (Model 2) and Future Product Types to be Purchased (Model 3).

	2		3	
	B	Sig.	B	Sig.
Constant	0.299	0.0925	0.625	0.00223*
Fresh	0.0734	0.127		
Frozen	0.125	0.0265*		
Tinned	0.148	0.00697*		
Future Fresh			0.200	0.0482*
Future Frozen			0.283	0.0110*
Future Tinned			0.131	0.179
MU(1)	0.995	0.00000*	1.121	0.00000*
Log Likelihood	-266.462		-179.656	
Pseudo R^2	0.038		0.029	
% Predictions Correct	55.16		57.07	
Sample Size	281		198	

It can be observed from model 2 in the table above that people who bought tinned fish or frozen fish in the past were more likely to purchase PUFA fish. It can be observed from model 3 that future frozen fish purchasers and future fresh fish purchasers were more likely to purchase PUFA fish.

Table 103: Predicting Premium Price PUFA Fish Purchase from Past and Future Product Types Purchased (Model 1).

	1	
	B	Sig.
Constant	-0.167	0.660
Fresh	0.170	0.477
Frozen	0.0627	0.826
Tinned	0.244	0.422
Future Fresh	0.166	0.413
Future Frozen	0.301	0.146
Future Tinned	-0.0797	0.669
MU(1)	0.945	0.00000*
Log Likelihood	-212.265	
Pseudo R^2	0.0130	
% Correct Predictions	33.16	
Sample Size	196	

It can be observed from the table above that premium price PUFA fish purchase was not predicted by the purchase of any past or future product types.

Table 104: Predicting Premium Price PUFA Fish Purchase from Past Product Types Purchased (Model 2) and Future Product Types to be Purchased (Model 3).

	2		3	
	B	Sig.	B	Sig.
Constant	-0.0244	0.898	0.0608	0.780
Fresh	0.111	0.0182*		
Frozen	0.0423	0.418		
Tinned	0.0560	0.270		
Future Fresh			0.175	0.0814
Future Frozen			0.194	0.0624
Future Tinned			0.0408	0.657
MU(1)	0.872	0.00000*	0.933	0.00000*
Log Likelihood	-304.278		-214.733	
Pseudo R^2	0.014		0.012	
% Predictions Correct	37.72		36.36	
Sample Size	281		198	

It can be observed from model 2 in the table above that people who purchased fresh fish in the past were more likely to purchase premium price PUFA fish. It can be observed from model 3 that no specific type of product purchased in the future predicted the purchase of premium price PUFA fish. However future purchase of frozen products was nearly significantly contributing to predicting the purchase of premium price PUFA fish.

Table 105: Predicting PUFA Salmon Purchase from Past and Future Product Types Purchased (Model 1).

	1	
	B	Sig.
Constant	-0.0676	0.859
Fresh	0.853	0.00108*
Frozen	0.148	0.621
Tinned	-0.342	0.298
Future Fresh	0.0300	0.880
Future Frozen	-0.197	0.350
Future Tinned	-0.192	0.316
MU(1)	0.702	0.00000*
Log Likelihood	-201.170	
Pseudo R^2	0.047	
% Correct Predictions	46.43	
Sample Size	196	

It can be observed from model 1 in the table above that only past purchase of fresh fish contributed significantly to predicting the purchase of PUFA salmon. People who purchased fresh fish in the past were more likely to purchase PUFA salmon.

Table 106: Predicting PUFA Salmon Purchase from Past Product Types Purchased (Model 2) and Future Product Types to be Purchased (Model 3).

	2		3	
	B	Sig.	B	Sig.
Constant	-0.163	0.404	0.0697	0.747
Fresh	0.213	0.00003*		
Frozen	-0.0266	0.620		
Tinned	-0.0353	0.493		
Future Fresh			0.241	0.0165*
Future Frozen			-0.652	0.529
Future Tinned			-0.199	0.833
MU(1)	0.644	0.00000*	0.671	0.00000*
Log Likelihood	-286.714		-208.285	
Pseudo R^2	0.035		0.021	
% Predictions Correct	49.82		48.48	
Sample Size	281		198	

It can be observed from model 2 above that past fresh fish purchase significantly contributed to predicting PUFA salmon purchase i.e. people who purchased fresh fish in the past were more likely to purchase PUFA salmon. It can be observed from model 3 that future fresh fish purchasers significantly contributed to predicting PUFA salmon purchase i.e. people who would purchase fresh fish in the next week were more likely to purchase PUFA salmon.

Table 107: Predicting PUFA Eel Purchase from Past and Future Product Types Purchased (Model 1).

	1	
	B	Sig.
Constant	-0.964	0.0654
Fresh	-0.636	0.146
Frozen	-0.0506	0.902
Tinned	-0.0416	0.928
Future Fresh	0.896	0.0102*
Future Frozen	0.290	0.415
Future Tinned	-0.438	0.149
MU(1)	0.324	0.00110*
Log Likelihood	-90.891	
Pseudo R^2	0.060	
% Correct Predictions	86.15	
Sample Size	195	

It can be observed from model 1 that people who will purchase fresh fish in the future were more likely to purchase PUFA eel.

Table 108: Predicting PUFA Eel Purchase from Past Product Types Purchased (Model 2) and Future Product Types to be Purchased (Model 3).

	2		3	
	B	Sig.	B	Sig.
Constant	-1.577	0.00000*	-1.291	0.00002*
Fresh	0.150	0.00980*		
Frozen	-0.0565	0.488		
Tinned	0.0658	0.381		
Future Fresh			0.305	0.0301*
Future Frozen			0.0212	0.896
Future Tinned			-0.132	0.323
MU(1)	0.339	0.00011*	0.318	0.00049*
Log Likelihood	-115.091		-93.15	
Pseudo R^2	0.031		0.039	
% Predictions Correct	88.93		86.29	
Sample Size	280		197	

Model 2 in the table above reveals that people who purchased fresh fish in the past were more likely to purchase PUFA eel. Model 3 reveals that people who will purchase fresh fish in the future were more likely to purchase PUFA eel.

Table 109: Predicting PUFA Sturgeon Purchase from Past and Future Product Types Purchased (Model 1).

	1	
	B	Sig.
Constant	-1.697	0.00504*
Fresh	-0.142	0.643
Frozen	0.440	0.183
Tinned	1.008	0.0550
Future Fresh	0.380	0.115
Future Frozen	0.0417	0.863
Future Tinned	-0.472	0.0289*
MU(1)	0.952	0.00000*
Log Likelihood	-141.600	
Pseudo R^2	0.046	
% Correct Predictions	71.28	
Sample Size	195	

People who will purchase tinned fish in the future were more likely to purchase PUFA sturgeon .

Table 110: Predicting PUFA Sturgeon Purchase from Past Product Types Purchased (Model 2) and Future Product Types to be Purchased (Model 3).

	2		3	
	B	Sig.	B	Sig.
Constant	-0.738	0.00025*	-0.741	0.00100*
Fresh	0.0503	0.338		
Frozen	-0.0278	0.654		
Tinned	0.0526	0.379		
Future Fresh			0.230	0.0334*
Future Frozen			0.0313	0.796
Future Tinned			-0.0519	0.625
MU(1)	0.923	0.00000*	0.935	0.00000*
Log Likelihood	-209.073		-147.731	
Pseudo R^2	0.0052		0.017	
% Predictions Correct	71.79		71.07	
Sample Size	280		197	

It can be observed from model two in the table above that no types of product purchased in the past significantly contributed to predicting the purchase of PUFA sturgeon. Model three reveals that people who will purchase fresh fish in the future were more likely to purchase PUFA sturgeon.

Generally the models containing both past and future variables i.e. model one, explained the most variance so priority will be given to these models when explaining PUFA purchasers product preference. PUFA fish purchasers have a preference for both tinned fish and frozen fish according to the results from model one, model two and the data presented in Table 100. Premium price PUFA fish purchasers do not have a preference predicted by model one or model three. Model two highlights a preference for fresh fish whereas the data presented in Table 100 indicates that frozen and tinned fish are both popular with premium price PUFA fish purchasers. Potential

premium price PUFA fish purchasers do not have any product preference. PUFA salmon purchasers have a preference for fresh fish according to model one. This result is reinforced by the findings of model two and model three. The data in Table 100 also shows that fresh fish was the most popular purchase in the past with PUFA salmon purchasers. PUFA eel purchasers were found to have a preference for fresh fish according to model one. This result was reinforced by the findings of model two and model three. The data in Table 100 found fresh fish was the most popular future purchase for PUFA eel purchasers. Model one found PUFA sturgeon purchasers to have a preference for tinned fish. The data in Table 100 found tinned fish to be the most popular purchase in the past for PUFA sturgeon purchasers.

ATTITUDINAL DIFFERENCES BETWEEN PURCHASERS AND NON-PURCHASERS OF DIFFERENT SPECIES/PRODUCTS.

The Attitudinal Differences of Past Species/Product Purchasers.

Cross tabulations, chi-squares and correlations were performed on the twenty prespecified species/products in order to find out if attitude to fish influenced species/products purchased. Any species/products not mentioned either had no significant results or consisted of a small sample, less than twenty.

Table 111: The Chi-squares and Correlations of Species/Products with Attitude Statements.

Species	Attitude Statement	Chi-Square Value	Chi-Square Sig.	Correlation
Cod	It makes a good family meal.	-	-	0.12536
	It has an unpleasant smell.	7.77	0.02052	-
Haddock	It is difficult to prepare.	6.38	0.04118	-
	It goes off quickly.	7.39	0.02490	0.15459
	There are lots of different recipes.	8.07	0.01771	-
	I prefer poultry.	15.61	0.000411	0.20368
Fish Fingers	It is difficult to prepare.	8.87	0.1186	-0.17588
Smoked Salmon	I like to serve guests fish.	11.13	0.00382	0.18551
	There is a danger of food poisoning.	-	-	0.11731
Kippers	I prefer poultry.	7.94	0.01885	0.15312
Crab sticks	It is difficult to prepare.	9.75	0.00763	-0.18624
	It goes off quickly.	8.12	0.01723	-0.14707
	The bones are off putting.	-	-	-0.12968
Smoked Mackerel	I prefer poultry.	-	-	0.12521
Plaice	I like to serve guests fish.	6.36	0.04165	-
Fish Pies	It is difficult to prepare.	10.01	0.00669	-0.18746
	It has an unpleasant smell.	6.03	0.04910	-
Tinned Tuna Salmon	It is healthy.	10.49	0.00527	0.18208
	It is versatile.	7.41	0.02459	0.16048
	There are lots of different varieties.	7.37	0.02497	0.13367
Fish In Sauce	It is an alternative to red meat.	7.16	0.02781	-
	It can be used in many different recipes.	-	-	0.12804
Skate	I prefer poultry.	14.94	0.00057	0.22946
	I like to serve guests fish.	6.82	0.03307	0.12462
	It is expensive.	-	-	0.16114
	It has an unpleasant smell.	-	-	0.17242
Salmon	I like to serve guests fish.	19.65	0.00005	0.17948
Prawns	It makes a good family meal.	6.46	0.03965	0.14411
Trout	There are lots of different recipes.	9.48	0.00872	-
	It is versatile.	10.28	0.00586	0.13047
	I like to serve guests fish.	12.96	0.00153	0.19041
	There is a danger of food poisoning.	7.67	0.02159	-
	It has an unpleasant smell.	7.48	0.02374	0.13747
	It makes a good family meal.	-	-	0.12027
	I prefer poultry.	-	-	0.12173

As it can be observed from Table 111 that general attitudes to fish consumption varied slightly according to the species/product purchased. Cod purchasers agreed more that fish made a good family meal and they were less likely to be put off by its smell. Purchasers of haddock were less likely to find fish difficult to prepare, less likely to think fish goes off quickly, more likely to agree that fish can be used in lots of different recipes and more likely to prefer fish to poultry. Fish finger buyers were more likely to find fish difficult to prepare. Buyers of smoked salmon were more likely to enjoy serving guests fish and less likely to perceive a danger of food poisoning. Kipper purchasers were more likely to prefer fish to poultry. Crab stick purchasers were more likely to find fish difficult to prepare, more likely to think fish goes off quickly and were deterred more by the bones. Purchasers of smoked mackerel preferred fish to poultry. Plaice buyers were more likely to enjoy serving guests fish. Buyers of fish pies thought fish was difficult to prepare but were not deterred by the bones. Tinned tuna/salmon purchasers were more likely to believe there were lots of different varieties of fish and that it was versatile. Purchasers of fish in sauce were less likely to perceive fish as an alternative to red meat but more likely to think fish could be used in lots of different recipes. Skate buyers were more likely to prefer fish to poultry, more likely to enjoy serving guests fish, less likely to think fish is expensive and less likely to find the smell of fish unpleasant. Buyers of salmon were more likely to enjoy serving guests fish. Prawn purchasers were more likely to think fish makes a good family meal. Purchasers of trout were more likely to think fish could be used in lots of different recipes, was versatile, was suitable for serving to guests, makes a good family meal and were less likely to think there was a danger of food poisoning, that the smell was unpleasant and less likely to prefer poultry.

The Attitudinal Differences of Future Species/Product Purchasers.

Cross tabulations, chi-squares and correlations were performed with the twenty prespecified species/products in order to find out if attitude influenced species/products purchased. Any species/products not mentioned either had no significant results or consisted of a small sample.

Table 112: The Chi Squares and Correlations of Future Species/Products Purchased with Attitudinal Differences.

Species Product	Attitude Statement	Chi-Square Value	Chi-Square Sig.	Correlation
Haddock	It is difficult to prepare. I prefer poultry.	- 8.28	- 0.01589	0.16106 0.19834
Fish Fingers	It is difficult to prepare. It is an alternative to red meat. The bones are off putting.	- - -	- - -	-0.17545 -0.23260 -0.18328
Tinned Tuna Salmon	The bones are off putting. It is an alternative to red meat.	6.24 -	0.04407 -	- -0.14571
Prawns	It is difficult to prepare. I like to serve guests fish.	- 9.95	- 0.00692	-0.14608 0.22289

Haddock purchasers were less likely to find fish difficult to prepare and more likely to prefer fish to poultry. Fish finger buyers were more likely to find fish difficult to prepare, more likely to be put off by the bones and less likely to see fish as an alternative to red meat. Tinned tuna/salmon buyers were less likely to see fish as an alternative to red meat and more likely to find the bones off putting. Buyers of prawns were more likely to find fish difficult to prepare and more likely to enjoy serving guests fish.

The similarities and differences in attitudes of each of the species/product purchasers were examined. Species/product purchasers with similar attitudes were grouped. Three groups were formed which were,

1. Frozen/processed products - Purchasers of these products tended to have a negative view of fish. Products in this category included fish fingers, crab sticks and fish pies.
2. Common, everyday species/products - Purchasers of these products in the main had a positive view of fish but were occasionally deterred by one of fish's negative attributes. Products in this category included cod, kippers, smoked mackerel, tinned tuna and salmon, haddock and fish in sauce.
3. Up market, exotic species/products - Purchasers of products in this category had very positive attitudes to fish. Products in this category included smoked salmon, plaice, skate, salmon and prawns.

PUFA Purchasers Species/Product Preference.

From Table 113 below it can be observed that each group of potential PUFA purchasers buy practically the same species/products and the species/products' popularity is also practically the same for each group of purchasers. All varieties of PUFA purchasers bought cod, tinned tuna/salmon, haddock, prawns and salmon. Cod, tinned tuna/salmon and haddock were generally the three most popular products. PUFA fish purchasers and premium price PUFA fish purchasers also both bought breaded/battered fillets, prawns, sardines, kippers and crab sticks. These species/products had similar degree of popularity within each group. PUFA salmon

purchasers bought trout and fish pies. PUFA eel purchasers bought trout and smoked salmon and PUFA sturgeon buyers bought smoked salmon. The species/products purchased by each variety of PUFA fish varied a little more than the species/products purchased by the two generic categories.

Table 113: The Most Popular Fish Purchased by Each Variety of PUFA Fish.

PUFA Fish (n=246)	Premium Price PUFA Fish (n=188)	PUFA Salmon (n=154)	PUFA Eel (n=31)	PUFA Sturgeon (n=82)
Tinned Tuna Salmon 36.2%	Tinned Tuna Salmon 34.6%	Tinned Tuna Salmon 33.1%	Cod 32.3%	Tinned Tuna Salmon 25.6%
Cod 30.5%	Cod 31.4%	Cod 31.2%	Tinned Tuna Salmon 29.0%	Cod 25.6%
Haddock 17.9%	Haddock 17.0%	Haddock 15.6%	Prawns 19.4%	Haddock 15.9%
Fish Fingers 14.6%	Fish Fingers 13.8%	Fish Fingers 12.3%	Haddock 16.1%	Fish Fingers 9.7%
Bread/Batter Fillets 8.9%	Bread/Batter Fillets 10.6%	Salmon 9.7%	Salmon 12.9%	Prawns 9.7%
Prawns 8.5%	Prawns 9.6%	Bread/Batter Fillets 9.7%	Trout 12.9%	Salmon 7.3%
Sardines 6.5%	Salmon 8.0%	Prawns 7.8%	Smoked Salmon 9.7%	Bread/Batter Fillets 7.3%
Salmon 6.1%	Sardines 6.9%	Trout 5.2%		Sardines 4.9%
Kippers 4.1%	Kippers 4.8%	Crab Sticks 5.2%		Smoked Mackerel 3.7%
Smoked Mackerel 4.1%	Crab Sticks 4.8%	Fish Pies 4.5%		Smoked Salmon 3.7%
Crab Sticks 4.1%				Kippers 3.7%

Multiple regressions were performed using Limdep to investigate what species/product purchases predicted the purchase of each variety of PUFA fish. Data was available for the past purchase and future purchase of a list of twenty species/products. Four models were used.

Model one examined separately the influence of past and future purchase of the twenty species/products on the purchase of each variety of PUFA fish. The sample consisted of people who had purchased fish in the past and would purchase fish in the future, i.e. the following week.

Model two examined the influence of past purchase on the purchase of each variety of PUFA fish. The sample consisted of people who had purchased fish in the past.

Model three examined the influence of future purchase on the purchase of each variety of PUFA fish. The sample consisted of people who would purchase fish in the future i.e. the following week.

Model four examined the combined effect of past and future purchase on the purchase of each variety of PUFA fish. The combined species/products variables were achieved by adding the values for past and future purchase of each species. The sample consisted of people who purchased fish in the past and would purchase fish in the future i.e. the following week.

Table 114: Predicting PUFA Fish Purchase from Past and Future Purchases.

Species/Products	Model 1		Model 2		Model 3	
	B	Sig.	B	Sig.	B	Sig.
Constant	0.462	0.174	0.189,	0.385	0.954	0.00000*
Cod	0.0529	0.886	0.114,	0.557		
Haddock	0.373	0.214	0.425,	0.0173*		
Fish Fingers	-0.195	0.483	0.111,	0.515		
Smoked Salmon	-0.146	0.721	-0.107,	0.652		
Monkfish	-1.087	0.0411*	-0.817,	0.0921		
Kippers	0.405	0.138	0.430,	0.0266*		
Mullet	1.350	0.178	1,262,	0..997		
Smoked Mackerel	0.148	0.613	0.243,	0.239		
Crab Sticks	0.450	0.160	0.323,	0.131		
Plaice	-0.237	0.380	-0.0142,	0.936		
Fish Pies	-0.148	0.706	-0.119,	0.606		
Tinned Tuna/Salmon	-0.0161	0.954	0.160,	0.776		
Fish In Sauce	0.741	0.0481*	0.235,	0.309		
Skate	0.365	0.521	0.117,	0.731		
Salmon	-0.117	0.655	-0.252,	0.136		
Prawns	0.385	0.138	0.218,	0.219		
Bread/Batter	-0.0976	0.697	0.0149,	0.928		
Trout	0.613	0.0201*	0.404,	0.0433*		
Carp	-1.043	0.999	-1.203,	0.999		
Sardines	-0.133	0.593	-0.0356,	0.847		
F. Cod	0.316	0.224			0.123	0.533
F. Haddock	0.172	0.589			0.316	0.180
F. Fish Fingers	-0.00679	0.984			-0.141	0.548
F. Smoked Salmon	-0.490	0.504			0.306	0.634
F. Monkfish	-2.915	0.999			-4.750	0.997
F. Kippers	0.592	0.252			0.434	0.411
F. Crab Sticks	0.133	0.847			0.332	0.566
F. Smoked Mackerel	0.459	0.413			0.401	0.425
F. Plaice	0.162	0.713			0.233	0.503
F. Fish Pies	-0.326	0.551			-0.224	0.597
F. Tinned Tuna/Salmon	0.00921	0.969			0.120	0.508
F. Fish In Sauce	-0.685	0.326			-0.211	0.763
F. Salmon	0.110	0.837			-0.161	0.664
F. Prawn	-0.221	0.633			0.246	0.562
F. Bread/Batter	0.457	0.302			0.551	0.119
F. Trout	-0.133	0.800			0.174	0.765
F. Sardines	-0.127	0.777			0.101	0.826
MU(1)	1.272	0.0000*	1.0922,	0.00000*	1.101	0.00000*
Log Likelihood	-155.390		-247.319		-178.159	
Pseudo R^2	0.150		0.107		0.042	
% Correct Predicted	60.20		53.74		56.06	
Sample Size	196		281		198	

In model one PUFA fish purchase was significantly predicted by past monkfish purchase, past fish in sauce purchase and past trout purchase. People who had not purchased monkfish were more likely to purchase PUFA fish. People who had purchased fish in sauce or trout were more likely to purchase PUFA fish. No future purchases were found to make a significant contribution to predicting PUFA fish purchase. This model accounted for 15% of the variance. In model two past haddock, kippers and trout purchase made significant contributions to predicting PUFA fish purchase. People who had purchased these species were more likely to purchase PUFA fish. This model accounted for 11% of the variance. In model three no future purchases were found to contribute to significantly predicting PUFA fish purchase. This model only accounted for 4% of the variance.

Table 115: Predicting PUFA Fish Purchase from Combined Past and Future Species/Product Purchases (Model 4).

Species/Products	Model 4	
	B	Sig.
Constant	0.464	0.104
Cod	0.140	0.298
Haddock	0.221	0.125
Fish Fingers	-0.0704	0.620
Smoked Salmon	-0.198	0.478
Monkfish	-0.851	0.0642
Kippers	0.491	0.00864*
Smoked Mackerel	0.221	0.273
Crab Sticks	0.336	0.129
Plaice	-0.0961	0.469
Fish Pies	-0.136	0.534
Tinned Tuna/Salmon	0.0202	0.879
Fish In Sauce	0.368	0.128
Skate	0.375	0.107
Salmon	-0.0321	0.863
Prawns	0.174	0.344
Trout	0.394	0.0610
Bread/Batter	0.0620	0.700
Sardines	-0.132	0.437
Carp	-1.079	0.999
Mullet	1.171	0.201
MU(1)	1.244	0.00000*
Log Likelihood	-159.684	
Pseudo R^2	0.126	
% Correct Predicted	60.20%	
Sample Size	196	

In model four kippers contributed significantly to predicting PUFA fish purchase. People who purchase kippers were more likely to purchase PUFA fish. This model accounted for 13% of the variance.

Table 116: Predicting Premium Price PUFA Purchase from Past and Future Purchases.

Species/Products	Model 1		Model 2		Model 3	
	B	Sig.	B	Sig.	B	Sig.
Constant	0.0806	0.242	0.0215	0.921	0.430	0.0139*
Cod	0.0380	0.909	0.00731	0.971		
Haddock	0.302	0.229	0.195	0.224		
Fish Fingers	-0.0216	0.931	0.0195	0.901		
Smoked Salmon	-0.151	0.577	-0.113	0.568		
Monkfish	-0.323	0.610	-0.371	0.509		
Kippers	0.335	0.128	0.237	0.142		
Mullet	0.283	0.745	0.386	0.578		
Smoked Mackerel	0.182	0.462	0.129	0.450		
Crab Sticks	0.634	0.00754*	0.401	0.0282*		
Plaice	-0.287	0.221	-0.0137	0.932		
Fish Pies	-0.510	0.144	-0.113	0.571		
Tinned Tuna/Salmon	-0.182	0.521	-0.116	0.517		
Fish In Sauce	0.439	0.149	0.233	0.234		
Skate	0.457	0.376	0.353	0.337		
Salmon	-0.0817	0.730	-0.0716	0.668		
Prawns	0.166	0.516	0.146	0.391		
Bread/Batter	-0.282	0.408	-0.113	0.469		
Trout	0.268	0.284	0.135	0.446		
Carp	-5.202	1.000	-5.0582	1.000		
Sardines	0.161	0.451	0.151	0.335		
F. Cod	0.0363	0.867			-0.0442	0.801
F. Haddock	-0.0386	0.873			0.0587	0.778
F. Fish Fingers	-0.172	0.575			-0.207	0.374
F. Smoked Salmon	-0.0233	0.973			0.448	0.516
F. Monkfish	-2.909	0.998			-5.300	1.000
F. Kippers	0.795	0.0539			0.781	0.0762
F. Crab Sticks	-0.182	0.810			0.260	0.652
F. Smoked Mackerel	-0.493	0.203			-0.323	0.354
F. Plaice	0.185	0.700			0.316	0.372
F. Fish Pies	0.150	0.791			-0.184	0.687
F. Tinned Tuna/Salmon	-0.187	0.343			-0.180	0.301
F. Fish In Sauce	0.533	0.343			0.502	0.247
F. Skate	4.851	1.000			3.801	1.000
F. Salmon	0.662	0.187			0.423	0.302
F. Prawn	0.0185	0.959			0.236	0.445
F. Bread/Batter	0.606	0.119			0.613	0.0472*
F. Trout	-0.372	0.483			-0.159	0.774
F. Sardines	-0.0959	0.793			0.152	0.683
MU(1)	1.104	0.00000*	0.917	0.00000*	0.983	0.00000*
Log Likelihood	-188.182		-292.942		-206.177	
Pseudo R^2	0.125		0.0509		0.0513	
% Correct Predicted	51.53		43.77		43.43	
Sample Size	196		281		198	

In model one only past crab sticks purchase contributed significantly to predicting premium price PUFA fish purchase. People were more likely to purchase premium price PUFA fish if they had purchased crab sticks. This model accounted for 13% of the variance. In model two once again it was found that people who had purchased crab sticks were more likely to purchase premium price PUFA fish. This model accounted for only 5% of the variance. In model three it was found that people who would purchase breaded or battered fillets in the future were more likely to purchase premium price PUFA fish. This model also accounted for only 5% of the variance.

