Instituto Superior de Ciências do Trabalho e da Empresa

MOTIVES DRIVING FUNCTIONAL FOOD CONSUMPTION AMONG PORTUGUESE STUDENTS

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with the orientation of Professor Doutor Reinaldo Proença

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"Let your food be your medicine and your medicine be your food."

Hippocrates, Ancient Greece, 400 B.C.

RESUMO

Apesar dos *Alimentos Funcionais* constituirem actualmente o segmento de maior crescimento no sector alimentar, as motivações inerentes ao seu consumo permanecem por explorar. A revisão bibliográfica indica os valores pessoais como um conceito teórico essencial na área motivacional, tendo os Estilos de Vida sido testados com sucesso como permitindo a sua mensuração. Adicionalmente, diversos autores têm defendido que os indivíduos são motivados por crenças àcerca da relação entre atributos do produto, consequências do seu consumo e valores pessoais.

Um estudo exploratório foi realizado junto de estudantes universitários, de forma a apurar as suas crenças mais frequentes relativas aos Alimentos Funcionais, recorrendo a entrevistas *laddering* e *focus group*. Identificaram-se os cereais integrais, sumos antioxidantes e iogurtes com ácidos activos como os produtos mais populares neste grupo. Posteriormente, foi testado o modelo conceptual, junto de uma amostra com 596 estudantes, propondo o segmento de Estilo de Vida Alimentar e crenças sobre a Atractividade do Produto como possíveis determinantes de consumo. Cinco segmentos foram identificados, confirmando-se uma correlação estatisticamente significativa apenas com o consumo de cereais.

Por outro lado, os resultados indiciam uma correlação forte entre atractividade e consumo, para os três produtos. O estudo quantitativo revela que os estudantes Portugueses só adoptam hábitos de consumo frequente de cereais e sumos funcionais, quando acreditam que quer as suas necessidades de prazer, quer de bem-estar podem ser satisfeitas. Relativamente aos iogurtes, os consumidores mais frequentes parecem aspirar a um estilo de vida independente, procurando produtos alimentares que os ajudem a tomar conta de si próprios. Por último, são apresentadas implicações para a indústria alimentar, bem como contributos para futuras investigações académicas.

Palavras-chave: *Motivação do Consumidor, Teoria da Cadeia de Meios e Fins, Estilos de Vida Alimentares, Alimentos Funcionais.*

ABSTRACT

Although *Functional Foods* are the fastest growing segment of the global food market, motives driving consumption remain somewhat unexplored. Literature points towards personal values as a vital theoretical concept to consider in motivational research, but requiring a mediating construct for measurement, with lifestyle succesfully tested for this effect. Furthermore, authors suggest that individuals are motivated by the self-relevant consequences of consumption and the ability to link them with product attributes and personal values.

Exploratory qualitative work has been undertaken to elicit such beliefs, concerning University students' perception of functional foods. Laddering interviews and focus group were used, establishing whole grain cereals, antioxidant fruit juices and probiotic yoghurts as the most popular products. The conceptual framework was afterwards tested, via questionnaire submission to a sample of 596 students, examining Food-Related Lifestyles (FRL) and those product-related beliefs as possible consumption motives. Five FRL segments were identified, with empirical confirmation of segment membership being determinant only for cereal consumption.

Conversely, findings indicate a strong association between beliefs and consumption frequency for all products. The study revealed that Portuguese students are only ready to adopt functional cereals and juices if both their well-being and pleasure needs are satisfied, as health claims alone do not seem enough to guarantee preference. For yoghurts, on the other hand, results suggest that loyal consumers strive for an independent lifestyle and look for convenient foods that can help them to take care of their own health. Implications for food companies, academic contributions and future directions are also offered.

Keywords: *Consumer motivation, Means-End Chain Theory, Food-Related Lifestyles, Functional Foods.*

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1 INTRODUCTION

The global marketing environment is becoming more dynamic through changes to technology, trade and consumers' lifestyles, and because of this, further scientific research is recommended, in order to acquire a better understanding on consumer decision processes (van den Heuvel et al., 2007). Food-related patterns of behaviour are also changing as a result of varied pressures ranging from changing demographics and diversified social patterns to retail concentration and product proliferation increasing choice and exposure to brand promotion.

Many food marketers are finding that instead of clearly identified market boundaries with distinct sets of customers, these structures have become increasingly blurred (Reid et al., 2000), as saturated markets and increasingly homogeneous products characterize European food markets nowadays (Grebitus and Bruhn, 2006).

In fact, consumers are adopting greater standardisation in food-related behaviours, like the drive for convenience and health (Reid et al. 2000), but at the same time, in an apparently contradictory way, food marketers in developed countries are also faced with more demanding and more fragmented consumer choices (Grunert, 2005).