Table 117: Predicting Premium Price PUFA Fish Purchase from Combined Past and Future Species/Product Purchased (Model 4).

	Model 4	
	B	Sig.
Constant	0.259	0.351
Cod	-0.0371	0.781
Haddock	0.0878	0.510
Fish Fingers	-0.0793	0.549
Smoked Salmon	-0.0677	0.750
Monkfish	-0.415	0.413
Kippers	0.432	0.00837*
Smoked Mackerel	-0.0313	0.846
Crab Sticks	0.459	0.0147*
Plaice	-0.0935	0.551
Fish Pies	-0.159	0.394
Tinned Tuna/Salmon	-0.219	0.0722
Fish In Sauce	0.358	0.0643
Skate	0.548	0.217
Salmon	0.122	0.502
Prawns	0.0682	0.682
Trout	0.0840	0.638
Bread/Batter	0.0804	0.596
Sardines	0.0581	0.695
Carp	-4.979	1.000
Mullet	0.414	0.597
MU(1)	1.055	0.00000*
Log Likelihood	-195.143	
Pseudo R^2	0.0926	
% Correct Predicted	50.51	
Sample Size	196	

In model four it was found that crab stick and kipper purchase contributed significantly to predicting premium price PUFA purchase. The more likely people were to purchase these species the more likely they were to purchase premium price PUFA fish. This model accounted for 9% of the variance.

Table 118: Predicting PUFA Salmon Purchase from Past and Future Purchases.

Species/Products	Model 1		Model 2		Model 3	
	B	Sig.	B	Sig.	B	Sig.
Constant	0.110	0.773	-0.106	0.667	0.299	0.108
Cod	0.0413	0.907	0.0631	0.773		
Haddock	0.168	0.525	0.0362	0.840		
Fish Fingers	-0.342	0.213	-0.114	0.497		
Smoked Salmon	0.265	0.346	0.453	0.0326*		
Monkfish	0.804	0.0861	0.245	0.506		
Kippers	0.0655	0.789	-0.176	0.306		
Mullet	-0.478	0.456	-0.0512	0.923		
Smoked Mackerel	0.154	0.584	0.106	0.591		
Crab Sticks	0.386	0.110	0.307	0.0960		
Plaice	0.263	0.266	0.333	0.0497*		
Fish Pies	-0.733	0.0379*	-0.230	0.293		
Tinned Tuna/Salmon	-0.162	0.593	-0.0995	0.620		
Fish In Sauce	0.226	0.472	0.219	0.286		
Skate	-0.241	0.594	-0.247	0.490		
Salmon	0.151	0.528	0.319	0.0525		
Prawns	-0.172	0.493	-0.208	0.254		
Bread/Batter	-0.221	0.411	-0.297	0.0985		
Trout	0.785	0.00172*	0.590	0.00221*		
Carp	-3.0498	0.997	-4.0238	1.000		
Sardines	-0.0833	0.717	-0.0624	0.710		
F. Cod	-0.118	0.588			-0.197	0.276
F. Haddock	-0.416	0.108			-0.278	0.179
F. Fish Fingers	-0.168	0.580			-0.343	0.115
F. Smoked Salmon	0.0840	0.905			0.674	0.267
F. Monkfish	-4.715	0.999			-4.309	1.000
F. Kippers	-0.418	0.540			-0.378	0.411
F. Crab Sticks	0.676	0.188			0.727	0.175
F. Smoked Mackerel	0.434	0.441			0.522	0.267
F. Plaice	-0.303	0.546			0.00227	0.995
F. Fish Pies	0.956	0.0939			0.335	0.441
F. Tinned Tuna/Salmon	0.127	0.586			-0.0130	0.943
F. Fish In Sauce	0.951	0.0823			0.653	0.191
F. Skate	-1.316	0.999			-1.633	1.000
F. Salmon	1.046	0.0409*			1.009	0.0170*
F. Prawn	-0.547	0.232			-0.394	0.251
F. Bread/Batter	0.113	0.747			-0.0760	0.790
F. Trout	-0.195	0.768			0.372	0.531
F. Sardines	-0.315	0.398			-0.308	0.301
MU(1)	0.823	0.00000*	0.702	0.00000*	0.701	0.00000*
Log Likelihood	-176.090		-268.830		-198.244	
Pseudo R^2	0.162		0.0949		0.0661	
% Correct Predicted	55.61		54.09		52.53	
Sample Size	196		281		198	

Model one revealed that people who were less likely to have purchased fish pies in the past were more likely to purchase PUFA salmon. People who had purchased trout in the past or who would purchase salmon in the future were more likely to purchase PUFA salmon. This model accounted for 16% of the variance. In model two it was found that people who had purchased smoked salmon, trout or plaice in the past were more likely to purchase PUFA salmon. This model accounted for 9% of the variance. Model three revealed that people who would purchase salmon in the future were more likely to purchase PUFA salmon. This model accounted for 7% of the variance.

Table 119: Predicting PUFA Salmon Purchase from Combined Past and Future Species/Products Purchased (Model 4).

	Model 4	
	B	Sig.
Constant	0.0545	0.849
Cod	-0.0133	0.919
Haddock	-0.0618	0.665
Fish Fingers	-0.162	0.242
Smoked Salmon	0.158	0.443
Monkfish	0.116	0.669
Kippers	-0.117	0.523
Smoked Mackerel	0.160	0.379
Crab Sticks	0.298	0.0873
Plaice	0.200	0.186
Fish Pies	-0.0610	0.778
Tinned Tuna/Salmon	-0.0437	0.740
Fish In Sauce	0.245	0.227
Skate	-0.242	0.507
Salmon	0.409	0.0208*
Prawns	-0.175	0.305
Trout	0.455	0.0232
Bread/Batter	-0.0541	0.712
Sardines	-0.112	0.442
Carp	-4.0510	1.000
Mullet	0.0449	0.939
MU(1)	0.745	0.00000*
Log Likelihood	-189.753	
Pseudo R^2	0.0990	
% Correct Predicted	54.08	
Sample Size	196	

In model four it was found that people who purchased salmon were more likely to purchase PUFA salmon. This model accounted for 10% of the variance.

Table 120: Predicting PUFA Eel Purchase from Past and Future Purchases.

Species/Products	Model 1		Model 2		Model 3	
	B	Sig.	B	Sig.	B	Sig.
Constant	-1.0294	0.229	-1.520	0.00330*	-0.913	0.00111*
Cod	-0.252	0.743	-0.0451	0.920		
Haddock	0.348	0.523	0.358	0.376		
Fish Fingers	0.533	0.335	0.305	0.381		
Smoked Salmon	0.299	0.612	0.301	0.431		
Monkfish	-0.688	0.571	-0.744	0.370		
Kippers	-0.0648	0.883	-0.297	0.289		
Mullet	0.463	0.719	0.726	0.402		
Smoked Mackerel	-0.278	0.615	-0.0532	0.873		
Crab Sticks	-0.110	0.848	0.199	0.528		
Plaice	0.0135	0.975	0.0490	0.867		
Fish Pies	-0.296	0.722	0.0739	0.849		
Tinned Tuna/Salmon	-0.283	0.623	-0.314	0.379		
Fish In Sauce	-0.562	0.544	-0.581	0.236		
Skate	0.855	0.360	0.707	0.160		
Salmon	-0.424	0.371	-0.177	0.602		
Prawns	0.420	0.420	0.354	0.286		
Bread/Batter	-0.571	0.383	-0.771	0.0593		
Trout	0.545	0.430	0.644	0.128		
Carp	-1.976	0.999	-2.685	1.000		
Sardines	0.163	0.749	0.121	0.722		
F. Cod	-0.183	0.706			-0.249	0.405
F. Haddock	-0.365	0.483			-0.210	0.554
F. Fish Fingers	-0.592	0.429			-0.472	0.253
F. Smoked Salmon	0.706	0.498			0.631	0.237
F. Monkfish					-3.484	1.000
F. Kippers	0.719	0.411			0.593	0.372
F. Crab Sticks	0.119	0.941			0.155	0.857
F. Smoked Mackerel	-0.613	0.588			-0.645	0.495
F. Plaice	-0.395	0.749			0.318	0.561
F. Fish Pies					-3.579	1.000
F.Tinned Tuna/Salmon	-0.191	0.680			-0.220	0.441
F. Fish In Sauce	-2.830	1.000			-3.260	1.000
F. Salmon					0.333	0.405
F. Prawn	0.754	0.234			0.627	0.152
F. Bread/Batter	-0.552	0.793			-0.635	0.619
F. Trout	0.654	0.502			0.808	0.135
F. Sardines	-0.339	0.727			-0.375	0.615
MU(1)	0.403	0.0560	0.384	0.00432*	0.357	0.00230*
Log Likelihood	-76.111		-103.185		-84.201	
Pseudo R^2	0.213		0.131		0.132	
% Correct Predicted	87.69		89.29		86.80	
Sample Size	195		280		197	

None of the models found any of the past and/or future species/products to contribute significantly to predicting PUFA eel purchase.

Table 121: Predicting PUFA Eel Purchase from Combined Past and Future Species/Products Purchased (Model 4).

Species/Products	Model 4	
	B	Sig.
Constant	-1.0343	0.0668
Cod	-0.0817	0.755
Haddock	-0.0470	0.874
Fish Fingers	0.102	0.708
Smoked Salmon	0.441	0.252
Monkfish	-0.750	0.384
Kippers	0.0527	0.864
Smoked Mackerel	-0.288	0.458
Crab Sticks	-0.0100	0.977
Plaice	-0.0154	0.958
Fish Pies	-0.198	0.735
Tinned Tuna/Salmon	-0.278	0.232
Fish In Sauce	-0.562	0.338
Skate	0.686	0.217
Salmon	-0.148	0.603
Prawns	0.503	0.0769
Trout	0.444	0.128
Bread/Batter	-0.461	0.288
Sardines	0.130	0.725
Carp	-2.452	1.000
Mullet	0.763	0.336
MU(1)	0.383	0.0155*
Log Likelihood	-79.763	
Pseudo R^2	0.175	
% Correct Predicted	88.21	
Sample Size	195	

In model four it was also found that no purchases contributed significantly to predicting PUFA eel purchase.

Table 122: Predicting PUFA Sturgeon Purchase from Past and Future Purchases.

Species/Products	Model 1		Model 2		Model 3	
	B	Sig.	B	Sig.	B	Sig.
Constant	-1.0670	0.0265*	-0.844	0.00181*	-0.304	0.159
Cod	0.343	0.427	-0.0320	0.895		
Haddock	0.516	0.138	0.328	0.115		
Fish Fingers	-0.0906	0.793	-0.151	0.432		
Smoked Salmon	0.0511	0.877	0.336	0.155		
Monkfish	0.122	0.857	0.0990	0.845		
Kippers	-0.0987	0.763	-0.0800	0.687		
Mullet	0.814	0.328	0.709	0.238		
Smoked Mackerel	0.177	0.555	0.159	0.442		
Crab Sticks	-0.203	0.523	0.108	0.609		
Plaice	-0.176	0.556	0.105	0.581		
Fish Pies	-0.668	0.246	-0.790	0.00580*		
Tinned Tuna/Salmon	0.0688	0.856	-0.224	0.307		
Fish In Sauce	-0.398	0.340	0.0147	0.947		
Skate	0.0418	0.943	-0.381	0.362		
Salmon	-0.401	0.149	-0.333	0.0801		
Prawns	0.650	0.0565	0.358	0.0871		
Bread/Batter	0.00648	0.983	0.163	0.372		
Trout	0.663	0.0621	0.293	0.165		
Carp	-3.297	0.998	-3.990	0.999		
Sardines	0.0108	0.971	0.126	0.527		
F. Cod	-0.303	0.307			-0.230	0.295
F. Haddock	-0.244	0.461			0.0588	0.814
F. Fish Fingers	-0.323	0.452			-0.394	0.238
F. Smoked Salmon	0.588	0.455			0.308	0564
F. Monkfish					-2.921	0.999
F. Kippers	0.200	0.740			-0.00171	0.997
F. Crab Sticks	0.105	0.891			-0.140	0.792
F. Smoked Mackerel	-0.504	0.408			-0.293	0.563
F. Plaice	-0.855	0.292			-0.402	0.465
F. Fish Pies	-0.280	0.770			-0.624	0.397
F. Tinned Tuna/Salmon	-0.266	0.328			-0.209	0.337
F. Fish In Sauce	0.165	0.865			-0.537	0.490
F. Salmon	0.312	0.551			-0.00336	0.993
F. Prawn	0.235	0.563			0.557	0.0779
F. Bread/Batter	0.230	0.649			0.114	0.757
F. Trout	-0.533	0.441			-0.126	0.804
F. Sardines	-0.235	0.713			-0.137	0.774
MU(1)	1.0984	0.0000*	1.044	0.00000*	0.957	0.0000*
Log Likelihood	-124.46		-189.84		-142.18	
Pseudo R^2	0.154		0.0967		0.0463	
% Correct Predicted	73.85		72.50		71.57	
Sample Size	195		280		197	

In model one it was found that no past or future purchases contributed significantly to predicting PUFA sturgeon purchase. This model accounted for 15% of the variance. In model two it was found that people who had not purchased fish pies were more likely to purchase PUFA sturgeon. This model accounted for 10% of the variance. In model three it was found that no future purchases contributed significantly to predicting PUFA sturgeon purchase. This model accounted for 5% of the variance.

Table 123: Predicting PUFA Sturgeon Purchase from Combined Past and Future Species/Product Purchases (Model 4).

Species/Products	Model 4	
	B	Sig.
Constant	-0.761	0.0437*
Cod	-0.0509	0.764
Haddock	0.188	0.262
Fish Fingers	-0.138	0.413
Smoked Salmon	0.197	0.350
Monkfish	0.0803	0.874
Kippers	-0.0144	0.944
Smoked Mackerel	0.00652	0.975
Crab Sticks	-0.826	0.700
Plaice	-0.0691	0.729
Fish Pies	-0.338	0.287
Tinned Tuna/Salmon	-0.199	0.391
Fish In Sauce	-0.321	0.246
Skate	0.0314	0.933
Salmon	-0.166	0.391
Prawns	0.469	0.0161*
Trout	0.366	0.0713
Bread/Batter	0.181	0.334
Sardines	-0.00657	0.975
Carp	-3.699	1.000
Mullet	0.755	0.204
MU(1)	1.0379	0.00000*
Log Likelihood	-131.563	
Pseudo R^2	0.106	
% Correct Predicted	72.31	
Sample Size	195	

In model four it was found that people who purchased prawns were more likely to purchase PUFA sturgeon. This model accounted for 11% of the variance.

By examining the pseudo R^2 for each of the four models it can be observed that the model including both past and future species/products purchased (Model one) explained the most variance therefore priority will be given to the results from this model. The model combining the past and future species/products purchased (Model four) explained the second largest amount of variance followed by the model containing only the past species/products purchased (Model two) and finally by the model containing only the future species/products purchased (Model three).

ATTITUDINAL DIFFERENCES BETWEEN PURCHASERS AND NON-PURCHASERS OF EACH TYPE OF PUFA FISH.

Cross tabulations, chi-squares and correlations were performed with the seventeen attitude statements to examine whether there were any differences between buyers, potential buyers and non-buyers of each variety of PUFA fish.

General PUFA Fish Purchasers.

Eight attitude statements produced positive chi-square results.

Table 124: A Cross Tabulation of PUFA Fish Purchase with "Fish is difficult to prepare".

Will you buy PUFA fish?	Agree	Neutral	Disagree
No (n=65)	21.5%	23.1%	55.4%
Maybe (n=92)	20.7%	10.9%	68.4%
Yes (n=154)	15.6%	7.8%	76.6%

The chi-square value was 13.35, p=0.00970. The majority of people thought fish was not difficult to prepare and as the probability of buying PUFA fish increases the likelihood of perceiving fish as easy to prepare increases. The correlation coefficient was 0.1734, p=0.002.

Table 125: A Cross Tabulation of PUFA Fish Purchase with “Fish can be used in many different recipes”.

Will you buy PUFA fish?	Agree	Neutral	Disagree
No (n=65)	63.1%	20.0%	16.9%
Maybe (n=92)	78.3%	14.1%	7.6%
Yes (n=154)	85.7%	8.5%	5.8%

The chi-square value was 14.75, p=0.00526. As the probability of purchasing PUFA fish increased there was an increased probability that they perceived fish as being a component of many different recipes. The correlation coefficient was 0.2251, p=0.000.

Table 126: A Cross Tabulation of PUFA Fish Purchase with “Fish provides good value for money”.

Will you buy PUFA fish?	Agree	Neutral	Disagree
No (n=65)	50.8%	23.0%	26.2%
Maybe (n=92)	71.7%	15.3%	13%
Yes (n=154)	79.9%	9.7%	10.4%

The chi-square value was 19.31, p=0.00068. The majority of people thought fish provided good value for money. However as the likelihood of purchasing PUFA fish increased there was a greater probability of fish being perceived as good value for money. The correlation coefficient was 0.2602, p=0.000.

Table 127: A Cross Tabulation of PUFA Fish Purchase with “I prefer poultry”.

Will you buy PUFA fish?	Agree	Neutral	Disagree
No (n=65)	64.6%	7.7%	27.7%
Maybe (n=92)	43.5%	30.4%	26.1%
Yes (n=154)	42.2%	24.7%	33.1%

The chi-square value was 15.42, p=0.00390. PUFA fish purchasers were less likely to prefer poultry than people who might buy PUFA fish and people who would not buy PUFA fish. The correlation coefficient was 0.1778, p=0.002.

Table 128: A Cross Tabulation of PUFA Fish Purchase with “Fish is versatile”.

Will you buy PUFA fish?	Agree	Neutral	Disagree
No (n=65)	50.8%	26.2%	23.0%
Maybe (n=92)	75.0%	17.4%	7.6%
Yes (n=154)	70.8%	22.7%	6.5%

The chi-square value was 18.25, p=0.00110. People who might or would buy PUFA fish were more likely to perceive fish as being versatile than people who would not buy PUFA fish. The correlation coefficient was 0.1948, p=0.001.

Table 129: A Cross Tabulation of PUFA Fish Purchase with “I like to serve fish when I have guests”.

Will you buy PUFA fish?	Agree	Neutral	Disagree
No (n=65)	15.4%	15.4%	69.2%
Maybe (n=92)	22.8%	25.0%	52.2%
Yes (n=154)	33.1%	24.7%	42.2%

The chi-square value was 14.69, p=0.00539. PUFA fish purchasers were more inclined to serve guests fish than people who might buy PUFA fish who were in turn more inclined to serve guests fish than people who would not buy PUFA fish. The correlation coefficient was 0.2597, p=0.000.

Table 130: A Cross Tabulation of PUFA Fish Purchase with “Fish is expensive”.

Will you buy PUFA fish?	Agree	Neutral	Disagree
No (n=65)	69.2%	26.2%	4.6%
Maybe (n=92)	60.8%	19.6%	19.6%
Yes (n=154)	56.5%	15.6%	27.9%

The chi-square value was 16.08, p=0.00292. Although the majority of people thought fish was expensive, PUFA fish buyers and people who might buy PUFA fish were less inclined to think so. The correlation coefficient was 0.2219, p=0.000.

Table 131: A Cross Tabulation of PUFA Fish Purchase with “There is a danger of food poisoning”.

Will you buy PUFA fish?	Agree	Neutral	Disagree
No (n=64)	39.1%	32.8%	28.1%
Maybe (n=92)	33.7%	31.5%	34.8%
Yes (n=154)	23.4%	28.6%	48.0%

The chi-square value was 10.17, p=0.03768. As the probability of purchasing PUFA fish increased the probability of perceiving a danger of food poisoning from fish decreased. The correlation coefficient was 0.2029, p=0.000.

A number of other attitude statements were correlated significantly with general PUFA fish purchasing behaviour. The majority of people believed fish is healthy but PUFA fish purchasers were more likely to strongly agree that fish is healthy (r=0.3182, p=0.000). PUFA fish purchasers were more likely to think fish makes a good family meal (r=0.2882, p=0.000), is an alternative to red meat (r=0.2334, p=0.000) and is nutritious (r=0.2426, p=0.000).

Premium Price PUFA Fish Purchasers.

Nine attitude statements produced a significant chi-square result.

Table 132: A Cross Tabulation of Premium Price PUFA Fish Purchase with "Fish makes a good family meal".

Will you buy premium price PUFA fish?	Agree	Neutral	Disagree
No (n=123)	75.6%	13.0%	11.4%
Maybe (n=94)	89.4%	7.4%	3.2%
Yes (n=94)	89.4%	5.3%	5.3%

The chi-square value was 11.18, p=0.02465. The majority of people thought fish made a good family meal. However people who might or would buy premium price PUFA fish were more inclined to perceive fish as a good family meal. The correlation coefficient was 0.1837, p=0.001.

Table 133: A Cross Tabulation of Premium PUFA Fish Purchase with “Fish provides an alternative to red meat”.

Will you buy premium price PUFA fish?	Agree	Neutral	Disagree
No (n=123)	75.6%	12.2%	12.2%
Maybe (n=94)	90.4%	3.2%	6.4%
Yes (n=94)	85.1%	3.2%	11.7%

The chi-square value was 12.42, p=0.01448. The majority of people perceived fish as providing an alternative to red meat. However, people who might buy premium price PUFA fish were more inclined to perceive fish in this way. The correlation coefficient was 0.1591, p=0.005.

Table 134: A Cross Tabulation of Premium Price PUFA Fish Purchase with “The bones in fish are off putting”.

Will you buy premium price PUFA fish?	Agree	Neutral	Disagree
No (n=123)	86.2%	4.0%	9.8%
Maybe (n=94)	70.2%	10.6%	19.2%
Yes (n=94)	71.3%	7.4%	21.3%

The chi-square value was 10.78, p=0.02913. The majority of people found the bones in fish off putting. However, as the probability of buying premium price PUFA fish increased the probability of not finding the bones off putting increased. The correlation coefficient was 0.1353, p=0.017.

Table 135: A Cross Tabulation of Premium Price PUFA Fish Purchase with "Fish provides good value for money".

Will you buy premium price PUFA fish?	Agree	Neutral	Disagree
No (n=123)	61.8%	17.8%	20.4%
Maybe (n=94)	75.5%	13.9%	10.6%
Yes (n=94)	79.8%	9.6%	10.6%

The chi-square value was 10.18, p=0.03756. The majority of people thought that fish provided good value for money. However, people who would or might buy premium price PUFA fish were more inclined to think so. The correlation coefficient was 0.2175, p=0.000.

Table 136: A Cross Tabulation of Premium Price PUFA Fish Purchase with "I prefer poultry".

Will you buy premium price PUFA fish?	Agree	Neutral	Disagree
No (n=123)	57.8%	15.4%	26.8%
Maybe (n=94)	42.6%	23.4%	34.0%
Yes (n=94)	38.3%	31.9%	29.8%

The chi-square value was 12.16, p=0.01618. As the probability of buying premium price PUFA fish increased the likelihood of preferring poultry to fish decreased. The correlation coefficient was 0.1734, p=0.002.

Table 137: A Cross Tabulation of Premium Price PUFA Fish purchase with "Fish is versatile".

Will you buy premium price PUFA fish?	Agree	Neutral	Disagree
No (n=123)	63.4%	22.0%	14.6%
Maybe (n=94)	77.7%	14.9%	7.4%
Yes (n=94)	63.8%	28.8%	7.4%

The chi-square value was 9.76, p=0.04469. The majority of people perceived fish to be versatile. People who might buy premium price PUFA fish were more inclined to perceive fish as being versatile.

Table 138: A Cross tabulation of Premium Price PUFA Fish Purchase with "I like to serve fish when I have guests".

Will you buy premium price PUFA fish?	Agree	Neutral	Disagree
No (n=123)	15.4%	20.3%	64.3%
Maybe (n=94)	29.8%	23.4%	46.8%
Yes (n=94)	37.2%	25.6%	37.2%

The chi-square value was 18.91, p=0.00082. As the purchase of premium price PUFA fish became increasingly likely the tendency to serve guests fish also increased. The correlation coefficient was 0.2836, p=0.000.

Table 139: A Cross Tabulation of Premium Price PUFA Fish Purchase with "Fish is expensive".

Will you buy premium price PUFA fish?	Agree	Neutral	Disagree
No (n=123)	62.6%	25.2%	12.2%
Maybe (n=94)	63.8%	10.6%	25.6%
Yes (n=94)	54.3%	19.1%	26.6%

The chi-square value was 13.80, p=0.00795. The majority of people thought fish was expensive. People who would or might purchase premium price PUFA fish were less likely to think fish is expensive. The correlation coefficient was 0.1628, p=0.004.

Table 140: A Cross Tabulation of Premium Price PUFA Fish Purchase with "Fish has an unpleasant smell".

Will you buy premium price PUFA fish?	Agree	Neutral	Disagree
No (n=123)	69.1%	5.7%	25.2%
Maybe (n=94)	60.6%	22.3%	17.1%
Yes (n=94)	67.1%	7.4%	25.5%

The chi-square value was 17.46, p=0.00158. The majority of people thought fish had an unpleasant smell. People who might buy premium price PUFA fish were less likely to think fish had an unpleasant smell.

One other attitude statement correlated with premium price PUFA purchase, premium price PUFA fish purchasers were more likely to strongly agree fish is healthy (r=0.2832, p=0.000).

PUFA Salmon Purchasers.

Six attitude statements produced significant chi-square results.

Table 141: A Cross Tabulation of PUFA Salmon Purchase with “Fish can be used in many different recipes”.

Will you buy PUFA salmon?	Agree	Neutral	Disagree
No (n=157)	73.9%	17.8%	8.3%
Maybe (n=70)	75.7%	10.0%	14.3%
Yes (n=84)	90.4%	4.8%	4.8%

The chi-square value was 13.99, p=0.00733. The majority of people agreed that fish could be used in lots of different recipes, however PUFA salmon purchasers were more inclined to think so. The correlation coefficient was 0.1470, p=0.009.

Table 142: A Cross Tabulation of PUFA Salmon Purchase with “Fish provides good value for money”.

Will you buy PUFA salmon?	Agree	Neutral	Disagree
No (n=157)	64.3%	17.2%	18.5%
Maybe (n=70)	72.9%	15.7%	11.4%
Yes (n=84)	83.3%	7.2%	9.5%

The chi-square value was 10.47, p=0.03325. As the probability of buying PUFA salmon increased the likelihood that fish is perceived as value for money increased. The correlation coefficient was 0.1688, p=0.003.

Table 143: A Cross Tabulation of PUFA Salmon Purchase with “I prefer poultry”.

Will you buy PUFA salmon?	Agree	Neutral	Disagree
No (n=157)	56.1%	17.8%	26.1%
Maybe (n=70)	42.8%	28.6%	28.6%
Yes (n=84)	34.5%	27.4%	38.1%

The chi-square value was 11.91, p=0.01806. As the probability of buying PUFA salmon increased the likelihood of preferring poultry to fish decreased. The correlation coefficient was 0.1817, p=0.001.

Table 144: A Cross Tabulation of PUFA Salmon Purchase with “Fish is versatile”.

Will you buy PUFA salmon?	Agree	Neutral	Disagree
No (n=157)	59.9%	29.3%	10.8%
Maybe (n=70)	78.6%	10.0%	11.4%
Yes (n=84)	73.8%	17.9%	8.3%

The chi-square value was 12.64, p=0.01320. The majority of people perceive fish to be versatile however, people who would or might buy PUFA salmon were more inclined to perceive fish as versatile. The correlation coefficient was 0.1376, p=0.015.

Table 145: A Cross Tabulation of PUFA Salmon Purchase with "I like to serve fish when I have guests".

Will you buy PUFA salmon?	Agree	Neutral	Disagree
No (n=157)	16.6%	23.6%	59.8%
Maybe (n=70)	30.0%	21.4%	48.6%
Yes (n=84)	41.7%	22.6%	35.7%

The chi-square value was 20.01, p=0.00050. As the probability of buying PUFA salmon increased the likelihood of serving guests fish increased. The correlation coefficient was 0.3027, p=0.000.

Table 146: A Cross Tabulation of PUFA Salmon Purchase with "There is a danger of food poisoning".

Will you buy PUFA salmon?	Agree	Neutral	Disagree
No (n=156)	37.8%	30.1%	32.1%
Maybe (n=70)	20.0%	34.3%	45.7%
Yes (n=84)	22.6%	27.4%	50.0%

The chi-square value was 12.84, p=0.01206. As the probability of purchasing PUFA salmon increased the likelihood of perceiving fish as a potential source of food poisoning decreased. The correlation coefficient was 0.2047, p=0.000.

Other attitude statements had a relationship with PUFA salmon purchasing behaviour. PUFA salmon purchasers were more likely to strongly agree that fish is healthy (r=0.2177, p=0.000) and more likely to perceive fish as an alternative to red meat (r=0.2112, p=0.000).

PUFA Eel Purchasers.

None of the attitude statements produced a significant result.

PUFA Sturgeon Purchasers.

None of the attitude statements produced a significant result.

Both general PUFA purchasers and premium PUFA fish purchasers had very positive attitudes to fish similar to ordinary fish purchasers. General PUFA fish purchasers and premium price PUFA fish purchasers both thought fish was healthy, made a good family meal and were more likely to serve it to guests. They perceived it as versatile, providing value for money and were less likely to think it is expensive. General PUFA purchasers and premium price PUFA purchasers were less likely to be deterred by fish's negative attributes and they were less likely to prefer poultry to fish. PUFA salmon purchasers also had a positive attitude to fish but to a lesser degree than PUFA and premium price PUFA purchasers. They were likely to perceive fish as healthy, as a component of many different recipes, as versatile and as value for money. They were less likely to think there was a danger of food poisoning from fish. They were also more likely to see fish as an alternative to red meat and were less likely to prefer poultry to fish. PUFA eel and PUFA sturgeon purchasers' attitudes did not differ significantly from non-purchasers attitudes.

QUALITATIVE RESULTS

Three general areas were covered in the group discussions, healthy eating, fish consumption and the concept of PUFA fish.

ASPECTS OF HEALTHY EATING

It was important to examine how interested people were in healthy eating and also what level of knowledge they had. This would be used to determine whether PUFA fish marketed as a healthy food would appeal to consumers and whether they would be aware of how it would fit in with the official guidelines. Most people were moderately interested in healthy eating and tried to incorporate changes into their diet to make it healthier. There were some people who were not interested in healthy eating. People tended to think their diet was not as healthy as it could be and there was room for improvement. Both people who were interested and people who were disinterested in healthy eating were sceptical or confused about the recommended guidelines. This scepticism and confusion arose from conflicting sources of information, alterations to the healthy eating guidelines and food scares.

People were generally aware of the official guidelines which have been reinforced since the beginning of the 1980's, such as reducing sugar, salt and fat intake. Certain types of guidelines caused scepticism and confusion. New guidelines caused confusion e.g. knowledge of fruit and vegetable intake which has only recently started to be promoted was poor, with many people underestimating the daily intake. Altered guidelines caused confusion and scepticism e.g. people were more aware of the old

figures for alcohol intake than the new figures for alcohol intake. Subdivided guidelines also created problems in understanding e.g. many people knew they should reduce saturated fat intake but were not aware they should increase polyunsaturated fat intake.

BSE - By finding out whether BSE had affected people's meat consumption it was possible to determine whether marketing fish, particularly PUFA fish, as a safe alternative to beef would be successful. The majority of respondents had not allowed the BSE crisis to affect their meat consumption. Many of these people were aware that BSE infected meat may have been sold for as long as ten to eleven years and that it was possible they had unwittingly consumed some. Some people continued consuming beef because the link between BSE, the consumption of infected meat and Creutzfeld-Jacobs disease, the human form of BSE, is not clear. Some people's habits had changed they had eliminated beef totally from their diet or eliminated certain cuts. These changes were initiated by concern for their family's welfare or by their children's concern about their welfare.

ASPECTS OF GENERAL FISH CONSUMPTION.

Reasons for Purchase and Non-Purchase of Fish - It was necessary to understand why people purchased fish in order to be able to emphasise the reasons in marketing new fish products. The sensory qualities of fish encouraged purchase; these included fish's enjoyable taste and lighter texture. Many people purchased it as an alternative to meat. Fish was perceived as a healthy food, low in fat, rich in oil, full of proteins and vitamins. Generally there was a contradiction in people's perceptions of the fat content

of fish. They believed it to be low in fat and rich in oils. People did not regard the oils as fat. They also tended to believe that fats had a negative affect on health and that oils had a positive affect on health. People believed fish to be good for alleviating rheumatism and arthritis, reducing cholesterol levels and preventing heart disease. Health related benefits of fish were not always the main reason for purchasing fish. Fish was purchased as it was believed to be good for dieting due to its low calorie content. Many people bought fish as they perceived it to be good value for money. People also purchased fish because it was readily available in the shops.

It was necessary to understand why people did not purchase fish more often so that strategies could be employed to minimise the perceived negative properties and encourage purchase. There were a number of reasons people did not purchase fish. A lack of availability prevented some people from purchasing fish. Many people were deterred by fish's physical properties, particularly with regard to fresh fish. People did not want to be presented with the whole fish including the head and the tail. With an entire fish many people did not like the feeling that the fish was looking at them. The bones and the smell were also disliked. Purchase of fresh fish was also prevented by a lack of knowledge about how to prepare it. When buying fresh fish people felt under pressure to use it on the same day.

The Serving of Fish to Guests - The willingness of people to serve guests fish revealed further reasons for purchasing or not purchasing fish which could be used in determining marketing strategies. The majority of people felt meat was a safer option to serve to guests than fish as they felt more people preferred meat to fish. Meat was

thought to be more filling than fish. People felt more confident and comfortable cooking with meat and felt they would be more capable of rescuing it should something go wrong. However some respondents were prepared to serve guests fish and the most popular choices were trout, salmon and prawn cocktail.

The Preparation and Cooking of Fish - The preparation and cooking of fish were thought to be areas where people would be deterred from purchasing fish and where change could be implemented to encourage purchase. As mentioned above people found the prospect of preparing fresh fish quite unpleasant. Some respondents did not like the appearance of the fish looking at them. Bones were greatly disliked for their potential danger. Respondents disliked the smell of fish which lingered long after cooking. The whole process of preparation was seen as messy, time consuming and a hassle. Cooking fish was seen as unrewarding as it often resulted in a visually unappetising dish. Also respondents found there was a lack of sauces available that could be used with fish to aid preparation.

Despite the negative points mentioned above a number of people found the preparation and cooking of fish to be unproblematic. Some respondents found fishmongers willing to prepare fish thus eliminating a major dislike. The cooking of fish was said to be easier, quicker and more convenient by some respondents. Fish was also perceived as very versatile.

A Comparison of the Qualities of Meat and Fish - The qualities of meat and fish were compared in order to find out what was appealing and unappealing so that fish's

positive properties could be emphasised and its negative properties could be minmised in marketing. Respondents felt more confident purchasing meat. They were familiar with the varieties, cuts, preparation and methods of cooking. They felt there were more sauces available for use with meat. Meat had some physical qualities which respondents preferred such as its chewy texture and stronger flavour. Respondents did not perceive meat as having any negative qualities.

Fish was perceived as having a large number of varieties and as being cheap. The help of a fishmonger was regarded as a positive quality of the purchasing process. Respondents liked the light texture of fish and the fact they found it easier to cook than meat. A disadvantage was that it was felt that some knowledge was essential in order to be able to prepare and cook some species properly, particularly shellfish.

Strategies for Encouraging the Purchase of Fish - It was important to find out what would encourage people to try a new fish or purchase more fish so that when a new product such as PUFA fish was launched these strategies could be used. A number of methods could be employed by multiples to encourage people to consume more fish and to try unfamiliar varieties of fish. The respondents wanted a traditional fishmonger who had considerable knowledge about the varieties of fish and the different cuts. They wanted the fishmonger to prepare the fish and to suggest how to cook and make a meal of their purchase. A fishmonger with a flair for selling and encouraging purchase would also be appreciated. Respondents would like appealing displays with a wide range of fish. Special offers such as a Buy of the Week or Month would persuade people to purchase fish. Respondents generally wanted leaflets providing information

on storing and preparing fish and recipe cards for ideas on how to cook the fish. More ready prepared sauces were required to aid in the preparation of fish. The information and recipe cards and the sauces could be displayed near to the fish to provide the consumers with inspiration.

THE REACTION TO THE CONCEPT OF PUFA FISH.

A number of interesting points were mentioned with regard to the concept of PUFA fish which are outlined below.

People were aware that fish and PUFA fish were beneficial to health. They were also able to state that it was good for alleviating arthritis and preventing heart disease. A few respondents stated it was good for lowering cholesterol levels and reducing blood pressure.

Farmed Fish vs Wild Fish - As PUFA fish would be farmed it was essential to discover the consumers' views about farmed fish. People were generally aware that salmon and trout were farmed and accepted this fact when purchasing these products. Some respondents were capable of distinguishing between the flavours of wild and farmed fish and were more likely to prefer the flavour of wild fish. When discussing fish farming in more depth issues such as force feeding, hormones, chemicals and antibiotics arose which concerned a number of consumers and could prevent purchase. People generally preferred the idea of consuming wild fish but questions were raised about the safety of consumption due to the pollution of the seas.

The Reactions to PUFA Fish - When people were told about PUFA fish they were very suspicious about how the fish became enriched with polyunsaturated fatty acids. They suspected it might be due to genetic engineering, breeding or chemicals. Some people correctly thought it would be achieved through diet and farming fish. Once the participants were told the greater concentrations were achieved through diet they wanted to know what the fish were being fed. These questions have been brought to the forefront particularly through the BSE crisis which is believed to have been caused by feeding cattle infected animal protein.

Despite concerns about how PUFA fish became enriched with PUFA a number of people were open to the concept and would be willing to purchase such a product. Repeat purchase of the PUFA product would depend on whether the consumer liked its taste. Other factors such as price and product format were mentioned as determining purchase. It was expected that the PUFA products would be more expensive than ordinary fish. However a number of people would still be prepared to purchase it. Some respondents expected the initial price to be low due to a special offer then increase.

Generally the participants were adamant that should the fish be sold it should not be labeled high in polyunsaturated fats. They would prefer to avoid the terminology polyunsaturated. Also any food labeled as high in any type of fat would be avoided by a lot of people due to a tendency to regard all fats as having an adverse effect on health

and confusion about which fats are beneficial to health and which have an adverse effect on health. A more user friendly terminology would be required.

A number of species of fish were put forward as potential PUFA fish products, including salmon, trout, halibut, turbot, carp, sturgeon and eel. A mixture of popular and less popular species were discussed to ascertain how familiarity affected responses and to gauge the consumer's reactions to unfamiliar species. The majority of people would buy PUFA salmon or trout as they were familiar with them and knew they were generally farmed already. A number of people seemed to have tried halibut. Some respondents stated that they did not like it or it was too oily but others had enjoyed it and would be willing to try PUFA halibut. Respondents who had not previously tried it had mixed feelings. Many people were not familiar with turbot and had not tried it. A few respondents were prepared to try it and a few previous purchasers would repeat buy PUFA turbot. People were not keen to try carp. It was associated with angling and being an ornamental fish rather than as being an edible fish. A few respondents were willing to try it. People were reluctant to try PUFA sturgeon because they had not heard of it or had not tried it. Some people knew it produced caviar and anticipated it being expensive. A few respondents wanted to know what it looked like. Eels were rejected outright by the majority of people with reactions such as "No chance". A few were prepared to try it and previous purchasers would repeat buy PUFA eel due to its taste. People were most interested in PUFA salmon and trout and were least interested in PUFA eel and carp.

SECTION SIX: DISCUSSION

As stated previously a huge number of new products are launched on to the market every year, 80-90% of which are destined to fail therefore it is of vital importance to assimilate knowledge about the group of people i.e. the market initiators who will be the first to purchase a particular new product. The aim of the present study was to identify the market initiators of the varieties of PUFA fish, particularly PUFA eel and PUFA sturgeon.

THE EFFECT OF THE DEMOGRAPHICS ON FISH PURCHASING BEHAVIOUR

It was thought that the demographics, sex, age, socio-economic class and region would influence the psychological variables which in turn would influence fish purchasing behaviours. It was also thought that the demographics would influence fish purchasing behaviours alone.

The Effect of the Demographics on the Psychological Variables.

Women were expected to have a more positive attitude to fish and be more involved in healthy eating than men. Women are the gatekeepers of the family's diet and from the group discussions it was found that they felt responsible for providing a healthy diet and tended to be aware of the trends in healthy eating, the role of diet in certain diseases and how to implement changes in the family's diet to make it healthier. Fish is perceived as nutritious and women would have a greater appreciation of its qualities than men. Women's knowledge and practical application of the information comes from women's magazines and women's section of the newspapers which always

contains information on food and health. Women are also subject to greater pressure from the media to be thin so more women than men are on diets. Women perceived fish positively and were more likely to incorporate it into their diet as it is low in calories and aided their slimming diets. However sex did not significantly influence attitude to fish or involvement in healthy eating. As women's roles have changed and they have increasingly entered the workplace men have become increasingly responsible for providing themselves and their family with healthy meals which may include fish. In recent years men have come under increasing pressure from the media to improve their looks and men's general interest magazines incorporating articles on health and fitness have been introduced onto the market so their interest in healthy eating has increased and they may perceive fish more positively as they become aware of its healthy properties. Cognitive style was not influenced significantly by sex, although women are generally more Adaptive than men (Kirton 1987).

Age in the past has been found to influence attitude to fish i.e. older people had more positive perceptions of fish than younger people (Goulding 1985, LeGrand 1992, Mintel 1995) and this association was found to be significant in the present study. In the past fish was a cheap source of protein and regularly incorporated into traditional British meals. The positive perceptions and habit of consuming fish was instilled to older people when they were children. As the stocks of popular fish have decreased through overfishing the price has increased so fish is no longer a cheap source of protein especially compared with poultry which has increased in popularity over recent years and is less readily incorporated into meals. In the past there were few multi-cultural influences on the British diet so older people have been more exposed to

traditional British meals which included fish and may prefer British food. However immigrants into the country have brought their native cuisine which has lead to a huge increase in the variety of foods available and the type of take aways and restaurants to choose from. Younger people are less likely to choose fish with the huge choice available and consequently do not have as positive an attitude to fish as older people. As expected age was not significantly associated with involvement in healthy eating. The group discussions revealed that the 55 plus age group were quite knowledgeable about medical conditions associated with various dietary habits. This may be due to them experiencing the emergence of health problems e.g. blood pressure and information being provided by the doctor about what it is and what can be achieved through diet to reduce or eliminate the problem. Older people tended to be confused by the subdivisions of the fat guidelines. This confusion may be due to the fact that the guidelines for healthy eating have changed considerably over the years and although a reduction in the amount of fat in the diet has been promoted for over a decade, the subdivisions have only been promoted for a few years. The similarity of the names of the different types of fat may also be a source of confusion. Older people's disinterest in healthy eating may be due to the belief that it will not positively affect their health at their time of life. Healthy eating has been promoted for over twenty years so many young people have grown up automatically incorporating changes into their diet. However some younger people are disinterested in healthy eating due to the fact the benefits of healthy eating are intangible and may not specifically be regarded as being due to healthy eating. Cognitive style was influenced significantly by age, as people became older they became increasingly Adaptive.

Socio-economic class, as expected did not influence attitude to fish. Within each class their was a mixed reaction to fish. Involvement in healthy eating was not influenced by socio-economic class. The group discussions found classes A, B, D and E to have a slightly greater interest in healthy eating than classes C_1 and C_2. Classes A and B may have a better educational background so they are more aware of the relationship between health and diet. Classes D and E may contain more elderly people who may have developed a medical condition which they have been advised by their doctor could be alleviated through dietary control. Socio-economic class as expected did not influence cognitive style.

Region did not influence any of the psychological variables. It was expected that within each region there would be a variety of different attitudes to fish, varying degrees of involvement in healthy eating and a mixture of cognitive styles.

The Effect of the Demographics on Fish Purchasing Behaviours.

Some of the demographics did have a significant influence on fish purchasing behaviour.

Women were expected to be more likely to purchase fish for the same reasons they were expected to have a more positive attitude to fish which were described above. However the majority of fish purchasing behaviours were not influenced by sex. Past tinned fish purchasing was the only behaviour to be effected by sex. Women were more likely to have purchased tinned fish in the past than men. This may be due to women having a greater awareness of the versatility of tinned fish in terms of the

number of different meals in can be incorporated into. Men were equally like to purchase tinned fish in the future possibly due to men taking greater responsibility for making meals for themselves and their family.

Age influenced a considerable number of fish purchasing behaviours. Older people were more likely to purchase fish in general than younger people because they have more positive attitudes towards fish for the reasons described previously. Older people were more likely to purchase fresh fish and less likely to purchase frozen fish. In the past fresh fish was the most common format of fish available so as these people grew up they would have become familiar with how to prepare and cook fresh fish from observing their parents and they have continued to purchase fresh fish and use their knowledge as they have grown older. Frozen fish may be perceived as inferior to fresh fish by older people as the products have undergone some kind of processing. Younger people have grown up with increasing developments in kitchen technology resulting in most people owning a fridge and a freezer. Simultaneously women have become increasingly involved in the workplace leaving less time to produce meals from raw ingredients and producing a demand for frozen products including fish products which are quick and easy to prepare. Younger people are reluctant to purchase fresh fish because they perceive it as difficult and time consuming to prepare and cook because they have little experience of using it. Older people were prepared to pay a premium price for PUFA fish. This group of people may have developed a medical condition or be aware they are more at risk of developing a medical condition which can be prevented or alleviated by increased consumption of polyunsaturated fatty acids. They perceive their health to be an investment and are prepared to pay extra to maintain it or

improve it. People who were older were more prepared to purchase PUFA salmon and PUFA eel this may be due to older people having a more varied experience of fish and being more willing to eat a number of different species. Trends in fish consumption have changed over the years so older people who have followed these trends will have consumed a considerable variety of fish and if the experiences have been largely positive they will try further unfamiliar species.

Socio-economic class was not expected to have any influence on fish purchasing behaviours and it was found that people in each socio-economic class would be able to find a fish that appeals to them generally and within each product class. However socio-economic class did influence some PUFA fish purchase behaviours. People in the higher socio-economic classes were prepared to purchase PUFA fish, PUFA salmon, eel and sturgeon. This group of people may have a greater educational background and have more knowledge on the benefits of increasing the amount of polyunsaturated fatty acids in the diet. Salmon, eel and sturgeon may appeal to people of higher socio-economic classes due to their associated images. Salmon has been considered a luxury food item for a considerable time, sturgeon is associated with the production of caviar another luxury and with royalty as any sturgeon caught belong to the monarchy. Eels are regarded as a delicacy abroad and this image may be influencing people in higher socio-economic classes who may have greater opportunities to acquire cosmopolitan tastes.

Region as expected had no influence on the majority of fish purchasing behaviours but it did influence the purchase of PUFA salmon. Northerners were more likely to purchase PUFA salmon than Midlanders or Southerners.

With regard to general fish purchasing and fresh, frozen and tinned fish purchasing and PUFA fish purchasing the demographics explained little of the variance which indicates there are other factors which are of greater importance in making a purchase decision.

THE EFFECT OF THE PSYCHOLOGICAL VARIABLES ON FISH PURCHASING BEHAVIOUR.

The models of fish purchasing behaviour consisting of the psychological variables explained a greater amount of variance than corresponding models consisting only on the demographic variables. However the amount of variance explained was still quite small, ranging from 0.02 for PUFA sturgeon purchase to 0.094 for future general fish purchase. Obviously other variables contribute to explaining these behaviours including the demographics and behavioural variables.

Attitude to fish influenced past and future general fish purchase and fresh and tinned fish purchase. Future frozen fish purchase was influenced by attitude to fish but not past frozen fish purchasers. Frozen fish eliminates many of the perceived negative attributes of fish such as the bones, the smell and the uncertainty over freshness etc. so it would attract purchasers who do not have a positive attitude to fish, but want a change in their diet. Future frozen fish purchase was influenced by attitude to fish this may be due to people with a negative attitude to fish who previously purchased frozen fish for a change, not repeat buying frozen fish leaving future purchasers who had a positive attitude to fish. This experience and knowledge means they would be more willing to try different species of fish or innovations in the food group. People with a positive attitude to fish readily accepted the concept of PUFA fish and were willing to purchase it. They were aware of ordinary fish's benefits to health and wanted to try fish with additional health benefits. People with a positive attitude to fish were prepared to pay a premium price for the additional health benefits. A positive attitude to fish will generally have been acquired through experience and knowledge of the

food group. People with a positive attitude to fish were prepared to try a variety of species including PUFA salmon which is well known and commonly consumed and PUFA sturgeon which is unfamiliar and not commonly consumed. PUFA eel purchase was not influenced by a positive attitude to fish so another factor must be of greater importance.

In addition to examining the affect of involvement in healthy eating on fish purchase, people's interest in healthy eating was investigated. Healthy eating has been promoted for nearly twenty years so it was important to find out whether people were still interested in the area and whether it would be an aspect that could be used in marketing PUFA fish.

Healthy eating was moderately important to the majority of participants indicating that most people want to achieve the aims of eating healthily i.e. preventing illness and premature death. In aiming for a healthy diet participants attempted to utilise the advice from scientists and the government and incorporate changes into their diet. These changes may have been quite small e.g. grilling food instead of frying it or quite large and entailing an examination of the whole diet e.g. reducing the amount of fat. Although changes were made they tended not to be adhered to rigidly. People allowed themselves to have occasional treats such as chocolate and chips. Treats generally had a high fat or sugar content and were not regarded as healthy. People included treats in their diets in the belief that nothing in moderation would be harmful. Most participants believed that their present diet was quite healthy but that there was room for improvement.

A number of participants were not particularly interested in healthy eating and some participants found the whole topic of healthy eating to be boring. These people may find it difficult to motivate themselves to eat healthily due to the lack of tangible benefits. It may be possible they have the philosophy “You only live once so you may as well enjoy it” and “You may as well enjoy yourself because you could get knocked over by a bus tomorrow”. People may also feel cynical about the results of eating healthily e.g. “My grandmother smoked all her life and lived to be eighty six”. It would be very difficult to motivate this group of people to consume a healthier diet.

Most participants were aware that there was often conflicting evidence from different government and scientific bodies and that dietary advice altered over the years. This was evident when a lady from the eldest age group stated that she tried to eat healthily but her downfall was eating too much bread. Years ago bread was deemed to be fattening because it was a carbohydrate. However, present dietary advice suggests that carbohydrates are not fattening but provide a ready source of energy. Despite the fact that healthy eating information was often contradictory people who were interested still tended to listen to advice from various bodies. Contradictory advice may contribute to people becoming disinterested in and or sceptical about healthy eating. It is impossible to produce a definite set of recommended guidelines due to the fact that science is always advancing and making new discoveries about the human body and nutrition which necessitate the implementation of new guidelines and modification of guidelines.

The accuracy of the respondents' knowledge represents how successful the government and scientific bodies have been in conveying the guidelines to the public. The incorporation of PUFA fish into the diet depends on people having accurate knowledge of the official guidelines and the ability to implement them.

The government and scientists recommend an intake of five portions of fruit and vegetables per day. Very few people knew the correct answer. The majority of people tended to underestimate the amount required and generally stated two or three portions were adequate. People have always known fruit and vegetables contribute to a healthy diet but there has not been a recommended intake until recently. Although Sainsbury's have reinforced this message in store with their healthy eating campaign, it has not been widely broadcast elsewhere.

Current thinking suggests a reduction in the level of sugar intake. All participants were aware of this and many had taken steps to reduce their intake e.g. using less in drinks. Nobody stated that they used sugar substitutes. One person mentioned the fact that sugar substitutes could actually have a greater negative affect on health than sugar. Although people tried to reduce their sugar intake they were often tempted by chocolates, sweets, biscuits and cakes. Many people were aware of "hidden" sugar in various food products but nobody mentioned purchasing reduced sugar alternatives. This is an area where people could improve their diet further.