If thoroughly analyzed, each individual choice reveal contradictions in itself, as for example growing interest in health and scepticism about industrial food production stands in contrast to busy lifestyles and a resulting demand for convenience (Brunsö, Fjord and Grunert, 2002; de Carlos et al., 2005).

Clearly the market's answer lies on a greater understanding of the different motivations and behaviours from distinct consumer segments, which highlights differentiation opportunities like the innovative 'functional foods' category, that definitely creates a promising market for food manufacturers (Holm, 2003), having already achieved the status of fastest growing segment in the food market (Verbeke, 2005).

1.1 Defining functional foods

According to literature, as *functional foods* were first commercially introduced in Japan[1], it was in this country that researchers began attempting to precise the concept on a scientific basis (Menrad, 2003; Prates and Mateus, 2002). Originally, functional products were described as processed foods containing physiologically active components that provide *health benefits beyond basic nutrition*. This definition is still currently under use by official organisms like the ILSI (International Life Sciences Institute) and the IMNAS (Institute of Medicine of the National Academy of Sciences), both in the USA. The IMNAS also adds that the active components or ingredients should be intentionally modified in order to provide those health effects.

In spite of the fact that only Japan has specific regulation for the approval of functional foods, several definitions have been presented for the concept of functional food all around the world (Prates and Mateus, 2002), a concept that still defies uniform definition (Liakopoulos and Schroeder, 2003). Even the name 'functional food' has been under heated debate, but although it might not be the most perfect of designations for this emerging food category, IFIC (International Food Information Council) research has demonstrated that it is the most widely recognized and preferred by consumers (Prates and Mateus, 2002).

A thorough review of definitions for functional food shows them to range from the simplest to the most complex of statements. 'EU Concerted Action' stipulated for the European Union that "*a food can be regarded as functional if it has been satisfactorily demonstrated to affect beneficially one or more target functions in the body beyond adequate nutritional effects in a way that is relevant to either an improved state of health and well-being and/or a reduction of risk of disease*" (Urala, Arvola and Lähteenmäki, 2003: 815), which constituted a breakthrough at the time, and one of the first attempts to accommodate the diversified scientific community's opinions on the subject.

[1] Yakult Honsha, a Japanese food manufacturer founded in 1955, played a significant part in creating the functional foods category, as it started to sell fermented milk drinks as healthy mass-market offerings, in convenient 65ml bottles (which are, in fact, based on the probiotic lactic acid bacteria *Lactobacillus casei Shirota*).

Bhaskaran and Hardley (2002) reinforced the specific health role performed by the *functional ingredient*, while Ovesen (1999) implied that functional foods should only comprise food consumed in customarily amounts and exclude foods produced for restricted groups of consumers (like patients with diabetes or intolerant to lactose).

As scientists emphasized the effective demonstration of clinical effects and roles, marketing researchers have, in turn, saliented form of consumption and convenience issues. Bech--Larsen and Grunert (2003) mentioned that functional foods are similar in appearance to conventional food and intended to be consumed as part of a normal diet and that they should enable the consumer to lead a healthier life without changing eating habits; Liakopoulos and Schroeder (2003) suggested they must remain 'foods' at all times.

So, in sum, an adequate and universally accepted definition of the term 'functional foods' can hardly be given, but the simplest and best understood definition is still that they are foods which promise health benefits above and beyond basic nutrition value (Bech-Larsen and Grunert, 2003; Frewer, Scholderer and Lambert, 2003; Prates and Mateus, 2002; Schmidt, 2000; van der Zouwen, 2006).

1.2 Functional foods: ethical, medical and legal context

Food is considered a critical contributor to physical well-being and a major source of pleasure, worry and stress (Wilcock et al., 2004). In most developed countries, discrepancy between dietary recommendations and actual food consumed still persists, as some sectors of the general population do not see those advices as personally relevant for them (Roininen, 2001) or are unable to comply with those recommendations.

Functional foods claim to provide health benefits, but the assumption that these effects could be delivered population-wide is not generally accepted (Frewer, Scholderer and Lambert, 2003). Holm (2003) suggests that functional foods blur the traditional distinctions between food groups, contradicting the basic understanding of what is a balanced diet, and Frewer, Scholderer and Lambert (2003) refer that consumers cannot directly experience health benefits prior to acquisition, thus depending on the credibility and trustworthiness of product promoting messages. Nevertheless, advantages promised by functional foods' health claims

suggest that they may be welcomed as an easy way of improving the healthfulness of people's eating habits, without totally changing the overall composition of their diets (Holm, 2003).