Current thinking suggests a reduction in the level of salt intake and all of the participants were aware of this. Many knew of the adverse effects too much salt has on

health e.g. increased blood pressure and risk of heart disease. Most people had reduced their salt intake either through not cooking with salt and/or not using salt at the table and a number of participants mentioned using a low sodium alternative to salt. A few participants were aware of “hidden” salt in various food products but nobody stated that they purchased reduced salt versions of ordinary foods.

The current thinking on acceptable alcohol consumption has recently changed from twenty one units for a man and fourteen units for a woman per week to twenty eight units for a man and twenty one units for a woman per week. Participants were familiar with the old figures and generally quoted them. A number of people were aware that the guidelines had increased recently but only a few knew the correct new figures. The new guidelines for alcohol consumption were briefly publicised and were headline news for possibly two days. These changes need to be reinforced.

All participants were aware of the need to reduce the amount of fat in their diet. Most people were aware that saturated fats had an adverse effect on health and when prompted most people concluded that polyunsaturated fats were beneficial to health. They knew that saturated fats came from animal fats and polyunsaturated fats came from vegetables. They were aware that saturated fats caused heart disease. Some people were quite knowledgeable and stated that excess polyunsaturated fats might have a negative effect on health and actually be carcinogenic. This statement reflects the current scientific uncertainty about the effects of excess polyunsaturated fatty acids in the diet. Other people stated that they were concerned that the substance used to solidify margarine may cause health problems and that consumers might just as well

use butter. The majority of people had tried to reduce the fat content of their diet through making a variety of changes such as using low fat spreads, not using lard, using olive oil, using semi-skimmed milk, grilling food instead of frying. However, there was still considerable confusion amongst some respondents and gaps in their knowledge which may have occurred due to different types of fat having different dietary targets. The family of fats also have very similar names which has probably contributed to the confusion about which fats need to be reduced in the diet and which can be increased. Altering the terminology now would result in further confusion so the only option would be to develop a clear, simple message conveying the information. This could be conveyed through articles in magazines, newspapers, in store healthy eating campaigns and health promotion literature.

Specific dietary targets set by scientists and the government were understood by a large number of participants who attempted to alter their diet accordingly. Problems understanding the guidelines arose when the message was new e.g. fruit and vegetable intake, the guidelines were altered e.g. alcohol or the initial message was not as simple as it first appeared e.g. fat. Education through the government, local health authorities and multiples should continue to reinforce old and new guidelines.

During the last twenty years during which healthy eating has been promoted there have been a number of food scares the most recent involving beef and beef by products. It is thought that beef and beef by products produced from cattle with BSE (bovine spongiform encephalitis) consumed by humans leads to the development of the human form of BSE, Creutzfeld-Jacobs disease. It was thought that BSE would

largely lead to a reduction in the consumption of beef and beef by products and produce an increase in the consumption of other meats including fish. It has had a variety of impacts on participants' diets. Some participants' consumption of red meat was totally unaffected. They took the view that BSE infected meat has been around since the mid 1980's therefore past beef consumption might already have infected them and there was no point in ceasing consumption of beef now. This lack of concern may also have been due to the lack of evidence that humans can contract the human form of BSE through the consumption of infected meat. The fact that previous food scares have created one or two weeks of concern and have faded without considerable alteration to food production or patterns of consumption have led people to treat the BSE food scare in the same manner. One person mentioned that they were consuming more beef than before the BSE crisis due to the price having decreased. Initially some participants were worried but after seeing friends and relatives continue to eat beef they decided to resume their normal eating habits. The reason for participants returning to their original consumption pattern may be the same as those stated by participants whose consumption remained unaffected. The remaining participants' diets had been influenced to some degree. Some participants had eliminated beef from their diet altogether, of these participants some had children and would not want anything to happen to them because they had ignored warnings or their children had stopped eating beef and had persuaded their parents to consume other alternatives. Other people had introduced subtle changes into their diet such as not buying offal but continuing to buy joints of beef. A few people as a result of the BSE scare had increased their consumption of other meats including fish. This mixture of reactions reflects the range of views expressed in the media about BSE, from beef is

safe to consume to warnings of epidemics of the human form of BSE. It is impossible to say for how long BSE will continue to influence people's meat consumption. It may be that as BSE disappears from the news some people's diets will return to normal. However some people's diets may have been permanently changed.

Although involvement in healthy eating was expected to influence all fish purchasing behaviours, the majority of fish purchasing behaviours were not influenced by it. Future tinned fish purchase, PUFA and premium price PUFA fish purchase behaviour were the only behaviours involvement in healthy eating influenced.

Healthy eating encompasses a vast variety of foodstuffs from healthy foods e.g. skimmed milk to health foods e.g. pulses. A healthy diet may even encompass foodstuffs perceived as unhealthy e.g. chocolate as the occasional treat. Fish is only one item of food. A healthy diet may consist of an infinite number of permutations, some of which will include fish, some of which will exclude fish. When fish is included in a diet the frequency of consumption will vary. Of these diets some may include healthy fish formats e.g. grilled, fresh fish and some may include less healthy fish formats e.g. deep fried, battered fish. Fish consumption is only one small component of a healthy diet. Healthy eating incorporates such a vast variety of foodstuffs that a person who is interested in healthy eating would not have to include fish in their diet.

Most people have some knowledge of the official guidelines. However accuracy of knowledge decreases if the guideline is new, altered or more complex than originally

thought. This inaccuracy may mistakenly lead to the incorporation of unhealthy foodstuffs. For example people may confuse the guidelines for fats and wrongly believe that saturated fats are good for health and polyunsaturated fats are bad for health. As a result people would wrongly include a lot of cheese and red meat and avoid fish, especially PUFA fish. A person may be interested in healthy eating but an inaccuracy in their knowledge may lead them to inadvertently implement changes in their diet which actually make it unhealthy. Healthy eating information needs to be conveyed in a clear simple manner which can be understood by people with a huge range of educational abilities to ensure they are receiving the correct message.

The official guidelines are generally not put in terms of foodstuffs but in terms of components such as fats, fibre etc. Many people may not be able to interpret official guidelines in terms of ordinary foodstuffs i.e. they may not have the knowledge about food and nutrition to enable them to state for example that cheese has a high saturated fat content. As stated earlier people believe fish to be low in fat or contain no fat at all therefore if they were aiming to implement the official guideline recommending an increase in their polyunsaturated fat intake they may not consider increasing their fish intake. People can be interested in healthy eating but their knowledge may not always be comprehensive or accurate enough to enable them to implement changes leading them to purchase unhealthy food.

Involvement in healthy eating influenced the purchase of tinned fish. Different fish products are perceived as having different degrees of healthiness. Fresh fish is perceived as the healthiest format as it has undergone the least processing. However

involvement in healthy eating does not influence the purchase of fresh fish which suggests there are other factors more important in determining purchase. Frozen fish is perceived as the least healthiest as the quality of the cuts of fish used cannot be ascertained and it has usually undergone the most processing therefore it is not surprising that involvement in healthy eating did not influence purchase. The perceived healthiness of tinned fish is perceptually between fresh and frozen fish. People who are involved in healthy eating are aware that tinned fish does not possess the negative qualities of fresh fish e.g.. the bones and that it is not made of poor quality cuts of fish like frozen products. Tinned fish is more versatile than fresh and frozen fish in that it can be used in a number of different recipes and at different mealtimes so people involved in healthy eating would be inclined to purchase it.

Generally people involved in healthy eating were prepared to purchase the generic products PUFA fish and premium price PUFA fish. They believed the health benefits of the product and were prepared to pay extra for them. However involvement in healthy eating did not influence the purchase of the specific PUFA species, salmon, eel and sturgeon. This indicates that their are other factors which are more important than health motivating purchase. Each of the species differs in terms of its familiarity and popularity with the public, salmon is familiar and commonly consumed, eel is familiar and not commonly consumed and sturgeon is unfamiliar and not commonly consumed. Factors determining these different degrees of consumption may include lack of knowledge, traditional perceptions of the fish, the sensory attributes and the price amongst others.

There was a significant correlation between attitude to fish and involvement in healthy eating i.e. the more positive the respondents' attitude to fish the more likely they were to be involved in healthy eating. This may explain why there were fewer significant relationships between involvement in healthy eating and fish purchasing behaviours than expected.

Both Adaptors and Innovators purchased fish in general. They were both expected to be able to find a type of product and a species of fish which would appeal to them. Innovators intended to purchase more fresh fish in the future than Adaptors. As previously described in Section One Innovators get bored easily and seek novelty. They tend to challenge rules and are less inhibited about breaking with the established methods. Fresh fish offers a huge variety of species from cod to parrotfish. Each species of fish offers a different appearance, taste and texture so Innovators will not become bored with fresh fish. Frozen and tinned fish products offer only a fraction of the species which are available in the fresh format and these are the most popular species so Innovators would become bored with these formats quickly. Fresh fish is a raw material. It is generally sold without cooking instructions, as a component from which people can create their own meals. These properties make fresh fish versatile and capable of being used in a wide range of recipes. Fresh fish offers no restrictions with how it can be cooked and what it can be cooked with. Innovators can experiment with fresh fish in terms of the cooking methods used e.g. stir frying, barbecuing, the types of meals e.g. fish curry, kebabs and the meal situations e.g. they may serve fish on Christmas Day. Adaptors as described in Section One generally prefer order and precision. They tend to be intolerant of change and are happiest working within an

established set of rules. Adaptors may not buy fresh fish because it has no cooking instructions or serving suggestions. If they do purchase it they will probably only buy the species they are familiar with, cook them in a limited number of ways and serve in traditional types of meals on certain occasions. Adaptors were expected to purchase frozen fish more than Innovators. As previously described Adaptors prefer order and precision and working within a framework so they would prefer frozen fish products which are made from the popular species, have specific instructions and are served in certain types of meals. However both Adaptors and Innovators purchase frozen fish. Recent developments have lead to a greater number of species being used in the production of frozen fish products. There has also be an increase in the type of product available. Frozen fish products are no longer restricted to plain frozen fillets, breaded or battered fillets and fish fingers. Frozen fish product manufacturers are being inspired by non-traditional recipes which include dishes such as smoked salmon carbonara. This product innovation has led Innovators as well as Adaptors to purchasing frozen products but Innovators product choice would probably be more varied. Adaptors may purchase a limited number of products whereas Innovators will be more experimental. As expected cognitive style did not influence past or future tinned fish purchasing behaviour. Both Adaptors and Innovators purchase tinned fish but they may use it in different ways according to their cognitive style. Adaptors who are less inclined to be sensation seekers may purchase tinned fish to use in a few traditional ways e.g. making sandwiches for packed lunches whereas Innovators may use tinned fish as a component of a greater number of recipes and in a wider number of meal situations. None of the varieties of PUFA fish were influenced by cognitive style. As expected Adaptors and Innovators were both prepared to purchase PUFA

fish. A number of people know fish contains polyunsaturated fatty acids therefore a fish enriched with the same substance may not seem radically different. This would appeal to Adaptors who prefer products which are slight improvements on old products but not Innovators who prefer radically new and different products. PUFA fish is generic therefore Adaptors would perceive it to be a familiar popular species whereas Innovators would perceive PUFA fish to be an unfamiliar fish. The difference in perceptions between Adaptors and Innovators explains why they would both be prepared to purchase PUFA fish. Premium price PUFA fish was also equally likely to be purchased by Adaptors and Innovators. This may once again be due to Adaptors and Innovators perceiving the generic premium price PUFA fish to be produced from a species which satisfies their own desires. Both groups were prepared to pay extra for a high quality product. It was expected that Adaptors would be more likely to purchase PUFA salmon than Innovators. Salmon is a popular, familiar variety of fish so an improved version would appeal to Adaptors' conservative tastes than Innovators experimental tastes. PUFA salmon purchase was purchased by both Adaptors and Innovators. The purchase of PUFA salmon may not be related purely to the product itself but also to its anticipated use. Adaptors may choose to use PUFA salmon in a limited number of ways whereas Innovators may be more experimental in the ways they use PUFA salmon. Innovators were expected to be more likely to purchase PUFA eel as they get bored easily and seek novelty. However cognitive style did not influence the purchase of PUFA eel. This suggests another factor has a major influence on determining the purchase of PUFA eel. One such factor could be the negative image of eel as highlighted by the respondents' reasons for their purchase decision. Adaptors and Innovators were also equally likely to purchase PUFA eel.

Adaptors and Innovators may have previously tried eel and enjoyed it so they would purchase it again. Some Innovators may not have tried eel before but with their strong desire for novelty and new foodstuffs they would not be deterred by eel's negative image. Adaptors and Innovators may both purchase PUFA eel but their reasons for purchase may be slightly different. Innovators were expected to be more likely to purchase PUFA sturgeon due to qualities such as a desire for novelty, as previously described in Section One. However, cognitive style did not influence the purchase of PUFA sturgeon. This suggests another factor has a major influence in determining PUFA sturgeon purchase. A factor highlighted by the respondents' as being important in making a purchase decision was a lack of knowledge about sturgeon. In order to make a purchase decision a certain amount of information may be required before it can be made. Adaptors require enough information for them to ascertain that it is similar to a product they are already familiar with before they buy. Innovators would require enough information to ascertain that it was sufficiently different from any product they are already familiar with before they buy. A lack of information would prevent both Adaptors and Innovators from being able to arrive at a purchase decision. Adaptors and Innovators were equally likely to purchase PUFA sturgeon. A few Adaptors and Innovators may have previously tried sturgeon and enjoyed the taste, leading to the purchase of PUFA sturgeon. Respondents who had previously tried sturgeon may have enough information about sturgeon, its taste, appearance and image to make a purchase decision. Adaptors may decide PUFA sturgeon is sufficiently similar to species they have previously tried whereas Innovators may decide PUFA sturgeon to be sufficiently different to previously consumed species. The information required for a purchase decision is not necessarily actively sought out which would

imply involvement, it is acquired from a wide variety of media and people impinging on the awareness of the person. The information is not acquired in an Adaptive or Innovative manner. The information processed concerns the sensory qualities of the product i.e. taste, appearance, texture etc. and its image. The information obtained would be processed in an Adaptive or Innovative manner which affects how the product is perceived.

It was generally expected that there would be a relationship between involvement in healthy eating and cognitive style affecting all fish purchasing behaviours. This relationship between involvement in healthy eating and cognitive style was not found with any fish purchasing behaviour, with the number of species/products purchased or with the purchase of any variety of PUFA fish. Establishing relationships between cognitive style, involvement in healthy eating and fish purchasing behaviours may have not been found for a variety of reasons.

Involvement in healthy eating may be too non-specific. In previous studies using involvement in healthy eating and cognitive style, the products to be purchased came from a range of foodstuffs e.g. low fat salad cream, mixer sherry, fibre rich cereal, decaffeinated coffee (Foxall and Bhate 1993). The current study concentrated on the purchase of one particular food group within healthy eating, fish. People who are involved in healthy eating do not need to incorporate fish to have a healthy diet as described previously. Instead of measuring involvement in healthy eating it may have been wiser to reduce the scope of foodstuffs which fall into that category and measure involvement in fish.

In past studies (Foxall and Haskins 1986, 1987, Foxall and Bhate 1993) the influence of cognitive style and involvement has been found for foods which have already been purchased i.e. actual behaviour. The current study has aimed to evaluate cognitive style and involvement role in predicting future behaviour. Cognitive style and involvement did not predict any future fish purchasing behaviour or PUFA fish purchase behaviour. In answering questions about past fish purchasing behaviour, the respondents' awareness of fish will be raised and they may consciously or subconsciously question why they only bought certain formats and species of fish. When questioned about future fish purchasing behaviours the conscious or subconscious questions raised by the respondent may lead them to consciously or subconsciously alter their answers so what they say they will do is not actually what they will do. Answers to future fish purchasing behaviour questions therefore may not necessarily reveal a relationship with cognitive style and involvement.

PUFA fish as products are conceptual therefore it may be difficult to establish a relationship between intention to purchase each variety of PUFA fish and cognitive style and involvement. The respondents have a limited amount of information about PUFA fish. They know it is enriched in polyunsaturated fatty acids, has a beneficial effect on health and that eel and sturgeon are the two species available. They are unaware of the types of products it will be incorporated into i.e. fresh, frozen or tinned and what recipes will be used within each format. The vast majority of the stimuli within the consumer environment which also contribute to determining purchase have which contribute to determining purchase e.g. price, special offers, the fishmonger's

ability to sell, the products appearance, the time allocated to shopping etc. have been removed. In this study the respondents are being asked to make a purchase decision about a product using two criterion, the greater quantities of polyunsaturated fatty acids and the species. It may be difficult for both Adaptors and Innovators to make projective purchase decisions using the limited amount of information and removed from the consumer environment. The Adaptive and Innovative approach to solving problems may only become significant when products are being judged on a greater number of criterion. Further research would need to be performed investigating whether the relationship between fish purchasing behaviour and cognitive style and involvement would emerge if a greater amount of information was provided about the PUFA fish products.

The results indicate that attitude to fish was the most successful of the three psychological variables in explaining fish purchasing behaviour. The fact that involvement in healthy eating did not significantly contribute to explaining many fish purchasing behaviours may be due to the correlation with attitude to fish. Cognitive style had limited success in explaining fish purchasing behaviour. Overall the psychological variables explained very little of the variance however in predicting the number of respondents in each fish purchasing category the psychological variables were reasonable ranging from 28-90%.

THE DESCRIPTIVE MODELS OF FISH PURCHASING BEHAVIOURS.

A descriptive model was performed for the past and future of each fish purchasing behaviour and the number of species/products purchased. The pseudo R^2 figures were examined for each behaviour and it was found that the descriptive models for the future fish purchasing behaviours explained more variance than the descriptive models explaining the past fish purchasing behaviours. This may be explained by the fact that people who purchase a product in the future were satisfied with their past purchases whereas past purchasers may not all have been satisfied with their purchases. The models of future fish purchasing provide a more comprehensive picture of why people make fish purchase decisions.

The Descriptive Model for Fish Purchasing.

Fish was increasingly likely to have been purchased in the past or to be purchased in the future if the respondent's attitude to fish was positive. In the past Midlanders were more likely to purchase fish than Northerners or Southerners. The model explaining future fish purchase found people in the 55-64 age group were more likely to purchase fish than any other age group for reasons which were explained in a previous section. Demographics and psychological variables accounted for 11% of the variance for past general fish purchase behaviour and 13% of future general fish purchase behaviour. This suggest that there are other variables of equal or greater importance in predicting past and future general fish purchasing.

The Descriptive Model for Fresh Fish Purchasing.

As attitude to fish became more positive there was an increasing probability of fresh fish being purchased both in the past and in the future. As a person's attitude to fish increases they will perceptually maximise the positive attributes and minimise the negative attributes of fish. In fresh fish the positive and negative attributes of fish are epitomised. People are not encouraged to buy fish because of its positive attributes, people tend to be deterred from buying fish by its negative attributes therefore in order to eat fresh fish with its readily apparent negative qualities people must have a very positive attitude to fish. Age significantly contributed to predicting past and future fresh fish purchase. The model predicting past fresh fish purchase found the 16-24 and 25-34 age groups were significantly less likely to have purchased fresh fish in the past. The model predicting future fresh fish purchase found the 16-24, 25-34, 35-44 and 45-54 age groups were significantly less likely to purchase fresh fish in the future. The influence of age on fish purchasing behaviour has been reported in previous research (Goulding 1985, LeGrand 1992) and the reasons were explained in an earlier section. The model for future fresh fish purchase found retired people to be significantly less likely to buy fresh fish than people of other occupational statuses. Retired people may be on a limited income and unable to afford to purchase fresh fish very often. Fresh fish was once a relatively cheap meal but its price has increased in recent years, particularly the price of popular species, due to the depletion of stocks through overfishing. In the model for past fresh fish purchase retired people were almost found to be a significant predictor. The model for future fresh fish purchase found people in the Midlands were significantly less likely than Northerners and Southerners to purchase fresh fish. This may be due to the Midlanders living in an area where it is

slightly more difficult to obtain fish. Midlanders live further from the coast so they will have not have access to direct coastal suppliers of fresh fish unlike people in the North and the South. Midlanders may be more reluctant to make the effort of going to the local fish market or out of town multiple than Northerners and Southerners. Demographics and psychological variables accounted for 9% of the variance for past fresh fish purchasing behaviour and 16% of future fresh fish purchasing behaviour. These variables are quite important in predicting past and future fresh fish purchase but there are others of equal or greater importance.

The Descriptive Model for Frozen Fish Purchasing.

People with a positive attitude to fish were more likely to have purchased frozen fish in the past. The descriptive models for past and future frozen fish purchasers found the 16-24 age group were more likely to buy frozen fish than other age groups. As described earlier younger people are more likely to have been brought up in a time when freezers and refrigerators were regarded as common household appliances and frozen food products were readily available and more convenient to serve than fresh fish. Younger people therefore would be more familiar with cooking and serving frozen products than fresh fish products and more likely to purchase them. The model predicting future frozen fish purchase found classes A and B were significantly less likely to purchase frozen fish than classes C_1, C_2, D and E. Frozen products have a general image of having added value which would appeal to lower socio-economic classes who have less expendable income. Classes A and B may not purchase frozen fish products for a number of reasons. They may perceive frozen products as being limited in the variety of recipes offered. The species offered in the frozen format are

generally only the most popular species such as cod and haddock. Classes A and B may prefer fish with a more exotic, up market or luxurious image. They may also perceive frozen fish products as being less healthy and perhaps of a poor quality due to the processing they have undergone. Demographic and psychological variables only accounted for 7% of the variance in the past frozen fish purchasing model and 9% in the future frozen fish purchasing model which suggests these results indicate there are other variables of greater importance in explaining these behaviours.

The Descriptive Model for Tinned Fish Purchasing.

People who were more involved in healthy eating were more likely to have purchased tinned fish in the past for the reasons described in the previous sections. In the descriptive model of past tinned fish purchase it was found that the greater the number of people in the household the greater the probability of tinned fish having been purchased. This may be due to the greater number of people having a variety of different experiences outside the household with regard to food and introducing new likes and dislikes. The more preferences introduced to the household the greater the probability of tinned fish being one of them. With the greater number of people in the house tinned fish may be regularly bought to provide a relatively cheap basis for a meal or alternatively the basis of snacks or packed lunches. Unemployed people were significantly less likely to have purchased tinned fish in the past. In the past tinned fish was expensive and regarded as a luxury, this image may still be held by the unemployed and prevent them from purchasing it. Unemployed people may be looking for cheap added value products which does not necessarily include tinned fish.

The 25-34 and 45-54 age groups were more likely to purchase tinned fish than other age groups. The 25-34 age group may be more likely to use tinned fish as part of a cheap main meal whereas the 45-54 age group may be more likely to use it for packed lunches. The 25-34 age group may have experienced dishes using fish as the basis for a meal on foreign holidays and attempt to recreate them at home using tinned fish. Alternatively they may have devised cheap, tasty meals through economic circumstance after initially leaving home. The 45-54 age group may have been brought up at a time when tinned fish such as salmon and crab were fairly luxurious items and were bought for Sunday tea or when unexpected guests arrived. These items are not currently regarded as a treat but habit might make this age group purchase such items. The models for past and future purchase found two totally different sets of variables to predict purchase. Both models accounted for the same amount of variance.

The Descriptive Model for the Number of Species/Products Purchased.

The more positive a person's attitude to fish the greater the likelihood they enjoy fish and would purchase a large variety of species/products. People who are involved in healthy eating aim to avoid illness and premature death. They would be aware of how fish contributes to a healthy diet and would include a variety of fish species/products into their diet to achieve their aims. The greater the number of people in the household the greater the number of species/products purchased. This may be explained by the fact people will have a greater number of experiences with fish outside the household. This will lead to each family member introducing new likes with regard to fish into the household. Northerners were more likely to buy a greater number of species/products

than Midlanders or Southerners. No variables were found to predict the number of species/products to be purchased in the future.

The Descriptive Model for PUFA Fish Purchase.

Past tinned fish purchase and past fish in sauce purchase significantly contributed to explaining PUFA fish purchase. Tinned fish and fish in sauce both fall into the frozen/processed category. People who purchase these products already accept fish which has undergone some form of processing and were prepared to purchase PUFA fish which has undergone a human dictated feeding process. People who purchase fresh/unprocessed fish may be reluctant to purchase PUFA fish as they may perceive it as having been tampered with. The demographics, psychological variables and past and future fish purchasing behaviour in this predictive model accounted for 28% of the variance.

The Descriptive Model for Premium Price PUFA Purchase.

Involvement in healthy eating was found to be a significant predictor of premium price PUFA fish purchase i.e. the more involved people were in healthy eating the greater the probability of them being willing to pay extra money for the extra health benefits of PUFA fish. People are prepared to invest money in their long term health to prevent illness or premature death. People who purchased fish in sauce or crab sticks were found to be more likely to purchase premium price PUFA fish. Crab sticks and fish in sauce are categorised as frozen/processed products. Whilst many frozen/processed products aim for the value added market, crab sticks and fish in sauce do not necessarily fall into that category . Some frozen/processed products may be marketed

as an aid for slimming or as a slightly luxurious quality treat rather than as an added value product. PUFA fish could be developed into a range of luxurious and/or slimming frozen products. Potential purchasers of premium price PUFA fish may be accustomed to paying a little extra for quality frozen products. Demographic, psychological and past and future fish purchasing behaviour accounted for 15-20% of the variance in explaining premium price PUFA fish purchase.

The Descriptive Model for PUFA Salmon Purchase.

People who have purchased fresh fish in the past or will purchase fresh fish in the future were more likely to purchase PUFA salmon. Fresh fish purchasers are likely to be fish lovers appreciating its positive qualities and not being readily deterred from purchase by its negative attributes. Fish lovers may be more inclined to try new fish products such as PUFA salmon. Fresh fish purchasers may have purchased fresh farmed species such as salmon or trout and would be prepared to accept farmed salmon which has received a specific diet. People with children were less likely to purchase PUFA salmon. Although the farming of salmon has brought the price down it still retains an up market, expensive image which could deter people with children from purchase as they may have less money available to spend on luxurious food items. People may be less likely to buy PUFA salmon because salmon is mainly sold in the fresh and tinned formats which contain bones and it is assumed PUFA fish would be available in the same formats. The bones are perceived as a danger as they may cause choking so parents may avoid giving fresh or tinned fish to their children. The greater the number of people in the household the greater the probability of PUFA salmon being purchased. When there are a large number of people in the household

each one may have different experiences of fish outside of the home. These experiences and preferences are subsequently introduced in to the household e.g. a preference for salmon. Also if there are a large number of people in the household there may be a greater amount of money available to spend on luxurious foods such as salmon. People who purchased monkfish were more likely to purchase PUFA salmon. Monkfish has an exotic image which appeals to fish lovers, the same as the up market image of salmon and may explain why monkfish purchasers would purchase PUFA salmon. These variables accounted for between 19-69% of the variance.

The Descriptive Model for PUFA Eel Purchase.

No results were produced for model two and for model one there were no variables that contributed significantly to predicting PUFA eel purchase. Obviously if PUFA eel purchasers come from a range of age groups, socio-economic classes, occupational statuses and regions, have a range of attitudes to fish and cognitive styles, different degrees of involvement in healthy eating and no consistent purchasing patterns it is impossible to target them with a specially designed marketing campaign. The model did explain 44% of the variance.

The Descriptive Model of PUFA Sturgeon Purchase.

People in classes A and B were found to be more likely to purchase PUFA sturgeon than classes C_1, C_2, D and E. Classes A and B may be more aware of sturgeon's up market and regal image and have a greater expendable income with which to purchase a fish with such an up market image whereas the lower classes may believe PUFA

sturgeon would be too expensive for them to purchase. This model for predicting PUFA sturgeon purchase accounted for 28% of the variance.

The descriptive models explaining fish purchasing behaviour explained more variance than the models consisting only of the demographic or psychological variables. The pseudo R^2 values ranged from 0.0587 for past tinned fish purchase to 0.692 for PUFA salmon purchase.

ATTITUDINAL DIFFERENCES OF PURCHASERS AND NON-PURCHASERS OF FISH.

Attitude was found to influence both past and future general fish purchasing behaviour i.e. the more positive the respondent's attitude towards fish the more likely they were to have purchased it in the past and to purchase it in the future. Fish purchasers' attitudes were distinguishable from non-purchasers by being more positive about fish's attributes both the positive and the negative attributes. The similarities and differences in purchasers and non-purchasers attitudes to fish are discussed below.

Many people, both purchasers and non-purchasers, were aware and generally accurate in their statements of the health benefits of regular fish consumption e.g. preventing heart disease. Fish had a very healthy and nutritious image with both purchasers and non-purchasers of fish. They all perceived it as being full of protein, vitamins, minerals and as being low in calories and useful as part of a slimming diet. There was a certain amount of confusion relating to fats and oils in fish. People believed fish to be very low in fat and some people believed it contained no fat at all. People were aware fish contained oils but they generally did not equate the oils with being fats. The medical benefits stated by people were generally associated with the fish oils. This confusion may stem from the official guidelines for fat as mentioned earlier. Not all participants were confused, some knew saturated fats were bad for health and were found in meat and dairy products and some knew that polyunsaturated fats were good for health and were found in vegetables and fish. A few participants were even aware

that it may be possible that too much polyunsaturated fatty acids in the diet may be carcinogenic.

Although fish is a very healthy foodstuff and people are aware of the fact, it is not a major motivator to purchase. People do not tend to buy foods they do not particularly like the taste of even if they are healthy. The sensory qualities of a food seem to be of primary importance when making a purchase. Many participants purchased fish purely because they enjoyed it and liked the taste. The fact that fish is a healthy food is a bonus. Fish was often perceived as tasting bland. It was also believed that the taste does not vary very much between species. The stronger flavour of meat was generally preferred to fish. There are species of fish which have a stronger flavour such as kippers and smoked haddock. Information needs to be provided at the point of sale describing the taste of each species so that people will be able to find one fitting their requirements.

Fish was perceived as less filling than meat. This perception may be due to a lack of knowledge about fish. Fish has a variety of species which range from having a light, flaky texture through to a more substantial, chewy texture. Fish such as sword fish have a chewier, meatier texture and are likely to be more filling than some popular fish. Meat in comparison is perceived as chunky, masculine, satisfying and as having a chewier texture than fish. Cuts of meat are generally thick and substantial whereas cuts of fish are usually thin fillets. Fish also has an image of being a meal for slimmers so it has a more feminine image and an image of being unfulfilling which does not appeal to men particularly. The texture and appearance of meat provides an image of a

satisfying, filling meal whereas fish may be perceived as insubstantial and unsatisfying. Cutlets of fish could be promoted as they would be thicker and chunkier and more meat like in appearance. A greater awareness of fish which have a substantial texture may contribute to altering people's perception that fish is a light, slimming meal. Many people said the light texture of fish was a positive attribute.

Fish was perceived as having a number of different varieties by all respondents, particularly by the fish purchasers. Although this perception existed, the difference between the varieties of fish were not perceived to be as great as the differences between the varieties of meat. The perceptions of the two food groups, meat and fish differed. Meat is not perceived as meat, it is perceived as beef, chicken, lamb etc. People use different types of meat every day in different meals e.g. beef in chilli con carne, roast lamb, tandoori chicken. The varieties of meat are perceived as different enough to have a different type every day. Fish is perceived as fish, it is not generally perceived as different species such as mackerel, haddock etc. The species of fish are not perceived as different enough in taste and texture to have a fish meal every day. Fish is perceived as being limited in the type of meal it can be a part of i.e. usually fish and chips.

People are aware there are a huge variety of species and that multiples stock a considerable variety of products, both traditional and new and exotic products e.g. Tesco have been promoting tilapia for over a year. A wide variety of species/products are not essential to consumers as the mean number of species/products purchased in the past was seven and the mean number of species/products to be purchased in the

future was two. The species purchased were generally the more traditional, popular ones which dominate the market such as cod and haddock.

Non-purchasers and purchasers simultaneously thought fish provided good value for money and was expensive. Fish may be regarded as value for money due to the fact there is no waste through large bones or a carcass. Fish may be perceived as expensive due to the fact that it is now a similar price to meat whereas some years ago it was cheaper than most meat. The popular species such as cod which were relatively cheap in the past have increased in price due to over fishing and the depletion of stocks. Purchasers of fish are more likely to think fish is expensive because they buy it frequently and are more capable of making accurate price comparisons with other meats which present fish in an unfavourable light. People who do not purchase fish will perceive fish as quite expensive but not as expensive as fish purchasers because they lack up to date information to be able to make an accurate comparison with other meats.

The majority of purchasers and non-purchasers thought fish was versatile and could be used in many different recipes. However twice as many non-purchasers than purchasers disagreed with these statements. Purchasers may generally be more interested in cookery and aware of how fish can be incorporated into a number of different meals rather than just the traditional fish dishes such as fish and chips. A number of purchasers who thought fish was versatile, consumed mainly fresh fish and described a variety of recipes and methods of cooking fish. Purchasers may be aware of the growing innovation in the frozen and tinned fish markets which has lead to a

wider variety of frozen and tinned products becoming available. Purchasers may have obtained their knowledge through the media and through experience of cooking and consuming a variety of species/products. Non-purchasers who thought fish was versatile and could be used in different recipes may also have obtained their knowledge through the media. Respondents who did not perceive fish as versatile and as a component of number of different recipes may have little or no experience of cooking or eating fish. They may also be less aware of fish in the media due to a lack of interest in food and cooking generally. However, participants thought there were a wider variety of recipes and cooking techniques which could be used with meat and they were more aware of these and able to perform them with confidence. People want fresh approaches to cooking fish, not just traditional recipes and traditional cooking methods.

The majority of purchasers and non-purchasers did not think fish was difficult to prepare and some purchasers believed it to be easier to prepare than meat. The respondents who said fish was easy, convenient and quick to cook tended to be fresh fish purchasers. A number of participants however perceived fresh fish as a hassle and as time consuming to cook. These participants did not feel very confident in their ability to cook fish. They did not experiment when cooking fish as they thought it would be difficult to rescue if something went wrong. One man was reluctant to experiment with fish after one attempt when the fish disintegrated in to an "unappetising mush". A few people found if they did cook fish the end product was visually unappetising and they were put off trying again. Fish was perceived as needing a lot of imagination and the use of lots of herbs and spices to make it

interesting. People who did not know how to prepare or cook fish felt it had a lot to do with their childhood diet. Participants tended to eat the same fish species they had as a child. They also tended to cook them in the same way as their parents had cooked them. Younger respondents particularly, felt if they had been familiarised with preparing fish or going to fishmongers when they were children they would be more knowledgeable and more prepared to buy fish now. Older respondents stated that they had learnt how to prepare and cook fish at school. None of the younger respondents said they had learnt anything about fish in home economics at school. This difference between the generations may be as a result of women's roles having expanded beyond the home and the availability of a wide range of convenience foods decreasing the importance of being able to cook meals from raw materials. The participants' diets were not totally dictated by their childhood, other factors influenced their fish consumption such as foreign holidays and recommendations from friends.

The perceived negative attributes of fish deterred both the majority of purchasers and non-purchasers but non-purchasers were more likely to be deterred. A major problem was the physicality of the fish. Many participants did not like the whole fish being presented to them including the head and the tail. The presence of the head was disliked as many participants did not like the feeling of the glazed eyes staring at them. Other participants did not like the appearance or the feeling of the skin. People did not know how to produce fillets or cutlets from whole fish and they did not want to have to remove the fish's internal organs. The bones of fish were greatly disliked due to the fiddliness of them, the number of them, the fineness of them and the potential danger from them. Purchasers of fish may be less deterred from buying fish as they

may be more aware that the bone problem is largely eliminated in the production of frozen and tinned products. They may also be aware that fishmongers will prepare the fish on request.

Participants did not like the smell of fish which was often thought to linger long after it had been cooked even if the kitchen was well ventilated. Although the majority of purchasers and non-purchasers found the smell of fish to be offensive, non-purchasers were more likely to be put off by the smell of fish.

There is considerable uncertainty as to whether there is a danger of food poisoning from fish. The majority of purchasers and non-purchasers thought there was or there may be a danger of food poisoning from fish. Non-purchasers were more likely to perceive this danger than purchasers. Purchasers may be less inclined to perceive this danger due to their experience of handling and cooking fish. Fish has not been at the centre of a major food scare in the United Kingdom for many years. In light of recent food scares e.g. listeria in soft cheeses, salmonella in eggs and BSE in beef and related by products, it would be important to emphasise how safe fish is for consumption. Also the majority of purchasers and non-purchasers thought fish went off quickly and felt pressured into using it on the day of purchase to prevent it from going to waste.

The majority of purchasers and non-purchasers saw fish as an alternative to red meat indicating that the healthy eating message that too much red meat has an adverse affect on health has reached the general population. However twice as many non-purchasers than purchasers stated that fish was not an alternative to red meat which implies that

meat has a number of qualities which make it preferable to fish as the main component of a meal.

Purchasers were more likely than non-purchasers to perceive fish as making a good family meal. A family meal is one which all the family enjoy, which is healthy and nutritious, easy and quick to prepare and cook and does not pose any threat to health. Purchasers are more likely to perceive the aforementioned qualities in fish. As they regularly purchase fish they would be more aware of fish's positive attributes and how to reduce its negative attributes. Their family are more likely to be familiar with the taste of fish and enjoy it. Non-purchasers although aware of fish's positive qualities are discouraged from purchase by its negative attributes. The potential threat from bones was a considerable deterrent. Their family would be less likely to be familiar with fish and enjoy its taste.

The vast majority of non-purchasers and the majority of purchasers do not like to serve guests fish. Fish is generally perceived by both non-purchasers and purchasers as having a number of positive attributes but still many people choose not to serve it to their guests. People perceive these positive attributes with regard to frozen fish and tinned fish but there is a limited range of frozen and tinned products none of which would be especially suitable for serving to guests. Fresh fish has many of the positives of frozen and tinned fish i.e. it is healthy, versatile but unfortunately it has many negative attributes not present in the aforementioned formats i.e. bones, storage, cooking. Consumers are not encouraged to purchase fresh fish by its positive attributes, they are discouraged by its negative attributes. People need to be

encouraged initially to incorporate fish into their own diet and become familiar with how to store, prepare and cook it. Increasing confidence and familiarity may lead people to gradually incorporate fish into their entertaining for example initially as a starter. People tended to be more comfortable serving meat or poultry as it was thought to be more acceptable to the majority of people than fish. A number of people who were reluctant to serve guests fish for this reason had eaten fish at other people's parties and had enjoyed it. This suggests that the perceived preference for meat is greater than the actual preference for meat and people who do not perceive themselves to be great fish lovers do enjoy fish. Approximately thirty three percent of purchasers enjoyed serving guests fish. These people tended to serve fish on special occasions. The most popular choices for dinner were salmon and trout, with tuna and swordfish being popular at barbecues. These fish species are up market and exotic and likely to be regarded as a treat so cost may not be a primary factor when purchasing fish for guests.

Fish was readily available as most people had access to multiples with fishmongers, high streets with fishmongers, a fish market or a travelling fishmonger. However a few people complained they had difficulty in obtaining fresh fish due to the decline of the Macfisheries chain of stores, the independent fishmongers and travelling fishmongers. This decline has occurred for a variety of reasons including the general decline of incorporating fish into the diet, the replacement of fresh fish with frozen fish and a change in shopping habits from shopping at a number of stores in the high street to shopping at one large store out of town. The two main sources of fresh fish are multiples and fish markets. Multiples tend to be situated on the edges of towns and

require personal transport or an efficient public transport system to reach them. People without personal transport or living in an area with a poor public transport system will be less able to access these stores so fresh fish may be unavailable to them. There are only a few specialised fish markets and many respondents would not be within easy travelling distance of one. Once again if the respondent has no personal transport or lives in an area with an inefficient public transport system they may regard fresh fish as unavailable to them. Even if people do have their own transport or have access to an efficient public transport system factors such as work commitments may make the purchase of fresh fish difficult.

The changes in retailing fish evoked mixed reactions. People received the introduction of fishmongers into multiples positively. They were also aware that fishmongers were introducing a wider variety of species which was received positively. Despite these positive reactions some negative opinions about multiples were raised. The wet fish counters were often poorly manned and the people behind them lacked the expertise of the traditional fishmonger with regard to knowledge about the preparation and cooking of fish. They were also perceived to lack a flair for selling fish to the consumers. Fishmongers both in the fish market and the traditional high street fishmongers were perceived as being more amenable to preparing fish and suggesting methods of cooking it than fishmongers in the multiples. Multiples need to ensure their staff are fully trained and capable of not only answering consumers' requests but of making suitable suggestions for all aspects of storage, preparation and cooking fish. A fishmonger is also required to encourage consumers to buy fish and through providing a good service and appropriate advice they will encourage repeat purchase and

eliminate consumers' doubts over their expertise. The consumers were willing to be persuaded to buy fish with some encouragement from the fishmonger.

The displays of the multiples were often praised for being beautifully presented and immaculately clean and odour free. However some participants thought the presentation at the multiples was not as appealing as a fish market's display. The fish at a market are presented on an open counter surrounded by ice. This presentation gave an impression of freshness. In multiples fish are generally presented in a refrigerated counter behind glass. The displays in the multiples were perceived as unappealing, particularly at the end of the day due to the display being practically bare and due to the best fish having been sold. Doubt was cast on the freshness of the fish on multiple wet fish counters due to the frequent presence of labels stating the fish had been previously frozen and must not be refrozen.

Promotion is needed to draw people's attention to fish. A lot of people do not purchase fish because they do not think of it and there is such a huge variety of other foodstuffs to choose from that initially fish must be raised in the consumers' awareness. A body such as the Sea Fish Industry Authority could organise promotional campaigns such as National Fish Week. Multiples could reinforce the S.F.I.A.'s campaigns. These promotions would aim to encourage people to try fish and unfamiliar varieties of fish. In comparison to meat fish is perceived as healthier but the species are perceived as similar in taste and texture and as insubstantial. Fish is believed to be less versatile than met and more difficult to prepare. A number of strategies could be employed to reduce these negative perceptions of fish. At the fishmongers information cards could

be used in the display to describe the taste and texture of each species. This would provide the consumer with more information allowing them to make a more informed decision particularly regarding unfamiliar species. Fillets of fish were perceived as feminine and insubstantial therefore fish could be prepared as cutlets which are chunkier. People did not like the physicality of the whole fish and in particular the bones therefore they need to be informed that the fishmonger will prepare the fish through a sign displayed at the counter. The perceived lack of versatility could be tackled through a series of recipe cards and the production of innovative chilled, frozen and tinned products and ready to use sauces using non-traditional recipes. Fish, particularly fresh fish, was often perceived a difficult to prepare. This could be partially overcome with convenience products and ready to use sauces and a card such as the one produced by Tesco which summarises the cooking times for the different cooking methods for various species of fish. Some species of fish require special knowledge e.g. mussels which could also be described on a card. Leaflets, posters, special offers, articles in newspapers and magazines and televisions adverts could be employed by multiples and the S.F.I.A. to promote fish consumption.

The attitudes of purchasers and non-purchasers coincided with regard to health and nutrition, fish's availability and the fact that there are a number of varieties in the shops. Both non-purchasers and purchasers agreed that fish provides good value for money. Differences between purchasers and non-purchasers occurred with regard to versatility, meal situations, expense and preference for other meats. Purchasers were more likely to perceive fish as versatile and as the component of a number of different recipes. Purchasers were more inclined to serve fish both to their family and to guests.

They were more likely to think of fish as expensive and they actually preferred it to red meat and poultry. Differences in attitude also occurred with regard to the negative attributes of fish. Non-purchasers were more likely to think there is a danger of food poisoning from fish and that it goes off more quickly. They were also more likely to be deterred from purchase by the bones and smell.

ATTITUDINAL DIFFERENCES BETWEEN PURCHASERS AND NON-PURCHASERS OF DIFFERENT TYPES OF FISH PRODUCTS AND THE PRODUCT TYPE PREFERENCE OF PUFA FISH PURCHASERS

The attitudes to fish of purchasers and non-purchasers of fresh, frozen and tinned fish were examined in more detail in order to find out if there were any areas where differences occurred.

The Attitudinal Differences between Fresh Fish Purchasers and Non-Purchasers.

Fresh fish was the least popular format and only people with a very positive attitude to fish had purchased it in the past and would purchase it in the future. Fresh fish purchasers' attitudes are similar to those of general fish purchasers previously described but they are significantly more positive in the following areas.

Fresh fish purchasers perceived fish as an extremely healthy food. Purchasers of fresh fish were more likely to perceive fish as versatile and less likely to perceive it as difficult to prepare. Fresh fish does not come with any cooking instructions so in order to learn how to cook it and make different recipes, people would generally have used a number of sources of information and inspiration e.g. recipe books, cookery programmes. Their knowledge and experience will have grown with each new method of cooking and recipe they tried and as a result their perception of fish's versatility would have increased.

The bones in fish were less likely to deter fresh fish purchasers than non-purchasers. Fresh fish purchasers may have a greater awareness of the services that fishmongers

offer than non-purchasers. Purchasers of fresh fish may perceive the actual bones to be less of a threat than non-purchasers as they have greater actual experience of consuming fish and removing the bones.

Fresh fish purchasers were less inclined to think fish is expensive, and more inclined to perceive it as good value for money. They may have accurate, up to date knowledge of how fish compares in price to other meats and knowledge of the fish market, i.e. which fish have decreased in price, which have increased in price, which have always been cheap and which have always been expensive. Fish may be perceived as value for money because there is no waste left over such as a carcass.

Fresh fish purchasers were less likely to prefer poultry to fish. This indicates that they purchase fresh fish because they enjoy it rather than merely buying it "for a change". It also suggests that as they enjoy fish more and that they may be more aware and discerning of its physical properties i.e. they might be able to differentiate the tastes and texture of various species.

Fresh fish purchasers were more likely to perceive fish as a good family meal. Fresh fish epitomises both the positive and negative qualities of fish. However, people do not seem to be encouraged to buy fresh fish for its positive attributes rather they are discouraged from purchase by its negative attributes therefore people who purchase fresh fish have a very positive attitude to fish. These people appreciate its qualities such as freshness, health, nutrition, low fat content, ease and speed of preparation and cooking and its value in making a good family meal. Non-purchasers would not

perceive it to be a good family meal due to its negative qualities such as the bones and the smell.

People who purchase fresh fish were more likely to enjoy serving guests fish. Purchasers of fresh fish are likely to be confident in their ability to prepare and cook fish. The knowledge and experience they have acquired through regular purchase of fresh fish will give them the confidence to prepare an appetising meal for their guests. People tend to serve guests up market or exotic species of fish which are mainly available in the fresh fish format. Fresh fish has a healthy, natural image as it has not undergone any form of processing so it may be preferred for serving to guests than frozen or tinned fish.

Fresh fish purchasers' attitude to fish was distinguishable from general fish purchasers' and non-purchasers' attitudes to fish through a very positive view of fish's healthiness, their perception that fish is good value for money and not expensive, that it is versatile, not difficult to prepare, their refusal to be deterred by the bones and their preference of fish over poultry. Fresh fish purchasers were more likely to perceive fish as a good family meal and as suitable for serving to guests.

The Attitudinal Differences between Frozen Fish Purchasers and Non-Purchasers.

Frozen fish was the most popular fish format. Attitude did not influence past frozen fish purchase but it did influence future frozen fish which implies that there is no straight forward relationship between attitude to fish and the probability of frozen fish

being purchased. Frozen fish may be purchased by people with a wide range of attitude scores. This is because there is a wide range of frozen products which will appeal to a broad variety of fish consumers' tastes.

Future frozen purchasers tended to prefer poultry to fish which suggests that they are not fish lovers but purchase frozen fish perhaps for a change from other meats or because it is convenient i.e. quick and easy to cook. Frozen fish purchasers did not enjoy serving guests fish. This may be explained by the fact that there are few if any suitable frozen fish products which would be suitable for serving to guests. If there were any suitable frozen products available people may not use them due to the feeling that some effort should go into preparing food for guests and that frozen food would be unacceptable. This belief would mean fresh fish would have to be used which would introduce doubts due to fish's negative qualities and consequently would probably lead to another more familiar foodstuff being selected.

Future frozen fish purchasers were distinguishable from non-purchasers due to their attitudes being more negative to fish consumption. Frozen fish purchasers' attitudes reveal that they are not fish lovers and prefer to serve other food stuffs to their family and guests rather than fish.

The Attitudinal Differences between Tinned Fish Purchasers and Non-Purchasers.

Tinned fish was the second most popular fish format. The general attitude of tinned fish purchasers was more positive than non-purchasers but there were no particular aspects of attitude that were significantly more positive or less negative.

The Product Categories which would appeal to Purchasers of Each Variety of PUFA Fish.

PUFA fish is a concept so in addition to investigating whether PUFA fish was acceptable to the consumer, it was also important to find out in what format PUFA fish would be most popular i.e. fresh, frozen, tinned or a combination. This information would be essential for product development.

Past behaviour has been found to influence future behaviour (Bentler and Speckart 1979, East 1992, 1993). Future behaviour or intention to behave also influences behaviour and may contribute to explaining PUFA fish product preference. From the people who purchased fish in the past not all of them will have been satisfied with the products they purchased. People who repeat buy the products they purchased in the past are satisfied customers so future purchasers will contribute to explaining PUFA fish product preference. In explaining PUFA fish purchase from past and future products purchased the amount of variance explained ranged from 1% for premium price PUFA fish to 6% for PUFA eel. This indicates that the types of products purchased in the past or to be purchased in the future do not contribute very much to predicting the purchase of each type of PUFA fish.

PUFA Fish - The product PUFA fish does not mention any specific species of fish or produce any strong associations with a particular type of product e.g. fresh, frozen or tinned. People can imagine PUFA fish to be made from the species they like and in the format they like, therefore PUFA fish purchasers were expected not to have a product preference. However, potential PUFA fish purchasers tended to buy frozen and/or tinned fish. Frozen and tinned fish have undergone some form of processing of which the purchasers are aware. PUFA fish have been fed a special diet so they have also undergone a form of processing which was accepted by frozen and tinned fish purchasers. Frozen and tinned fish are not perceived as being as healthy as fresh fish therefore frozen and tinned purchasers would appreciate a fish which contains additional health benefits which they may perceive as healthier than ordinary frozen and tinned fish products and even fresh fish. Fresh fish purchasers may buy fresh fish because it is in its natural state and has not been processed in any way. This category of purchasers may be reluctant to purchase PUFA fish as they may perceive it as having undergone an unnatural process i.e. being fed a special diet. Further research would be required to determine exactly what kinds of frozen and tinned fish products would be most appealing e.g. frozen fillets, battered fillets, ocean pie etc.

Premium Price PUFA Fish - It was expected that premium price PUFA fish purchasers would have a preference for fresh fish. However, all three formats were highlighted as potential premium price PUFA fish product types. Fresh fish is generally more expensive than other fish products so fresh fish purchasers are accustomed to paying more for fish products and were therefore willing to purchase premium price PUFA

fish. The premium price tag could place PUFA fish in an up market, quality product category.

There are two potential frozen food markets, the cheaper, added value market and the more expensive, luxurious or slimming market. It would not be worth attempting to persuade purchasers of value added frozen products to purchase premium price PUFA fish purely because it is expensive. It is possible that purchasers of more expensive or slimming, frozen products would be willing to buy frozen PUFA fish products within the same price range. These purchasers may be fish lovers who simply do not have the time to produce creative fish recipes and manufacturers should bear this in mind when developing a suitable range of frozen products. The range of products should steer away from conventional recipes and use more exotic fish dishes with a foreign influence or it should revive forgotten, traditional, British fish recipes. Fish is popularly used in slimming diets. People often perceive slimming foods to be uninteresting and restrictive. Manufacturers could develop a range of fish dishes which are low in calories and/or low in fat. These would need to be imaginative and make the consumer feel that they were eating healthily but not actually on a diet. Further research would be required to determine which dishes would be most appealing to both the purchasers of luxurious and slimming products.