Controversy apart, from a purely technical point of view, modifying foods for health reasons is not entirely new. The new thing about functional foods is their social contextualization. Even though they reflect public health priorities, they are not developed as part of a public health policy. Widespread scepticism about health claims among nutrition experts is based on the fact that there is no such thing as good or bad foods, only good or bad diets. From this perspective, functional foods run the risk of drawing the consumers' attention away from the diet as a whole, and instead lead them to focus on single elements in foods and single outcomes, ignoring others (ibidem, 2003).

Analyzing regulatory and legal environment, it is worth mentioning that health claims, as opposed to medicinal ones, are not expressly prohibited (Cockbill, 1994). A product only needs approval for use by medical rather than merely food-related regulatory bodies, when it is marketed as having therapeutic effects.

The USA has adopted a more liberal approach to functional foods than Europe and Japan. In fact, it is generally agreed that it was the deregulation of the US' health claim legislation in 1985 that gave impetus to the creation of the functional foods market (Bech-Larsen and Grunert, 2003). By contrast, EU legislation specify that the labelling, presentation and advertising of foodstuffs is not allowed to attribute to them the property of preventing or curing a human disease (Ovesen, 1999), leaving the positioning of these products to the matter of 'reducing' – rather than absolutely preventing – disease (Frewer, Scholderer and Lambert, 2003), which has an obvious impact in the marketing activities for these products.

1.3 Functional foods: a booming market

Interest in functional food has been driven by development of scientific knowledge of the importance of a healthy diet, technical advances in the food industry, increased consumer demands for health promoting products, as well as predictions for an ageing population and rapidly increasing health costs (Menrad, 2003). As a result, food industry companies have

rather high expectations in food products that meet the consumers' demand for a healthy lifestyle (van der Zouwen, 2006).

As concluded by recent research, US' consumers are among the fastest adopters of foods with health benefits, in terms of awareness[2], positive attitudes[3] and behaviour[4]. In fact, according to IFIC (2005) American consumers are overwhelming aware and accepting of these products, and since 1996 consumer demand steadily increased and will continue to do so. In 2005, already half of the most successful new US' consumer food and beverage brands offered 'better-for-you' benefits.

In Europe, research suggests that consumers are also becoming increasingly aware of functional foods (Liakopoulos and Schroeder, 2003), although perhaps to levels yet inferior to those observed in the US and, unsurprisingly, food companies are reacting to its market potential, since the launch of the first European functional products in the mid'90s (Menrad, 2003).

But one might ask what has been the real business impact of all this growing interest. Considering Europe and the USA altogether, and although it still compromises a very small part of the total food market, the functional foods category has experienced growth rates between 15 and 20 per cent since 1999, which is impressive compared to growth rates of no more than 1-2% per annum for the food industry as a whole (Bech-Larsen and Grunert, 2003; Frewer, Scholderer and Lambert, 2003). Furthermore, this trend is still considered to be just an emerging one, particularly in the European market, as Liakopoulos and Schroeder (2003) point out. Thus, several authors have suggested further scientific investigation regarding the European consumer's acceptance of the concept, as a very diversified set of players are indicated as having a commercial interest on the functional foods category: multinational food companies, pharmaceutical / dietary products producers, national and

[2] Nine out of ten Americans are able to name a specific food and its associated health benefit (IFIC, 2005).

[3] About 88% of American consumers agree that certain foods have health benefits that go beyond basic nutrition and may reduce the risk of disease (Schmidt, 2000).

[4] Four out of ten consumers, in the USA, declare often giving up convenience for health and almost two-thirds used at least one functional product in 2005 (Sloan, 2006).

regional category leaders, large retail chains, suppliers of functional ingredients and even some small or medium-sized food producers (Menrad, 2003; Verbeke, 2005).

1.4 Choice of target group

Usual practices relating to the nature and range of food variety, ways of preparing food, time for eating and quantity of meals and snacks have been recently studied for several authors (Soriano, Moltó and Mañes, 2000). Within a population, different factors have been shown to influence health behaviours and food choices, like age, health beliefs and knowledge (Monneuse, Bellisle and Koppert, 1996). In many European countries, surveys on the eating habits of young people, in particular, have been conducted, usually focussing on nutritional issues like establishing comparisons between reported nutrient intake and recommended allowances (ibidem, 1996).

However, a gap has been identified as academic research on young people's behaviour as consumers emphasizing marketing issues, instead of medical and nutritional ones, are less abundant (Ness, Gorton and Kuznetsof, 2002). Taking into account that young people will be the decision-makers of future families (Vermeir and Verbeke, 2004) and are already an attractive segment for food marketers (Ness, Gorton and Kuznetsof, 2002), their choices and motivations should provide with an useful and interesting investigation field.