Tinned fish such as salmon and crab are often purchased as a treat, for unexpected guests, for packed lunches or as the basis of a main meal. A premium price PUFA tinned product in brine may be perceived as a quality health product especially suitable for providing the basis of a main meal. Recent innovations have lead to tinned

fish being canned in a variety of dressings suitable for packed lunches. People may be prepared to pay extra for such innovative products. The dressings used would have to be determined by further research. However it may be difficult to market tinned premium price PUFA fish as a healthy food as tinned products are not usually associated with being particularly healthy due to having undergone a form of processing.

PUFA Salmon - PUFA salmon purchasers were expected to have a preference for fresh or tinned fish as salmon is most commonly available in these two formats. However, PUFA salmon purchasers had a preference for fresh fish. Fresh fish purchasers have a very positive attitude to fish. As fresh fish buyers enjoy fish, they are more likely to buy a wide range of fish including ordinary, exotic and up market species. Salmon is commonly perceived to be up market and is also popular, therefore PUFA salmon would be a favourite choice for many fresh fish purchasers. Salmon is a fish which is accepted as being farmed so the fact that PUFA salmon would also be farmed would probably not cause enough concern to deter many people from purchase.

Although PUFA salmon purchasers showed a preference for the fresh format, as it is a popular fish with a luxurious image it may be possible to develop frozen and tinned PUFA salmon products. There are a growing number of frozen products which are either luxurious or aimed at slimmers that contain a wider variety of fish species and are slightly more expensive than ordinary frozen fish products. PUFA salmon may be incorporated into these types of frozen fish products. People would be willing to pay

for slightly more expensive, quality frozen products with a greater variety of non-traditional recipes, containing an up market fish such as PUFA salmon. Manufacturers need to maintain product development and innovation in this product area to retain the consumers' interest and stimulate it further.

Salmon is one of the most popular species of tinned fish. Purchasers of ordinary tinned salmon may find a healthier PUFA version appealing. Tinned salmon has quite a different taste to fresh and frozen salmon so whilst it may appeal to some fresh and frozen salmon purchasers it may alienate others and it may appeal to people who do not buy fresh or frozen salmon. It is not clear how the taste of PUFA salmon will differ from ordinary fresh, frozen or tinned salmon so tinned PUFA salmon may produce a similar consumption pattern but further research would be required to determine its appeal. Tinned fish products are undergoing change as manufacturers produce fish in a variety of dressings as opposed to purely oil or brine. These developments would need to be continued to develop tinned PUFA salmon's appeal.

PUFA Eel - The most acceptable format to PUFA eel purchasers as expected, was found to be fresh fish. This may be because fresh fish purchasers have a very positive attitude to fish. Fresh fish purchasers are likely to be fish lovers and consequently more willing to try unfamiliar species of fish in order to find out whether they like them or not. As eel is not a commonly consumed fish the multiples may produce a series of recipe cards solely for eel which would familiarise purchasers with cooking eel and with the foods which complement it. Manufacturers could develop sauces specifically for complementing the flavour of eel.

PUFA Sturgeon - It was expected that PUFA sturgeon purchasers would prefer fresh fish as it is an uncommon fish and most uncommon fish are only available in the fresh format. However, PUFA sturgeon purchasers had a preference for tinned fish. Many of the species which are tinned e.g. tuna, crab, salmon are not popular species but they are up market or slightly unusual. Tinned fish purchasers generally had a positive attitude to fish and along with their liking for slightly unusual or up market fish this may explain why they would like to try PUFA sturgeon. PUFA sturgeon tinned in brine or oil could be used as the basis of a main meal. The multiples could develop a range of recipes for PUFA sturgeon familiarising people with how to cook it and what foods complement it. PUFA sturgeon could also be tinned in a variety of different dressings. Further research would be required to find out what recipes would appeal to tinned PUFA sturgeon purchasers and what kinds of dressings would appeal to them.

It is possible that fresh fish purchasers would be prepared to try PUFA sturgeon. Most exotic and unfamiliar fish are available in the fresh format. Fresh fish purchasers have a very positive attitude to fish and are the most likely to purchase unusual and exotic fish including PUFA sturgeon. It is unlikely that frozen product purchasers would purchase PUFA sturgeon products. Frozen products are largely made from popular species of fish such as cod or haddock. Sturgeon is not commonly consumed so it would not appeal to frozen fish purchasers' more conservative tastes. Also frozen fish purchasers' attitudes to fish are quite negative so they are unlikely to enjoy tasting less popular species.

The two non-specific types of PUFA fish appealed to a mixture of product type purchasers, PUFA fish to frozen fish purchasers and tinned fish purchasers and premium price PUFA fish to fresh, frozen and tinned fish purchasers. This indicates that the concept of PUFA fish is generally acceptable to all types of product purchasers even when a premium price would have to be paid. When the species of PUFA fish were stated as being salmon, eel and sturgeon the product preference becomes clearer. PUFA salmon purchasers and PUFA eel purchasers preferred fresh fish. PUFA sturgeon purchasers preferred tinned fish.

ATTITUDINAL DIFFERENCES BETWEEN PURCHASERS AND NON-PURCHASERS OF VARIOUS SPECIES/PRODUCTS AND PUFA FISH SPECIES/PRODUCT PREFERENCE.

The attitudinal variations fell into three categories,

1. frozen/processed products
2. common, everyday species/products
3. up market species/products

The first category encompassed purchasers of fish fingers, crab sticks and fish pies. Purchasers of these products tended to take a negative view of fish, perceiving it to be difficult to prepare and as going off quickly. They were also deterred by the bones and the smell. These perceptions explain their choice of fish products. These respondents purchase frozen and processed products because they overcome all their negative perceptions of fish. They are not difficult to prepare, they do not go off quickly and they will not have as strong a smell as fresh fish. Also as they are processed the bones will have been removed. These respondents are not fish lovers, they will generally be purchasing fish for a change and/or for convenience. Obviously these respondents are aware of the positive attributes of fish as their attitudes towards them do not deviate from general fish purchasers' attitudes but the most important factors are the negative ones which determine their choice of product.

The second category encompassed purchasers of cod, kippers, smoked mackerel, tinned tuna and salmon, haddock and fish in sauce. Purchasers of these products generally had a very positive view of fish. They believed fish to make a good family

meal, to be easy to prepare, versatile, a component of many different recipes and as having lots of different varieties. They often saw fish as an alternative to red meat and preferred it to poultry. However, occasionally a negative opinion was expressed such as they found the bones or the smell to be off putting. The majority of species in this category are popular in more than one format. The respondents are aware of the positive attributes of fish most apparent in fresh fish and are not readily deterred by its negative attributes. This category of purchasers are also aware that many of fish's good qualities are present in frozen and tinned fish but without its negative qualities. Some species in this category have quite strong, distinctive flavours such as kippers, haddock and tinned salmon which suggests that people purchasing these species are relatively keen on fish and quite enjoy consuming it.

The third category encompasses purchasers of fish such as smoked salmon, plaice, skate, salmon, prawns and trout. These people were very positive about fish consumption. In addition to the positive attributes mentioned by purchasers in the second category, these respondents were more likely to think of fish as being suitable for serving to guests. This suggests these people are confident in their ability to prepare and cook fish and also enjoy consuming fish. These fish purchasers were also less likely to be deterred from consuming fish by its negative attributes. The types of fish in this category are more likely to be available as fresh or frozen fillets as opposed to being components of frozen, ready meals or being tinned. Also as these respondents are likely to serve guests fish they are more likely to prepare the meal from the raw material rather than serve a frozen meal which may be perceived to be inappropriate.

The Species/Products which would appeal to Purchasers of Each Variety of PUFA Fish.

The variance explained by the model, past and future species/products purchase, ranged from 12.5% for premium price PUFA fish to 21.3% for PUFA eel purchase. These variables do not explain a particularly large amount of variance so there are other variables contributing to determining the purchase of each variety of PUFA fish.

PUFA Fish - PUFA fish purchasers were not expected to have a species/product preference as it was generic and expected to appeal to all types of fish purchasers. Past trout and fish in sauce purchasers were more likely to purchase PUFA fish and people who purchased monkfish were less likely to purchase PUFA fish. Fish in sauce falls into the common, everyday products category. These species/products are purchased by people who generally have a positive view of fish but are likely to be occasionally deterred from purchase by a negative attribute. Monkfish and trout fall into the up market and exotic category. People who purchase these varieties of fish are fish lovers. Trout is generally a farmed fish so trout purchasers are more likely to be willing to accept PUFA fish which is also farmed. Monkfish purchasers may enjoy fish because it is a wild product, taken from its natural environment and has not been tampered with by humans which may explain why they would be unlikely to purchase PUFA fish. PUFA fish appeals to two different types of fish purchaser and a variety of formats could be marketed to satisfy each segment's requirements. Common, everyday species are not restricted to being sold in one particular format so PUFA fish may be marketed as fresh, frozen and tinned. Frozen and tinned fish products' positive attributes include easy preparation, a wide variety of products, ready availability and the fact that they

make good family meals. A luxurious range of frozen PUFA fish products would appeal to people with a very positive perception of fish but not enough time to prepare it. PUFA fish purchase is predicted by trout, an up market species, so these people are likely to prefer fresh fish. They may appreciate a range of recipe cards with new challenging meals suitable for a variety of occasions including serving to guests. Manufacturers could produce a range of sauces which would appeal to purchasers of up market and exotic species and common, everyday species. A range of sauces produced exclusively for a certain exotic or up market species might appeal to these consumers. A wide range of sauces might encourage people to buy fish more often and be more experimental with it.

Premium Price PUFA Fish - Premium price PUFA fish purchasers were expected to prefer up market species/products as these are the most expensive. Crab sticks was found to be a significant predictor of premium price PUFA fish purchase. Crab sticks is a frozen, processed product. Purchasers of these products are likely to be easily deterred from purchasing fish by its negative attributes e.g. the bones and the smell. They tend to purchase fish as a change. Premium price PUFA fish purchasers appear to prefer a frozen PUFA fish product and would be prepared to pay extra for it. They are prepared to pay extra to avoid the inconvenience of preparing the fish, removing the bones, spending time finding a recipe to incorporate it into and the uncertainty of cooking the fish. These purchasers want products which minimise the negative attributes of fish and emphasise its positive attributes. A range of frozen products suitable for main meals and snacks which could be cooked in different ways is required.

PUFA Salmon - It was expected that PUFA salmon purchasers would prefer up market species as salmon has such an image. PUFA salmon purchase was predicted by past trout and future salmon purchase. Past fish pie purchase was a significant negative predictor of PUFA salmon. Salmon and trout are up market species. People who purchase these products have a very positive perception of fish and are likely to enjoy preparing, cooking and serving fish both to their family and to guests. These species of fish are generally most popular in the fresh format so purchasers must appreciate the positive attributes of fish epitomised in the fresh format and be less readily deterred by the negative attributes of fish also most apparent in the fresh format. As potential PUFA salmon purchasers tend to buy species which are usually sold in the fresh format they would probably prefer fresh PUFA salmon. Fish pies are a processed, frozen product and are not purchased by potential PUFA salmon purchasers who may perceive them negatively. In order to help in the preparation of dishes manufacturers could develop an innovative range of sauces. These could be inspired by foreign dishes which people may have sampled on holiday and thought difficult to reproduce at home. Multiples could produce a range of recipe cards with a similar theme suitable for serving both to the family and guests.

PUFA Eel - It was expected that up market species/product would appeal to PUFA eel purchasers. PUFA eel purchase was not predicted by the purchase of any species or products. This implies that eel does not appeal to any specific segment of the population of fish purchasers. PUFA eel must differ from the other species/products in

a particular way to explain why no species/products purchased predicted PUFA eel purchase.

PUFA Sturgeon - PUFA sturgeon purchasers were expected to prefer up market, less popular species. Prawns predicted PUFA sturgeon purchase which as anticipated fall into the up market category of species/products. People who purchase these species will have a very positive attitude to fish. Unusual species of fish are generally only available in the fresh format. PUFA sturgeon purchasers would appear to have a very positive attitude to fish so they would probably purchase fresh PUFA sturgeon. As sturgeon is not a commonly consumed fish it may be necessary for the multiples to inform people via information cards, leaflets and posters about the taste and texture of sturgeon. A range of recipe cards would also be required to familiarise people with how to cook PUFA sturgeon and what other foods complement it. Manufacturers could develop sauces which would aid in the preparation of sturgeon.

In summary PUFA fish purchasers preferred both common and up market species, premium price PUFA fish purchasers preferred frozen, processed products, PUFA salmon and PUFA sturgeon purchasers preferred up market species and PUFA eel purchasers had no preference.

THE ATTITUDES AND REACTIONS OF PURCHASERS AND NON-PURCHASERS OF EACH VARIETY OF PUFA FISH.

PUFA fish is farmed so it was necessary to find out people's perceptions of farmed fish and whether it would be a major influence in determining purchase. People were aware that sea fish and most river fish they bought were likely to be from the wild and that if they bought trout or salmon it was quite likely to have been farmed. Some people were capable of distinguishing between the flavours of wild and farmed fish and generally expressed a preference for the wild version. Wild fish were perceived as being natural and untampered with and were generally preferred to farmed fish. There was some concern about how safe wild fish were to consume due to pollution. Farmed fish were perceived with a degree of suspicion. People were concerned about the fishes' diet, whether it contained antibiotics, hormones or various other chemicals. These concerns may have been caused by the BSE crisis. It is thought that BSE may have been caused by feeding the cattle infected animal protein. Some respondents half joking, half seriously raised the possibility of mad fish disease when discussing farmed fish. Although BSE had not affected the diet of many people, a description of the fish's diet could be placed on the packet depending. Investigations would have to be carried out to discover what types of feed and terminology would be acceptable to the consumer e.g. the consumer may accept reconstituted animal protein but be horrified by ground up fish heads and tails. If the feed was acceptable to the consumer it may potentially be a marketing aspect that produces a distinctive flavour similar to corn fed chicken. Any concerns raised by the question of what the fish were fed on may subside with the BSE scare. Although people did show concern over what farmed fish were fed on, in reality people bought farmed salmon and trout without asking or

looking for such information. Many participants did not even think about whether the fish they purchased might be farmed. Although people did express a certain amount of concern about the composition of the feed given to farmed fish it is unlikely to greatly affect the purchase of PUFA fish.

The Attitudinal and Reactions of Purchasers and Non-Purchasers of PUFA Fish.

Approximately 79% of the sample would or would consider purchasing PUFA fish. These respondents were characterised by a positive attitude to fish consumption i.e. the more favourable they felt towards eating fish the more likely they were to buy it. The aspects which distinguished PUFA fish purchasers from non-purchasers are described below.

All of the respondents were aware fish is healthy and nutritious. Health, the prevention and alleviation of disease and the alteration of dietary fat intake were the three main reasons why respondents stated they would purchase PUFA fish. As with general fish purchasers, health was a source of confusion in terms of which fats conveyed health benefits and whether fish contained fat. This confusion could lead to a number of people being deterred from purchasing PUFA fish which were labelled “High in Polyunsaturated Fats”. People generally knew fish were rich in oil which conferred health benefits but they did not equate the oil with being fat so in order to overcome the confusion about the fat guidelines it would be wise to replace “High in Polyunsaturated Fats” with a user friendly term such as “High Concentrations of Fish Oils” or “Rich in Fish Oils”. The main negative point is that the word oils may conjure up a greasy, oily texture and taste which may act as a deterrent to some people.

Promotional material for PUFA fish could state that the consumption of PUFA fish could contribute to official guidelines and maintaining good health. This information could be presented in a variety of ways, in a limited way on the products' packaging or in a more in depth way in a leaflet, on a poster or through advertising in magazines. In depth articles on the role of PUFA fish in the diet could be run in in store magazines, health, food and women's magazines and newspapers. A disinterest in healthy prevented some respondents from purchasing PUFA fish. These people believed that altering their fat intake would not affect their short term or long term health as it was good anyway. It would be difficult to persuade this group of respondents to buy PUFA fish. Reinforcing any health message to these respondents would be likely to cause a further backlash and make them even less likely to eat healthily.

PUFA fish purchasers felt fish was versatile and easy to prepare suggesting they are confident in handling and cooking fish and are probably familiar with traditional fish recipes and cooking methods. Many food packages have a serving suggestion on them, either a picture or an actual recipe, this could be utilised on PUFA fish packaging. A range of recipe cards could be developed which contain a selection of unusual dishes using a variety of cooking methods. These recipes would appeal to consumers requiring something to broaden their culinary experience. Alternatively leaflets, posters, articles in in store magazines and or television adverts could be used for promotion. Sainsbury's ran a very successful advertising campaign in which celebrities made a recipe during the advert, a similar method could prove equally successful for PUFA fish.

Although many PUFA fish purchasers do not perceive fish to be a source of food poisoning it may be necessary to state how to handle the product and store it safely to allay potential purchasers' fears and purchasers' fears. This information could be given verbally by the fishmonger, presented on the packaging, on a card or in a leaflet etc.

Fish was perceived as a component in a variety of meal situations by PUFA fish purchasers. PUFA fish purchasers perceived fish as providing a good family meal. A good family meal needs to be enjoyed by all family members so a variety of filling, tasty meals which can be produced easily from PUFA fish need to be brought to the attention of the consumer through the methods mentioned earlier. PUFA fish purchasers were more inclined to serve guests fish suggesting these people enjoy fish and are confident preparing and cooking it. A number of PUFA fish purchasers were neutral or did not serve guests fish in order to encourage purchase for this purpose information would need to be made available on the preparation and cooking of fish meals for special occasions. This could be achieved through the methods mentioned earlier.

Fish is perceived as an alternative to red meat. This could be a particularly important point of view to use in light of the recent BSE scare. Many people might be uncertain as to whether beef is a safe food source and may reduce their intake or cease consuming it altogether. This reduces their red meat options and may make them consider eating fish more often. People who would purchase PUFA fish were slightly

more likely to prefer fish to poultry. This suggests PUFA fish purchasers are keen on fish and do not buy fish just for a change.

Sensory qualities were the main reasons for considering purchase, some potential PUFA purchasers were prepared to try it to see if they liked it and others stated it would depend on the product's taste. These two reasons encompass the favourability of the appearance, texture and taste of the PUFA fish. If one or more of these sensory qualities do not appeal to the consumer they will not purchase the product as enjoyment is a primary consideration when purchasing food. Generally if the product is in a category of food groups that is already favoured there will be more of a chance that the product will be tried, liked and purchased again. If the product is in a category of food which has been disliked through previous experience there is little chance that the product will be tested. Occasionally people may be stimulated to buy something new and unfamiliar to them purely for the novelty or because they were informed of it through a friend or the media. In introducing PUFA fish the opportunity for potential consumers to actually taste it would allow them to find out whether they liked it or not. This would remove the risk of buying new product and finding out it was unsatisfactory. A scheme such as this on a very large scale would be costly and impractical. However a similar scheme on a smaller scale targeting consumers at fish markets or in large supermarkets would be more practical.

It would seem potential PUFA purchasers need some issues clarified before they can make their purchase decision. When the concept of PUFA fish was introduced to the participants the main question that arose was how had the fish become enriched with

polyunsaturated fatty acids. A number of potential explanations were discussed including genetic engineering, breeding fish specifically to be high in polyunsaturated fatty acids, the possibility it was a new fish that was naturally high in PUFA that people do not normally buy and it was achieved through fish farming and diet control. Many people were deterred by these ideas, particularly by genetic engineering and the controlled diet. These methods they felt involved tampering with the fish. They thought the whole purpose of buying a fish as a natural, wholesome food had been defeated. When the respondents were told the fish had been enriched with polyunsaturated fatty acids through diet they were worried that the feed would incorporate additives, antibiotics, hormones or other chemicals which would have adverse affects on their health. As stated earlier these questions have been brought to the forefront by the recent BSE crisis but the degree of concern expressed by these respondents may not be great enough to significantly influence PUFA fish purchase. People need to be educated as to how the fish become enriched through diet and what the diet consists of; this information would enable them to realise that the enrichment of the fish with PUFA has occurred through a natural process and that the fish had not been tampered with. Despite all of these concerns a number of people were prepared to try the product indicating the level of trust people have in food manufacturers.

PUFA fish is a product concept so it was not made clear what product format it would be made available in, fresh, frozen or tinned. Some respondents stated their purchase decision would depend on what type of products were available. It was indicated in a previous section that PUFA fish appealed to purchasers of all three formats. Some respondents stated their PUFA fish purchase decision would depend on the species

available. People have product and species preferences which they consider when deciding whether to purchase a new product.

Although PUFA fish purchasers thought fish provided good value for money and were less inclined to think it was expensive, respondents considering PUFA fish purchase were concerned with price stating they might consider buying it if it was not too expensive. Many consumers have to work within monetary constraints so even though they may like a product they may not always be able to purchase it when desired. The barrier of price to consumption may be reduced through strategies such as making PUFA fish the Buy of the Week or providing money off vouchers.

Through employing some of the methods outlined above e.g. tastings, special offers, it may be possible to persuade potential PUFA purchasers and non-purchasers to become actual PUFA purchasers, in particular respondents who stated they only buy what they like. For these respondents buying something new is a risk because they may not like it and it may go to waste, this may be especially relevant when they are working within a tight budget. If the respondent had tasted and enjoyed the product much of that risk will have been removed.

Non-purchasers of PUFA fish tended to dislike the physicality of fish e.g. the bones, the smell. Many of these problems are overcome with frozen or tinned products and could be emphasised in the advertising of any frozen or tinned PUFA fish products. Non-purchasers' awareness of the lack of unpleasant physical properties would be raised and may encourage them to consider purchase in the future.

The Attitudes and Reactions of Purchasers and Non-Purchasers of Premium Price PUFA Fish.

Approximately 60% of the sample were prepared to purchase or consider purchasing premium price PUFA fish. Premium price purchasers were characterised by a positive attitude towards fish consumption. Their attitudes were very similar to PUFA fish purchasers.

Health was the main reason stated for purchasing premium price PUFA fish. 60.5% of people were prepared to pay extra for the health benefits conveyed by consuming PUFA fish. These people perceive their health as an investment; they are prepared to pay extra to maintain their health and prevent incapacitation through illness and premature death.

Fish was perceived as versatile by premium price PUFA fish purchasers. Once again this could be emphasised in the marketing through serving suggestions on the packet, the development of a range of recipe cards, leaflets containing recipes, a variety of posters with different recipes outlined, articles in the media and television advertisements.

Premium price PUFA purchasers were more likely to think fish provides good value for money and were less inclined to think fish is expensive, so increasing the cost of PUFA fish slightly would be unlikely to make them perceive the product as unduly expensive and may actually make them perceive it as a quality product. Many respondents stated they would be prepared to pay extra for a high quality, wholesome

product which would be beneficial to their health. Many respondents expected PUFA fish to cost more than ordinary fish due to the research that has gone into its production. In marketing PUFA fish therefore, it would be necessary to decide between pricing the product the same as the ordinary product and presenting a straightforward choice between the ordinary product and the healthier version to the whole market or increasing the cost of the PUFA fish product, giving it an image of a high quality product and aiming it at a smaller section of the market. If PUFA fish was to be marketed at a premium price then the tolerance of individuals with regard to the price would require further investigation. As a price which conveyed quality and value for money would be required, a balance would need to be obtained. Too small a price increase would lead the consumer to think it was of average quality and merely expensive. Too large an increase and people would perceive it to be a quality product but unjustifiably expensive. A price between the two extremes is required. The amount extra the respondents would be prepared to pay will be dictated by their budgetary constraints. Potential buyers may have mentioned health but with a qualifying statement such as “If it’s healthy I’d buy it but it would depend on how much more it cost”. This suggests that health reasons are not a priority for potential purchasers at least not until certain conditions have been satisfactorily fulfilled such as price and sensory qualities. A certain product or species to the respondents’ liking would induce them to pay extra. The main reason people gave for not purchasing premium price PUFA fish was that it would be too expensive. This would mainly be due to budgetary constraints but may in part be due to the fact that people know fish contain polyunsaturated fatty acids and are not prepared to pay more for something which is present already in ordinary fish.

The majority of premium price PUFA fish purchasers and non-purchasers found the bones and smell of fish to be off putting. Premium price PUFA purchasers were slightly less likely to be deterred by these negative aspects. Consumers need to be made aware through information cards at the point of sale or through the fishmonger of the signs that a fish is fresh e.g. fresh fish smells of the sea. They also need to be made aware that the fishmonger will prepare the fish i.e. remove the head, tail, any internal organs and most of the bones through a sign at the point of sale.

Premium price PUFA fish purchasers were more likely to see fish as an alternative to red meat. As with PUFA fish this attitudinal aspect may be useful to emphasise in light of the BSE scare. As prices of other meat rise due to demand, a premium price PUFA fish may not appear too expensive to potential buyers if the price of fish remains unaffected.

Premium price PUFA purchasers perceived fish as providing a good family meal and as suitable for serving to guests. Premium price PUFA fish purchasers may be prepared to pay extra for a product which will provide a good, healthy meal that takes care of the family's dietary fat intake and their long term health. A premium price PUFA fish product with an image of quality and wholesomeness might appeal more to a hostess as a special treat than merely a healthier version of a fish.

Some potential premium price PUFA purchasers would be prepared to try premium price PUFA fish if it's sensory qualities were generally to their liking. A variety of

methods may be used to persuade people to buy PUFA fish e.g. taste tests, introductory offers and money off coupons. These methods allow the respondents to find out whether they like the product at less than cost price so that any potential loss through not liking the product is reduced.

Once again some respondents felt the product had been genetically altered, tampered with or contained unhealthy fats. Information needs to be provided on how the fish became enriched with polyunsaturated fatty acids through a special feed. Also information needs to be supplied on which fats are beneficial to health to eliminate any confusion. This information could be supplied through various methods as stated previously.

A number of respondents would not purchase premium price PUFA because they did not like fish or they were not interested in healthy eating. It would be difficult to persuade these two groups of respondents to purchase premium price PUFA fish. People whose past experiences of fish have been unpleasant will not pay extra for something they will not enjoy. Respondents who are not interested in healthy eating will not pay extra for a healthier version.

The Attitudes and Reactions of Purchasers and Non-purchasers to Potential PUFA Species.

The reaction to a variety of PUFA species was examined including familiar, popular species e.g. salmon, familiar, less popular species e.g. eel and unfamiliar species e.g. sturgeon. The familiar popular species, trout, salmon and cod had the most positive

reception. Most people have tried these species and know what they taste like so when purchasing a PUFA variety of the species they essentially know what they are getting and there is minimal risk. Participants were aware that salmon and trout tended to be farmed fish so they may be less suspicious about the diet they are fed to become enriched with polyunsaturated fatty acids.

With the less familiar species people had varying degrees of knowledge. Some people had a little knowledge of turbot and halibut and after salmon and trout, people were most prepared to try these two species. Some participants were prepared to try halibut to find out if they would like the taste. The price and availability would also determine whether people would purchase it. Some participants would not purchase halibut as they thought it would be very expensive or very oily. Some fish purchasers were also prepared to try turbot. These people generally had a broad knowledge and experience of fish species which would remove the risk of buying something they do not like and/or do not know what to do with. These fish purchasers were more confident in their ability to prepare fish and make a meal out of it. Some purchasers although lacking confidence in their culinary ability would be prepared to try halibut and turbot. Other participants stated they had never heard of them or had never tried them. These participants did not dismiss the idea of eating halibut or turbot so with education and familiarisation they might be persuaded to try them. Most of the participants did not seem to keen to try carp. A few people had some kind of knowledge about carp. They perceived it as being ornamental or for sport but not really for consuming.

The reaction to the familiar, less popular species was generally negative. Many people did not specifically express a dislike of the flavour of eel but stated a general negative feeling such as “I wouldn’t even contemplate it”. This suggests that people may be expressing dislike without having actually tried the fish. There were members of the thirty five to fifty four age group who thought eel was gorgeous. Some participants would be prepared to try it but these were in a minority.

The purchase related decisions for a familiar fish with a positive image, an unfamiliar fish and a familiar fish with a negative image were examined in more detail.

The Attitudes and Reactions of Purchasers and Non-Purchasers to PUFA Salmon.

The vast majority of the sample (78.5%) had tried salmon before, however only 49.5% would be prepared to buy or would consider buying PUFA salmon. The respondents who would not purchase PUFA salmon may not be averse to the concept of PUFA fish, they may simply have disliked salmon. PUFA salmon purchasers were distinguishable from non-purchasers because they had a more positive attitude to fish consumption. The attitudinal aspects outlined below distinguish them from non-purchasers.

Health was a main reason for purchasing PUFA salmon. PUFA salmon purchasers were more likely to perceive fish as healthy than non-purchasers. Although PUFA salmon purchasers know fish is healthy the message could be reinforced using strategies mentioned earlier.

PUFA salmon purchasers thought fish was good value for money and were less likely to perceive it as expensive. However, expense was the second most popular reason for not purchasing PUFA salmon. Salmon used to be an expensive food when it was only available in the wild, however since it has been farmed, the price has fallen. The price of salmon has also become comparable to the price of popular species as they have increased in price due to the depletion of stocks through overfishing. Although salmon has an exclusive, up market image it has become better value for money and more accessible to a wider range of people. These points need to be emphasised in order to encourage non-purchasers to change their minds. Salmon's image also explains why a number of people would purchase PUFA salmon as a treat for a special occasion or when they were dining out.

PUFA salmon purchasers perceive fish as versatile and as being a component of many different recipes. These respondents may already know a number of different recipes and be familiar with a variety of ways of preparing fish but their knowledge could always be extended through a series of recipes for serving suggestions on the package, recipe cards, leaflets, posters or promotion through other media.

PUFA salmon purchasers enjoyed serving fish to guests. As these respondents may be familiar with simpler recipes and cooking techniques they may like a range of cards with more elaborate recipes suitable for entertaining.

PUFA salmon purchasers perceived fish as distinct from red meat and poultry. They were more likely to enjoy fish more than red meat and poultry. Too much red meat has been condemned as bad for the health and beef has been the subject of the recent BSE food scare therefore fish's status as a healthy, safe food could be stressed in contrast to that of red meat and beef in particular.

Another main reason for purchasing PUFA salmon was purely for enjoyment indicating the importance of the taste, texture, smell and appearance of food. If these qualities do not satisfy the consumer, no matter how healthy the product, it would not be purchased. The sensory qualities were important to people considering purchasing PUFA salmon. They stated they would like to try PUFA salmon in order to find out whether it was generally too their liking or their taste. Tastes varied from respondent to respondent, some would purchase PUFA salmon if it tasted like wild salmon and some would buy it if it tasted like farmed salmon. A few respondents stated a preference for tinned salmon rather than fresh salmon so tinned PUFA salmon could be an option. Apart from showing how important the taste of the food is, it also shows how the ideal taste can vary between respondents for one particular species. The participants could be introduced to the taste of PUFA salmon through taste tests, special offers and money off coupons. The main reason for not purchasing PUFA salmon was the respondent disliked a physical property of salmon such as the bones or the taste which many people thought was bland. Very little could be done to alter these respondents' perceptions of salmon and encourage them to purchase PUFA salmon.

Some respondents would not buy PUFA salmon as it was not an item they usually bought or were familiar with. It may be practical to carry out taste tests in a limited number of stores which would give people who only buy a limited range of species, the opportunity to try another species without the risk of buying something they will not like. Strategies such as special offers and money off vouchers could also be employed. Of course people who only buy a limited range of species and products may be quite happy with their repertoire and may not want to take advantage of a taste test.

The Attitudes and Reactions of Purchasers and Non-Purchasers to PUFA Eel.

Approximately eighteen percent of the sample had tried eel in the past. However only ten percent would purchase PUFA eel. People with a positive attitude to fish consumption were more likely to purchase PUFA eel. PUFA eel purchasers' attitudes were not distinguishable from non-purchasers attitudes.

Respondents who would purchase PUFA eel stated health as being the main reason for purchase. This included altering dietary fat content and the prevention and alleviation of disease. As stated before, although health is often quoted as a major influence on purchasing a food, many other physical attributes and their desirability are assessed prior to making a purchase decision. Some people who were past purchasers of eel would repeat buy PUFA eel because they generally liked it or liked a specific physical property. Potential purchasers who were past purchasers of eel would repeat buy eel because they generally liked it or liked a specific physical property. However, some people who had tasted eel did not want to repeat the experience saying it took up the taste of its surrounding environment which cast doubt on how safe it was to eat due to

pollution. Potential purchasers would try PUFA eel to see if it the sensory attributes were to their liking. The main reason for not purchasing PUFA eel was the respondents' general perception of eel which was very negative. They did not like the sound, idea or thought of eating eel. The second most popular reason for not purchasing PUFA eel was its physical appearance. Eels are generally perceived to be unattractive fish, largely due to their snake like appearance and way of moving through water. This dislike of the physical appearance of the fish probably underlies the negative perceptions of the respondents who said they did not like the sound, thought or idea of eating eel. Another set of respondents stated they did not like eel without actually having eaten it. These respondents may also be deterred from the purchase of PUFA eel by the physical appearance of the fish. They may be equating the ugliness of the fish with it also having an unpleasant taste. Fish such as rainbow trout and salmon are attractively coloured, a traditional fish shape and graceful in their movements through the water which is why they do not evoke the same negative reaction. Even though prepared fish often do not bear any resemblance to the original creature, its image is still retained. The whole image of eel is negative and prevents people from trying it. This perception of eel would be extremely difficult to change especially as it does not seem to have any redeeming features. The appearance of the whole live animal seems to be as important as the sensory qualities i.e. taste, texture and smell of the food. Unfortunately eel could not be utilised in generic dishes such as fish pies and processed products as oily fish can cause technical problems. In the Netherlands smoked eel is regarded as a delicacy. This option could be viable in Great Britain and would entail marketing it to a small section of the fish market who have enjoyed eel in the past or who would be prepared to try it. Smoked eel would

hopefully contribute to disassociating eel from the down market image of Cockneys eating jellied eels.

The Attitudes and Reactions of Purchasers and Non-Purchasers to PUFA Sturgeon.

Sturgeon was not a commonly consumed fish with only nine percent of the sample having tried it. The fact that nine percent of the sample claimed to have tried sturgeon seems artificially high as it is not widely available or commonly used either in households or catering establishments. A fairly large proportion (26%) of the sample were prepared to buy it or consider buying it. People with very positive attitudes to fish were more likely to purchase PUFA sturgeon. However, PUFA sturgeon purchasers did not hold any attitudinal beliefs which distinguished them from non-purchasers.

Health reasons were the most popular reason for purchasing PUFA sturgeon including altering dietary fat intake and the prevention and alleviation of diseases. In targeting potential PUFA sturgeon purchasers the health benefits and the intake required to achieve them could be reiterated through the methods previously stated.

Respondents who had tried sturgeon would be prepared to repeat buy PUFA sturgeon as they enjoyed the taste and other physical properties of the fish. A number of respondents were prepared to try sturgeon to see if it was to their liking whereas others were prepared to buy it if they specifically liked the taste. Potential PUFA sturgeon purchasers are therefore open to the powers of persuasion. The most popular reason

for not purchasing PUFA sturgeon was a lack of information about it. Many respondents stated they had not heard of sturgeon, had never tried it or had not thought about eating it. Some people did not even know sturgeon was a fish. A number of respondents simply did not find the idea of consuming sturgeon appealing. The reason for this reluctance is not as apparent as it was with eel. Some respondents did mention sturgeon being physically unappealing. Sturgeon is slightly flattened dorso-ventrally with an armoured appearance and a longish snout so it may vaguely resemble a crocodile. However it is unlikely the public have that amount of knowledge about sturgeon's appearance to explain its lack of appeal. Sturgeon did not evoke the same degree of negative reaction as eel. People who have tried caviar and did not find it to their taste may assume sturgeon will have a similar flavour and dismiss it without having tasted it. People need to be educated about sturgeon in terms of its whole appearance, taste, texture etc. The appearance of a food in its entirety is quite important. If an animal has a repellent image then people will be deterred from consuming it. This was found with regard to eel. Sturgeon is not an immediately attractive fish so it may be wise to investigate consumers' reactions to the fish as a whole. A positive reaction would allow the whole fish to be incorporated into displays and promotional material. A negative reaction would mean the image could be withheld from displays and promotional material. Any sturgeon sold would have to be in fillets, steaks or cutlets. It is difficult to say whether people would purchase a product which they were unfamiliar with in its entirety and this area would need to be investigated.

In promoting sturgeon one approach would be to develop its image as an up market, luxurious food. It is debatable whether its associations with royalty would positively or adversely affect its image considering their recent adverse publicity. As sturgeon is unfamiliar to the majority of people the information and image presented to potential consumers could be very carefully managed to present it in the most attractive and appealing manner.

The taste and texture of sturgeon would need to be described and compared to foods the majority of the population are already familiar with to encourage purchase. Unfamiliarity with the food and not knowing whether they will like it or not prevents many people from purchasing new foods. There are a variety of methods which could be employed to encourage purchase of PUFA sturgeon including the opportunity to sample a piece of sturgeon. Once respondents know they like the taste of something they are more likely to purchase it when they see it. The risk of the respondent not liking it and wasting their money has been eliminated. However this method of familiarising people with sturgeon would be expensive, probably impractical and would not have a widespread effect.

People are often prevented from purchasing a new food because they do not know how to cook it. This risk could be removed with serving suggestions on the packaging, recipe cards and various strategies mentioned previously. Manufacturers could develop a range of sauces to aid preparation and cooking.

Many respondents preferred to purchase some other fish related product they were already familiar with and liked. This could be partially due to the lack of information about sturgeon but may be due to a reluctance to try new products. Both of these reasons could be overcome using the methods outlined above.

A few respondents said they would consider purchasing PUFA sturgeon depending on the price. Some respondents gave price purely as a reason for not purchasing PUFA sturgeon. These respondents had the impression that sturgeon had an up market image like salmon due to the fact that caviar is produced by sturgeon and due to an old law that states all sturgeon caught belong to the monarchy. This regal, up market image seems to currently be persuading people not to purchase PUFA sturgeon. This kind of image could be fruitfully used to market sturgeon as a high quality, up market fish that would be suitable for guests and special occasions. The price would need particular emphasis as presently it is acting as a deterrent to purchase.

Some respondents stated they would not be able to purchase it as it was unavailable. This problem could be eliminated depending on demand.

A selection of respondents who had previously purchased sturgeon would not repeat purchase simply because they did not like the taste. Other respondents generally did not like fish.

THE DEVELOPMENT OF A MARKET PLAN FOR PUFA EEL AND PUFA STURGEON.

Christopher, McDonald and Wills (1980) stated *"the aim of marketing is to match an organisation's capabilities with the wants of its customers. It must do this against a background of the dynamic characteristics of the environment in which the marketing takes place. This includes direct and indirect competition, economic uncertainties, legal and political constraints and institutional patterns."* Marketing planning is a logical series of activities which takes into account the capabilities of the organisation, the needs of the consumers and the characteristics of the environment e.g. direct and indirect competition and leads to the setting of the marketing objectives and the formulations of plans to achieve them. The process is very simple and involves developing the organisation's mission statement, summarising the organisation's performance, producing financial projections, examining the entire market assessing the strengths and weaknesses of the product/market and the opportunities and threats to the product/market, considering an assumptions made about the organisation and the external environment and producing the overall marketing objectives and strategies (McDonald 1995).

In the current study the aim was to find out whether the product that was developed i.e. PUFA eel and PUFA sturgeon would satisfy the consumers' needs and identify them in terms of their demographic, psychological and behavioural characteristics. This information was used to formulate a marketing plan. A full and extensive marketing plan as described above could not be produced for a number of reasons. There was no specific commercial organisation involved in the development of PUFA

fish so there are no details on the organisation's performance or financial projections. There are no specific PUFA fish products, the marketability of the concepts of PUFA eel and PUFA sturgeon was essentially what was being investigated. A marketing plan incorporating the appropriate steps is described below.

The Marketing Plan for PUFA Eel and PUFA Sturgeon.

Mission Statement.

Aquacultural techniques have developed over the years and as a by product of this technology a "healthy" fish has been produced. These "healthy" fish are healthier than the non-farmed equivalent due to the fact they contain greater quantities than normal of polyunsaturated fatty acids (PUFA) in their flesh. Polyunsaturated fatty acids have been associated with the prevention and alleviation of various diseases. The species currently farmed with high concentrations of PUFA in their flesh are eel and sturgeon. The aim of this marketing plan was to raise the consumers' awareness of PUFA sturgeon and encourage purchase.

Market Overview.

In Great Britain there are approximately sixty species of fish and shell fish on sale. However a few dominate the market space in terms of volume and value; these are cod, haddock, scampi, plaice and mackerel (Connell 1987). The same species continue to dominate the market place despite the fact that stocks of these fish are in decline so less are being caught, forcing the price of them to increase. The dominance of these species has been challenged by attempting to introduce foreign, exotic species.

Sainsbury's and Tesco have both had some success in promoting tilapia (The Grocer 25 February 1995).

The fish market was worth over £2,120m in 1995. In 1995 frozen fish products held 26.5% of the market, fresh fish held 25.7%, canned fish held 16.2% and other processed fish held 31.6% of the market (Key Notes 1996). The biggest growth area in fish products is in frozen products. Although the value of the fish market is increasing, the actual consumption of fish has been in decline since the 1950's and this trend is set to continue (C.O.M.A. 1994).

SWOT Analyses of PUFA Fish, Premium Price PUFA Fish, PUFA Salmon, PUFA Eel and PUFA Sturgeon.

Strengths - These products have a number of strengths which are outlined below,

- Healthiness. Contributes to meeting official dietary recommendations. Reduces saturated fatty acid intake and increases polyunsaturated fatty acid intake. Contributes to long term health through the prevention and alleviation of a number of diseases.
- Uniqueness. Only fish enriched with polyunsaturated fatty acids. Product has a healthy, wholesome, quality image. Premium price acceptable.
- Up market image. Caviar originates from sturgeon. All sturgeon caught belong to the monarchy.

Weaknesses - These products have some weaknesses which are outlined below,

- Lack of knowledge. Need information on how the fish become enriched with polyunsaturated fatty acids, reassurance that the increased concentration of polyunsaturated fatty acids is not due to any genetic modification and information on the physical properties i.e. the taste, texture and appearance of the unfamiliar PUFA species, sturgeon and eel.
- Premium price. Due to budgetary constraints some consumers will not be able to pay a premium price.
- Physical appearance. Negative physical appearance deters consumers from purchasing the product. Eel is physically repellent to many consumers as it looks like a snake.

Opportunities

- Continuing drive by Government Health Department towards healthy lifestyle. Main dietary recommendations include reduction in saturated fatty acids, sugar and salt intake and increase in fibre intake. PUFA fish contribute through low saturated fatty acid content and high polyunsaturated fatty acid intake.
- Food scares. Recent food scares have included salmonella in eggs, listeria in soft cheeses and BSE in beef products. Fish not involved in any recent food scares. As fish is a safe food its consumption may increase.
- Availability. Stocks of high consumption fish are in decline and the quality is inconsistent. PUFA fish is farmed therefore it could be in plentiful supply and of a consistent quality.

Threats

- Potential healthy eating backlash. Healthy eating message constantly reinforced over last decade and official information has occasionally been conflicting. People may begin to ignore any healthy eating advice.
- Declining fish consumption over recent years. Trend unlikely to change. People less likely to purchase high consumption species so very unlikely to purchase unfamiliar, “new” species.

Portfolio Matrix.

Potential market segments are identified for each variety of PUFA fish below.

PUFA Eel - Potential PUFA eel purchasers have consumed eel in the past. People who have already consumed eel will know if they like it and be able to make a logical purchase decision. PUFA eel purchasers are likely to be fresh fish purchasers who have an extremely positive attitude to fish.

PUFA Sturgeon - People who have consumed sturgeon in the past are more likely to purchase PUFA sturgeon because they know they will like it. PUFA sturgeon purchasers are likely to be tinned fish purchasers who will have a relatively positive attitude to fish. Potential PUFA sturgeon purchasers are more likely to have purchased prawns. Prawns fall into the up market category of fish. People who purchase these products have a very positive attitude to fish which suggests that potential PUFA sturgeon purchasers are fish lovers and are prepared to try a wide variety of fish. Potential PUFA sturgeon purchasers are less likely to purchase fish in sauce. Fish in

sauce falls into the common, everyday category of species/products. These people generally have a positive attitude to fish but are occasionally deterred from purchase by fish's negative attributes. This suggests that people need to have a very positive attitude to consider purchasing PUFA sturgeon. Potential PUFA sturgeon purchasers were predicted to be from classes A and B. Classes A and B may be more aware of sturgeon's up market image.

Marketing Objectives and Strategies.

The two PUFA species that have been developed are PUFA sturgeon and PUFA eel.

PUFA eel received a very negative reaction from over eighty percent of the sample. People did not like the idea, thought or sound of eating eel. These reactions tended to be due to the appearance of eel i.e. it looks very similar to a snake and moves in a similar way. As many people do not like snakes and would not consider eating a snake they therefore would not consider eating something that looks very similar to a snake. Also respondents equated its physically unappealing appearance with an unappealing taste despite not actually having tasted it. These reactions were strong and based upon feelings rather than reason, logic and experience and would be very difficult to alter. It has been very difficult to achieve even limited success in introducing "new" species of fish onto the market when they have not had a negative image so it would be very difficult to persuade people to consume a fish which they generally perceive to be quite repellent. It would be unwise to attempt to persuade a large proportion of the fish market to eat eel as it would require a very intensive high profile campaign. From the emotional reaction of over eighty percent of the respondents it would be unlikely to

provide a return in profits that would justify spending such a large amount on promoting eel. Although eel is perceived very negatively and is not widely consumed in Great Britain, in countries such as Holland and Italy it is perceived more positively and is commonly consumed.

PUFA sturgeon received a slightly more positive reaction with only seventy percent of the sample stating they would not purchase PUFA sturgeon. This reaction is not characterised by the same intense negative, emotional feeling that PUFA eel was but by a lack of knowledge about its taste, texture, appearance and how it becomes enriched in polyunsaturated fatty acids.

Product - The species purchased by PUFA sturgeon purchasers, prawns, indicate these respondents have a very positive attitude towards fish and are not too concerned with fish's negative attributes. These respondents enjoy preparing, cooking and serving fish both to their families and to guests. PUFA sturgeon purchasers' positive attitude to fish and their willingness to serve guests fish suggests they would be prepared to purchase fresh fish. Fresh fish epitomises the negative attributes of fish so people are readily deterred from purchase unless they have a very positive attitude to fish. Fresh fish is the only format suitable for serving to guests. Frozen fish products fall into two categories. The cheaper, added value products are generally limited in both the range of products available and the variety of species used. The luxurious and slimming products are slightly more expensive and encompass non-traditional recipes and a wider variety of fish species. Fish lovers may want to purchase these products when they have not got enough time to create a meal from raw materials. PUFA sturgeon

purchasers were found to prefer tinned fish. It is possible that a range of products could be developed using PUFA sturgeon. When developing and marketing a range of sturgeon products it would be essential to examine the consumers' conceptual image of sturgeon. Jung-Stalmann and Booth (1995) found people associated sturgeon with nouveau cuisine, healthy eating, high quality restaurants and holidays in the Mediterranean. These are very positive associations which could be used in marketing to emphasise that sturgeon is an up market, high quality, wholesome fish which is a special treat. Evidence suggests that people have become bored with traditional recipes so a variety of new and imaginative recipes could be developed. Recipes which are exotic and would usually only be encountered abroad or recipes which would only be found in restaurants would appeal to the consumer. Recent restaurant trends have included mixed fish dishes and surf and turf dishes which combine fish with meat (Food Arts 1995, 1996). Restaurant trends are often used to develop new products. These associations and trends would need to be considered when developing all formats of PUFA sturgeon. Manufacturers would need to use this information to develop a range of exotic sauces which would aid in the preparation of fresh fish. Chilled fish may be ready packaged with a variety of sauces or herbs and spices which would be associated with foreign holidays or nouveau cuisine. A range of recipes could be devised for frozen products reflecting the consumers' positive associations with nouveau cuisine and foreign holidays. Frozen products would also need to be able to be cooked in a variety of ways, either through the three way method i.e. products may be grilled, oven baked or fried or alternatively through being microwaveable in order to maintain their convenience. Frozen PUFA sturgeon products could be developed to satisfy a variety of meal situations e.g. both main meals and snacks.

Traditionally, tinned fish have entailed the fish being canned in oil or brine. However, recent innovations have led to an increase in the number of products available e.g. tinned tuna can be obtained in garlic and herb mayonnaise or curry sauce. These innovations could be used if PUFA sturgeon was to be tinned. A variety of dressings which would appeal to potential consumers would need to be determined through further research.

Price - The number of respondents who would purchase premium price PUFA fish was 60.4% as opposed to 79.1% who would buy PUFA fish, so obviously price is an important factor to some segments of the market. Potential PUFA sturgeon purchasers are more likely to have purchased prawns. Prawns may be slightly more expensive than other popular products. This would suggest that potential PUFA sturgeon purchasers would be prepared to pay extra. A premium price product conveys an image of quality, of wholesomeness and healthiness and of being up market. People are prepared to pay a little bit extra for these characteristics particularly if they are likely to be serving it to guests or if it is going to be beneficial to their health. The exact tolerance of consumers i.e. how much extra they would be willing to pay, needs further investigation. The product would have to be sufficiently different in terms of PUFA content and sufficiently up market to justify an increase in price. A fine balance between price and the perception of the product needs to be achieved.

Promotion - There was a distinct lack of knowledge about what sturgeon was, what it looked like, tasted like etc. The potential customers therefore need to be educated about these aspects. Presentation of its physical appearance needs to be managed

carefully as eel's negative appearance deterred many customers from purchasing it. Research could be carried out to investigate people's perceptions of sturgeon once they have been familiarised with its appearance. If the reaction was negative, pictures of sturgeon could be withheld from promotional material and displays whereas if it was perceived positively pictures of sturgeon could be included. It is unlikely that many people would find sturgeon to be an attractive fish. Sturgeon is slightly dorso-ventrally flattened, has a longish snout and an armoured appearance somewhat similar to a crocodile.

Jung-Stalmann and Booth (1995) performed some research into the perception of the sensory characteristics of sturgeon. First time consumers of sturgeon gave a positive reaction to it. Sturgeon was most often compared to pork and amongst those who knew it, shark. It was described as having a "meaty" or "fishy" flavour which was "delicate", "mild" and even "bland". Sturgeon's texture was described as being "meaty" or "chewy". Descriptions of sturgeon's taste and texture using these kind of comparisons could be used on cards, in leaflets or on posters at the point of sale to allow the consumer to anticipate whether it would be to their liking. These attributes could also be used very positively in developing sturgeon's image. Many people perceive fish to be an unsatisfying meal due partially to its soft, flaky texture and associations with slimming. A fish with both a meaty flavour and meaty texture would possibly be perceived as more satisfying. Sturgeon would appeal to people who eat fish but tend to prefer meat. Sturgeon's meaty image could be developed in the way it is presented. Cutlets could be incorporated into displays as they look more substantial and like traditional cuts of meat than fillets of fish. Recipes for products and for

presentation in promotional material such as traditional fish recipes could be avoided and replaced with recipes which enhance the meaty flavour of the fish.

Generally people are aware of the need to reduce fat in the diet but are uncertain or confused about the different types of fat and their varying intakes i.e. saturated fat intake should be reduced and polyunsaturated fat intake should be increased. This means a fish labelled high in polyunsaturated fats would be avoided by a considerable number of people who perceive anything high in fat to be bad for their health or by people who are confused about the guidelines. In order to correct the perception that all fats are bad for health, a large scale intensive campaign would be required incorporating a variety of media. This however would be very costly. An alternative would be to find appropriate user friendly terminology. Fish oils were not equated as being fats and they were perceived as being good for health, therefore the fish could be labelled “Rich in oils” or “High in oils”.

The health aspect could be emphasised further. As the terminology saturated fats and polyunsaturated fats are being avoided people would need to know that official guidelines recommend an increase in the amount of fish oils in the diet and also that fish contributes to a low fat diet. People need to know the medical benefits of increasing the amount of fish oils in their diet i.e. a contribution to the prevention of coronary heart disease and various cancers and the alleviation of various inflammatory diseases such as rheumatoid arthritis. It is important to know how much fish oil must be consumed to achieve these medical benefits, how much fish oil is in a serving of PUFA fish and how much fish oil is in a serving of the ordinary equivalent.

Information on health and recipes may be presented in a condensed form on the packaging. There are certain guidelines from the Ministry of Agriculture Farms and Fisheries (1980) which have to be followed when medical benefits are claimed, these are,

1. the food must contain the substance in a sufficient quantity to provide such benefits
2. the minimum quantity of the substance must be stated as a percentage by weight of the food. Also where a specific claim is made the amount of food which has to be eaten to achieve the claim must be stated.

In addition to providing a concise explanation of the health benefits on the packaging a leaflet providing more detailed information on what diseases are alleviated and what diseases are prevented by the consumption of fish oils could be provided.

In order to bring the consumer's attention to the PUFA sturgeon the actual positioning of the product is crucial. At the fishmongers the PUFA sturgeon should be placed in the centre where it will be the focus of attention for people waiting to be served. Even though the consumer may not purchase sturgeon they will have noticed it which they may not have done had it been at either end of the display. Positioning of chilled products is equally important. PUFA sturgeon should be placed at eye level. Products displayed at this level are immediately more noticeable than products which are placed above or below eye level. Once a product has been noticed the consumer's familiarity with it will have been increased which may subsequently lead to them purchasing it.

As PUFA sturgeon is a relatively unfamiliar fish and it may be purchased for providing a good family meal or for serving to guests, a range of recipes could be developed in order to familiarise new users. These recipes would familiarise people with how to cook it and use it for different occasions. As these people will generally be fish lovers they will already be familiar with basic cooking techniques and recipes and may require something which will provide more of a challenge. These recipes could be promoted on recipe cards or leaflets and positioned at the point of sale within the store. Posters in store with appealing pictures of PUFA sturgeon recipes could be used to encourage purchase. Tastings of PUFA sturgeon could be used to familiarise members of the public with the taste and texture of sturgeon. This method of familiarisation would be costly to employ at every store. It would have to be used at large stores with fishmongers. Tasting would allow consumers to decide whether they like a product without the risk of wasting money buying something they may not like. A special offer could be run either alone or in conjunction with any tastings to encourage purchase. Alternatively discount vouchers could be used either alone or in conjunction with the tastings to encourage purchase. All of the methods mentioned above aim to increase the consumers' knowledge and familiarity with PUFA sturgeon. The greater the consumers' knowledge and familiarity with the product the more able the person will be able to judge whether they will like it or not. The risk of the consumer buying a product and not knowing whether they will like it or not is reduced.

PUFA sturgeon purchasers tended to buy up market fish used on special occasions e.g. prawns. These species of fish are generally purchased by fish lovers i.e. those who

enjoy preparing, cooking and serving fish both for themselves and for guests. When serving guests fish, people tend to purchase fresh fish with an up market image such as trout or salmon. In order to appeal to potential purchasers, PUFA sturgeon needs to develop its image which is already up market due to it being the origin of caviar and also due to the fact that any sturgeon caught belong to the monarchy. In any promotional material the image of sturgeon as a quality, up market fish would have to be maintained. This would require careful consideration of the wording and images used and would require the services of an advertising agency.

An equal amount of consideration would be required when considering where to advertise PUFA sturgeon in the media. Advertising PUFA sturgeon in the general media would not necessarily reach the people who would purchase the product. It would be necessary to select publications which would be read by fish lovers, food lovers and people who are interested in healthy eating. These may include specialist food magazines such as Sainsbury's Magazine and BBC Good Food. Delia Smith one of the most popular chefs in Great Britain, produces recipes for Sainsbury's Magazine. The sales of products used in her recipes are increased substantially. Features on PUFA sturgeon in specialist food magazines describing its physical characteristics, its health benefits, how it became enriched in polyunsaturated fatty acids and a selection of recipes would contribute enormously to reducing the lack of knowledge about the species and increasing familiarity with it. Most newspapers have a women's section one day per week which usually incorporates an article on food so a feature about sturgeon could be included. As sturgeon is likely to be purchased by classes A/B a feature could be placed in a selection of newspapers including the Daily Mail and the

Daily Express. The recipes would have to appeal to the targeted audience. They may involve nouveau cuisine recipes or recipes with exotic foreign flavours.

Place - As PUFA sturgeon is likely to be a premium price product with an up market image it will require promoting in the appropriate stores. It has been demonstrated that classes A and B would purchase PUFA sturgeon for its up market image and for its health benefits. Therefore it needs to be advertised and placed in stores which would appeal to these classes, ones which have a tradition of providing quality products. There are multiple retail outlets which have this image and in which sturgeon could be potentially sold. Tesco and Sainsbury's are both perceived as producing products of a high quality. They have both been concerned with promoting healthy eating through their own healthy eating labelling system and the production of a large number of information leaflets. Both stores as well as providing tinned, chilled and frozen fish, have introduced fishmongers into a number of their stores to provide fresh fish. They have also been innovative in introducing a number of unfamiliar, "new" fish species onto the fish counter such as tilapia and red snapper. Marks and Spencers also have an image of selling high quality products. The only negative attribute of M&S stores is that they do not have in store fishmongers and would only be able to supply packaged, chilled fresh products and frozen and tinned products. Multiple retail outlets would be prepared to invest the necessary resources into developing leaflets and posters for educating consumers about unfamiliar, "new" fish. A number of multiple retail outlets such as Kwik Save and Aldi would be unsuitable for selling sturgeon due to their image of pile it high sell it cheap. This image would conflict with sturgeon's image of being an up market, quality product.

Although the number of independent fishmongers is in decline, they still accounted for 42% of the sales of fresh fish in 1991 (LeGrand 1992) However independent fishmongers would be unsuitable outlets. The ports where the fish are landed and which are responsible for some processing have business associations with certain wholesalers, fish markets and fishmongers. This distribution system is quite complex and it would be difficult for a fish farmer to access the system and distribute their product nationwide through it. It would be more practicable for fish farmers to distribute PUFA sturgeon to specialist fishmongers and/or to large fish markets such as Birmingham and Billingsgate where there is a demand for unfamiliar, "new" species of fish. Sturgeon would not receive the same amount of promotion in a fishmonger that it would if it was sold in a store. There would be no packaging, information cards, leaflets or posters which would convey the much needed information on its physical attributes, health benefits or the recipes it can be used in. The barrier of a lack of knowledge about sturgeon would not be removed.

Initial production of and demand for PUFA sturgeon would be low. In this situation it may be advantageous to increase the shelf life of the fish through producing mainly chilled or frozen products. The production of chilled and frozen products provides the opportunity to display various information about PUFA sturgeon on the packaging. As the production of and demand for PUFA sturgeon would initially be slow it would only be made available to a few large stores. As production and demand increased it could be supplied to a greater number of stores. Also supplies of fresh PUFA sturgeon to the fishmonger could be increased as production and demand increased.

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APPENDIX ONE: QUESTIONNAIRE

Questionnaire

Good morning . I'm -------, representing Quality Fieldwork, an independent market research company, conducting a study about food products on behalf of Birmingham University. [Show ID Card.] Could you please spare some time to answer some questions about buying fish? I can assure you that anything you say will be kept strictly confidential.

Screening Question

Do you purchase food for your family (including take away food)?

Yes	(2)	Continue
No	(1)	Thank and close

Past Fish Consumption Behaviour

First I'd just like to ask you a few questions about what kind of fish you buy and how often. [USE SHOW CARD A. PLEASE CIRCLE THE APPROPRIATE NUMBER.]

1) How often do you buy any type of fish or shellfish for your family?

More than once a week	(5)	
Once a week	(4)	
Once a month	(2)	
Less than once a month	(1)	
Never	(0)	***GO TO QUESTION 6.***

2) How often do you buy fresh fish?

More than once a week	(5)
Once a week	(4)
Once a fortnight	(3)
Once a month	(2)
Less than once a month	(1)
Never	(0)

3) How often do you buy frozen fish?

More than once a week	(5)
Once a week	(4)
Once a fortnight	(3)
Once a month	(2)
Less the once a month	(1)
Never	(0)

4) How often do you buy canned/tinned fish?

More than once a week	(5)
Once a week	(4)
Once a fortnight	(3)
Once a month	(2)
Less than once a month	(1)
Never	(0)

5)Which of the following fish products have you bought? ***[Show Card B.]***

(1)	(6)	(11)	(16)
(2)	(7)	(12)	(17)
(3)	(8)	(13)	(18)
(4)	(9)	(14)	(19)
(5)	(10)	(15)	(20)

(21)Other(Please specify).....

.....

.....

Future Fish Consumption Behaviour

6) Will you buy any type of fish in the next week?

Yes (2)
Maybe (1)
No (0) ***GO TO QUESTION 11.***

7) Will you buy fresh fish in the next week?

Yes (2)
Maybe (1)
No (0)

8) Will you buy frozen fish products in the next week?

Yes (2)
Maybe (1)
No (0)

9) Will you buy canned/tinned fish in the next week?

Yes (2)
Maybe (1)
No (0)

10)Which of the following fish products do you think you will buy in the next week? ***[Show Card B.]***

(1)	(6)	(11)	(16)
(2)	(7)	(12)	(17)
(3)	(8)	(13)	(18)
(4)	(9)	(14)	(19)
(5)	(10)	(15)	(20)

(21)Other(Please specify).....

.....

.....

Attitudes To Fish Consumption

[USE SHOW CARD C.] Please tell me from this card how much you agree or disagree with the statements which I am going to read to you.

[ROTATE AND TICK START POINT. PLEASE CIRCLE THE APPROPRIATE NUMBER.]

	VSA	A	SA		SD	D	VSD
11) Fish is a healthy food.	7	6	5	4	3	2	1
12) Fish is difficult to prepare.	7	6	5	4	3	2	1
13) Fish makes a good family meal.	7	6	5	4	3	2	1
14) Fish provides an alternative to red meat.	7	6	5	4	3	2	1
15) Fish goes off quickly.	7	6	5	4	3	2	1
16) Fish can be used in many different recipes.	7	6	5	4	3	2	1
17) The bones in fish are off putting.	7	6	5	4	3	2	1
18) Fish is readily available in the shops.	7	6	5	4	3	2	1
19) Fish provides good value for money.	7	6	5	4	3	2	1
20) I prefer poultry.	7	6	5	4	3	2	1
21) Fish is versatile.	7	6	5	4	3	2	1
22) I like to serve fish when I have guests.	7	6	5	4	3	2	1
23) Fish is expensive.	7	6	5	4	3	2	1
24) There are lots of different varieties of fish.	7	6	5	4	3	2	1
25) There is a danger of food poisoning.	7	6	5	4	3	2	1
26) Fish is a nutritious food.	7	6	5	4	3	2	1
27) Fish has an unpleasant smell.	7	6	5	4	3	2	1

Involvement In Healthy Eating *[**SELF COMPLETION SECTION.**]*

The next few questions are going to look at how interested you are in healthy eating.
If you feel closely related to one end of the scale indicate as follows.

important to me _X_:___:___:___:___:___:___unimportant to me

OR

important to me ___:___:___:___:___:___:_X_unimportant to me

If you feel quite closely related to one or other end of the scale, but not extremely, indicate as follows.

important to me ___:_X_:___:___:___:_X_:___unimportant to me

OR

important to me ___:___:_X_:___:_X_:___:___unimportant to me

If you feel only slightly related, but not really neutral to one end of the scale, indicate as follows.

important to me ___:___:_X_:___:___:___:___unimportant to me

OR

important to me ___:___:___:___:_X_:___:___unimportant to me

Healthy eating is:

28) important to me ___:___:___:___:___:___:__ unimportant to me

29) boring to me ___:___:___:___:___:___:___interesting to me

30) relevant to me ___:___:___:___:___:___:___irrelevant to me

31) exciting to me ___:___:___:___:___:___:___unexciting to me

32) means nothing to me ___:___:___:___:___:___:___means a lot to me

33) appealing to me ___:___:___:___:___:___:___unappealing to me

34) fascinating to me ___:___:___:___:___:___:___mundane to me

35) worthless to me ___:___:___:___:___:___:___valuable to me

36) involving to me ___:___:___:___:___:___:___uninvolving to me

37) not needed by me ___:___:___:___:___:___:___needed by me

Polyunsaturated Fatty Acid Fed Fish

[SHOW CARD D.] I'm now going to tell you about a new fish product. As you may know diets high in fat can lead to various diseases including heart disease. However there are two main kinds of fats, saturated fats and polyunsaturated fats. The saturated fats are responsible for causing disease. The polyunsaturated fats not only contribute to preventing diseases developing but may also help certain other conditions such as arthritis. Fish generally contain a lot of polyunsaturated fats but this new fish product contains even more. Now I'm going to ask you some questions about whether you'd buy this product. [Please circle the appropriate number.]

38)Would you buy fish which was particularly rich in polyunsaturated fats as I've just described?

Yes (2)
Maybe (1)
No (0)

39)Why?.....

.....

.....

40) Would you buy fish which was particularly rich in polyunsaturated fats if it was slightly more expensive than ordinary fish?

Yes (2)
Maybe (1)
No (0)

41)Why would you pay more/not pay more?.....

.....

.....

42) Have you ever eaten fresh salmon at all?

Yes (2)
Maybe (1)
No (0)

43) Would you buy fresh salmon which was particularly rich in polyunsaturated fats?

Yes (2)
Maybe (1)
No (0)

44)Why?.....

.....

.....

45)Have you ever eaten eel at all?

Yes (2)
Maybe (1)
No (0)

46)Would you buy eel which was particularly rich in polyunsaturated fats?

Yes (2)
Maybe (1)
No (0)

47)Why?.....

.....

.....

48)Have you ever eaten sturgeon at all?

Yes (2)
Maybe (1)
No (0)

49)Would you buy sturgeon which was particularly rich in polyunsaturated fats?

Yes (2)
Maybe (1)
No (0)

50)Why?.....

.....

.....

[SHOW CARD E.] Now I would like to ask you a few questions about yourself. From time to time we all have to present a particular image of ourselves consistently over a long period of time. In some cases this can be easy as we are like this but sometimes it can be difficult as we are not like this. For example some people are early risers and it is easy for them to present themselves as good time keepers at work. So if you were an early riser and were asked how easy or hard it is for you to present an image at work as a good timekeeper you would say Easy or Very Easy. If on the other hand you are not naturally an early riser and find it difficult to be on time every morning you may say Very Hard or Hard.

<u>How easy or hard would you find it to present yourself, consistently over a long period of time as:</u>

	Very Hard	Hard	Don't Know	Easy	Very Easy
51) A person who conforms	_____	_____	_____	_____	_____
52) A person who enjoys the detailed work.	_____	_____	_____	_____	_____
53) A person who is prudent when dealing with authority or general opinion.	_____	_____	_____	_____	_____
54) A person who never acts without proper authority.	_____	_____	_____	_____	_____
55) A person who has fresh perspectives on old problems.	_____	_____	_____	_____	_____
56) A person who is thorough.	_____	_____	_____	_____	_____
57) A person who copes with several new ideas and problems at the same time.	_____	_____	_____	_____	_____
58) A person who is stimulating.	_____	_____	_____	_____	_____
59) A person who has original ideas.	_____	_____	_____	_____	_____
60) A person who masters all detail painstakingly.	_____	_____	_____	_____	_____
61) A person who proliferates ideas.	_____	_____	_____	_____	_____
62) A person who is methodical and systematic.	_____	_____	_____	_____	_____
63) A person who fits readily into "the system".	_____	_____	_____	_____	_____

Demographics

Finally, I would like to ask you some factual questions about yourself.

64)Sex: Male (1)
Female (0)

65)Age: 16-24 (1)
25-34 (2)
35-44 (3)
45-54 (4)
55-64 (5)
65 and over (6)

66)How many people are living in your home?.....

67)Number of Children At Home:.....

67a)The Children's' Ages:.....

68)Employment Status:
Working Full Time (6)
Working Part Time (5)
Unemployed (4)
Housewife/husband (3)
Retired (2)
Student (1)

69)Occupation of the chief wage earner.....

70)Qualifications.....

71)Number of staff responsible for .....

72)***[Respondents in the West Midlands area only.]***
Would you be interested in taking part in more research in this area?

Yes (1)
No (0)

Respondent's Name:.....

Address:.....

.....Post Code:.....

Telephone No:.....

Sample Point:.....

Interviewer:.....

Date of Interview:.....

[Thank, close and give thank you leaflet.

APPENDIX TWO: Group Recruitment Questionnaire

GROUP RECRUITMENT QUESTIONNAIRE

This form is the property of Quality Fieldwork, 86 Aldridge Rd, Perry Barr, Birmingham B42 2TP, 0121 3444848, and is CONFIDENTIAL.

JOB NO: BUNI/FISH2

FISH EATING

RECRUIT 9 for 8

SHOW ID

Introduce yourself as an interviewer from Quality Fieldwork, who is helping to gather opinions about health care. Assure of confidentiality.

SCREEN

READ OUT: Do you or any of your close friends or family work in any of the following types of organisation ?

MEAT or FISH Retail or Wholesale
ADVERTISING/PUBLIC RELATIONS
MARKET RESEARCH
JOURNALISM
MARKETING
TV, RADIO
(IF NONE, CONTINUE)

Q1. Have you ever attended a market research discussion group ?

Yes	1	Q2
No	2	Q4

Q2. How many group discussions have you been to before ?

Up to four	1	Q2
More than four	2	Thank and close

Q3. What subjects were the previous discussions about ?

(CLOSE IF RELATED TO PURCHASING OF MEAT OR FISH)

Q4. Do you PURCHASE food (apart from sweets/crisps/snacks) for yourself and/or your family ?

Yes	1 Continue
No	2 Thank and close

Q5. How often do you PURCHASE any type of FISH product? It could be fresh, cooked convenience meal, tinned, wet fish, shellfish from a supermarket, take away, restaurant etc. ?

At least once per week	1	**"Heavy" quota**
Less often but at least once in six months	2	**"Light" quota**
I never purchase any type of fish	3	**Close**

RECRUIT TO QUOTA

CLASSIFICATION

GENDER

Male	1	Groups 1,4,6,7,8
Female	2	Groups 2,3,4,5,6,8

AGE(Write in)___

Under 18	1	Thank and close

---

18 -34	2	Groups 1,3,8
35 - 54	3	Groups 4,5,7
55+	4	Groups 2,6

SEG

Occupation of CWE_____

AB	1	Groups 5,8
C1	2	Groups 1,3,6,7} Please obtain
C2	3	Groups 1,3,6,7} a mix
D	4	Groups 2,4 } Please obtain
E	5	Groups 2,4 } a mix

FISH BUYING:

Heavy	1	Groups 2,3,4,5,7
Light	2	Groups 1,4,5,6,8

RECRUITED TO:

	Gender	SEG	Age	Usage	
Group 1	Male	C1/C2	18-34	Light	Thursday 25th July 8.30pm
Group 2	Female	D/E	55+	Heavy	Thursday 25th July 7.00pm
Group 3	Female	C1/C2	18-34	Heavy	Monday 29th July 7.00pm
Group 4	Mixed	D/E	35-54	Mixed	Monday 29th July 8.30pm
Group 5	Female	A/B	35-54	Mixed	Wednesday 31st July 7.00pm
Group 6	Mixed	C1/C2	55+	Light	Wednesday 31st July 8.30pm
Group 7	Male	C1/C2	35-54	Heavy	Tuesday 23rd July 7.00pm
Group 8	Mixed	AB	18-34	Light	Tuesday 23rd July 8.30pm

RESPONDENT
NAME:_____

ADDRESS
_____

_____

_____

POST CODE_____TELEPHONE NO_____

RECRUITERS
NAME_____

DATE_____

APPENDIX THREE: GROUP DISCUSSION GUIDE

PUFA FISH - DISCUSSION GUIDE

GENERAL USAGE

How often do you buy fish?

In what form: Fresh
Frozen
Canned
Pre cooked
Other....

What fish species?

PROMPTS TO BUYING

Why do you buy fish?
Probe on A healthy food.....why not bought more often?
A nutritious food
Taste liked
Easily available
Give variety in diet
Is versatile (Ways of using. Forms available in.)
Good meal for the family
Value for money
As an alternative to red meat/beef

BSE: Has BSE made you think more carefully about your diet?
Has it caused changes in your eating habits?
Do you buy more fish now than you used to before the BSE scare?

PREPARATION

Ascertain: Which of you tend to buy fish in pre-prepared frozen form or tinned fish?
Do you also buy fresh fish?

Those who don't: Why is this?
Is the preparation of fresh fish a reason for preferring to buy frozen or tinned fish?

Are there products in the shops which make it easier to prepare fresh fish? *Sauces etc.?*

BARRIERS TO BUYING

Why don't you buy fish more often? *Probe on*

Ease of preparation
Expensive
Dislike taste of some kinds of fish - which?
Prefer poultry if avoiding red meats - why?
The smell of fish - any types more so than others?
The bones in fish
Short storage life
- goes off quickly
- concerns about food poisoning

What qualities do meat or poultry have which make you buy that rather than fish?

Do you feel more uncertain or unsure when you are CHOOSING AND BUYING FISH than you do when buying meat or poultry?
- Why is this?
- What information would be helpful?
- Where and how would you expect to get this information?

Do you feel more uncertain or unsure when you are PREPARING AND COOKING fish than you do when cooking meat or poultry?
- Why is this?
- What information would be helpful?
- Where and how would you expect to get this information?

Do you feel more uncertain and unsure when you are SERVING FISH TO GUESTS than you do when serving meat or poultry?
- Why is this?

HEALTHY EATING

How important is healthy eating to you?

What IS a healthy diet?
- How many portions of fruits and vegetables per day?
- Sugar intake?
- Salt intake?
- Units of alcohol per week?
-What types of fat - saturated vs polyunsaturated?
-What IS polyunsaturated fat?
-In what way is it better for you?

Thinking about “healthy eating”.....the foods and the information about healthy food, is this general subject
- Interesting or uninteresting? Why?
- Boring or exciting? Why?
- Relevant to you or not? Why?

Do you think that your diet is as healthy as it COULD be, as healthy as you in practice and in your personal circumstances can make it?

Do you think that your diet is as healthy as it SHOULD be, do you feel that you do in practice eat as healthily as possible?

What do you think are the benefits of eating fish?
Probe on Heart disease
Arthritis
Types of fat which are harmful, beneficial

PUFA FISH

State: We have talked about fats. Just to set the record straight, diets high in SATURATED fat can lead to various diseases, including heart disease.
POLYUNSATURATED fats contribute to PREVENTING diseases developing and also HELP certain other conditions, including arthritis.
Fish generally contain a lot of polyunsaturated fats and we would like to find out what you think about a new fish product which would contain even more polyunsaturated fat than fish generally does.

Would you buy fish particularly rich in polyunsaturated fats as I've just described?
Why ? / Why not ?

Those who would
Would this REPLACE the fish products which you currently buy or do you think you would buy MORE fish than you do at present?

Would you expect such a fish to be the same price, cheaper or more expensive than the fish you currently buy?
If such a fish were slightly more expensive than ordinary fish, how does this affect your likelihood of buying it?
Why would you be willing to pay more?
and/or
Why would you not be willing to pay more?

Of the fish which you tend to buy are you aware whether it is farmed fish or fishes taken from the sea?
Does this matter to you?

This new fish product, rich in polyunsaturated fats is only likely to be available in farmed fish, since the feeding process of the fish is involved.

How likely would you be to buy
Salmon which you knew to be rich in polyunsaturated fats
Trout
Carp

Sturgeon *Probe fully*
Eels *Probe fully*

Turbot
Halibut

Read whole list again
Which would you be MOST interested in buying? Why? *If not ascertained*
Which would you be LEAST interested in buying? Why? *If not ascertained*

If cod were available, would you be interested/more interested?

What would help persuade you to try a new variety of fish?

Now that we've talked about this kind of fish, overall what do you see as being the main benefits of this fish fed to be high in polyunsaturated fats?

APPENDIX FOUR: THE PSYCHOMETRIC PROPERTIES OF THE PERSONAL INTEREST INVENTORY AND KIRTON ADAPTION-INNOVATION INVENTORY

Table 1: Reliability of the Personal Interest Inventory and the Kirton Adaption-Innovation Inventory

Psychometric Scale	Cronbach's Alpha
Personal Interest Inventory	0.9275
KAI	0.5189
KAI subscales	
Rule conformity	0.7102
Efficiency	0.6992
Sufficiency of Originality	0.8158

It can be observed from Table 1 that the reliability of the Personal Interest Inventory is high, indicating that the psychometric test is very reliable. It can be observed from Table 1 that the reliability of the KAI is 0.5189 which is not a very satisfactory level of reliability. The subscales of the KAI have a greater degree of reliability with Cronbach's alphas of 0.6992 or more.

Table 2: Factor Structure for the Personal Interest Inventory

Item	Factor I	Factor II
Important/Unimportant	0.82	
Boring/Interesting	0.58	
Relevant/Irrelevant	0.83	
Means Nothing/Alot	0.76	
Involving/Uninvolving	0.59	
Not Needed/Needed	0.81	
Worthless/Valuable	0.79	
Exciting/Unexciting		0.85
Appealing/Unappealing		0.68
Fascinating/Mundane		0.86

The data was factor analysed by principal components analysis followed by varimax rotation using SPSS. It can be observed from table 2 above that two factors were extracted for the Personal Interest Inventory. The first factor consisted of seven items, had an eigenvalue of 6.10 and accounted for 61% of the variance. The second factor consisted of three items, had an eigenvalue of 1.05 and accounted for 10.5% of the variance.

Table 3: Factor Structure for the 13 Item KAI

Item	SO	R	E
Fresh Perspectives	0.67		
Several New Ideas	0.73		
Stimulating	0.77		
Original Ideas	0.84		
Proliferates Ideas	0.69		
Conforms		0.80	
Prudent		0.64	
Never Acts		0.49	
Fits Into System		0.77	
Detailed Work			0.32
Thorough			0.73
Painstaking Detail			0.63
Methodical			0.76

The data was factor analysed by principal components analysis followed by varimax rotation using SPSS. A three factor model was produced. The first factor, sufficiency of originality consisted of five items, had an eigenvalue of 4.31 and accounted for 33.2 % of the variance. The second factor, rule conformity consisted of four items, had an eigenvalue of 2.18 and accounted for 16.8% of the variance. The third factor, efficiency, consisted of four items, had an eigenvalue of 1.03 and accounted for 7.9% of the variance.