Also, awareness of foods with health claims has been shown to be positively associated with formal education (IFIC, 2005), as well as with comprehension of the diet-health relationship (van der Zouwen, 2006). And even though health-related reasons tend to be more relevant for older age groups (Urala, Arvola and Lähteenmäki, 2003), recent research in Portugal conducted by Moreira and Padrão (2004) found that educational attainment was more frequently associated with healthy food choices than income, as access to education appears to be the key element to a better food pattern. As a result, young students are regarded as a prospective and potentially lucrative target for current food marketing activity, as well as an interesting group for specific and segmented offers by food marketers (Ness, Gorton and Kuznetsof, 2002).

Elsewhere further studies confirm this tendency, as the main finding of Urala and Lähteenmäki's (2007) investigation was that more educated Finnish consumers are more positive towards the necessity for functional foods. So, young students, who might have limited financial means (Ness, Gorton and Kuznetsof, 2002), having to face the allocation of scarce financial resources to a series of competing obligations and passions (accommodation, food, clothes, course requirements and leisure), do have a privileged access to food and health information (Monneuse, Bellisle and Koppert, 1996).

It can thus be expected that students demonstrate some behavioural traits of young people in general, but yet a higher level of concerns for nutrition and health, distinguishing features that merit consideration as a separate segment (ibidem, 1996). It can also be expected that people who attend universities will constitute a significant proportion of the socio-economic elite of tomorrow and in consequence, that their behaviour will become the norm in their respective countries (Ness, Gorton and Kuznetsof, 2002). In conclusion, this study will focus on young Portuguese university students, who bear behavioural and cognitive characteristics distinct enough from their non-students peers to be considered as a separate target group.

1.5 Research implications and significance

There is a long tradition of research into consumers' food choice and quality perception. In the last few years, however, these topics have received even more attention due to the intense debate about such issues as ethical considerations in relation to food production and quality, food scandals and their resulting food scares among consumers, genetic modification of foods and animal welfare (or rather, non-welfare), which has made questions regarding food safety and consumers' food choices even more urgent (Brunsö, Fjord and Grunert, 2002; de Carlos et al., 2005). In the wake of the series of crises within the European agro-food system, culminating in BSE and 'Food and Mouth' disease, the general public in Europe seems to have lost its confidence in food safety (Vermeir and Verbeke, 2004).

Also, with rising public health costs, governments would naturally want to support preventative health programs and would be keen to see greater acceptance of functional foods by its communities (Bhaskaran and Hardley, 2002; Frewer, Scholderer and Lambert, 2003). In Europe, this picture is particularly complex, as for example Danish consumers

have been moderate adopters, at most, of functional foods, whereas in Finland these are already very successful products (Bech-Larsen and Grunert, 2003).

However, effective modification of dietary patterns depends firstly on an understanding of the factors governing food choice (Steptoe, Pollard and Wardle, 1995), as an essential pre--requisite for community health promotion and food marketing itself (Worsley and Skrzypiec, 1998). And despite previous efforts, the need to know the consumers' behaviour and motivations toward functional foods remains urgent since consumer opinions and the marketing environment change rapidly. Researching consumer needs and wants is the key to achieve repeated buying patterns, crucial towards guaranteeing the survival of food companies operating in this product category (Ares and Gámbaro, 2007).

Furthermore, food industry's interest may remain overwhelming, but only a few papers reporting consumer acceptance, based on primary data collection, have reached public domain (Liakopoulos and Schroeder, 2003; Verbeke, 2005) and literature often refers the poor market acceptance of several functional food innovations, that have allegedly failed to develop effective persuasive claims and a successful marketing strategy (van Kleef, van Trijp and Luning, 2005). Thus, the need to understand the exact nature of differences between the marketing of traditional and functional foods places this line of investigation in the order of the day, addressing a trend identified as one of the most sustainable segments of the global food market (Menrad, 2003).

1.6 Research objectives

Having several authors stated food provisioning as an issue worthy of future research, in the wider context of students' personal goals and motivations (Ness, Gorton and Kuznetsof, 2002), and having functional food acceptance been proved in a group of European countries including Portugal (Nutraingredients, 2006), this study aims to uncover motives driving university students' consumption of functional foods.

Lifestyle factors have been suggested by previous researchers as strongly affecting the consumption of functional foods (Bhaskaran and Hardley, 2002; Urala and Lähteenmäki,

2007), resulting in mixed consumer attitudes regarding their acceptability (Frewer, Scholderer and Lambert, 2003).

Healthiness, in particular, is one of the most frequently mentioned reasons behind food choices in EU countries (Urala, Arvola and Lähteenmäki, 2003) and one the most frequently considered food related values that emerged among participants in several studies (Connors et al., 2001). The marketing of functional foods is intimately connected with the issue of health claims (Ovesen, 1999), because belief in its health benefits is the main positive determinant of acceptance (Bech-Larsen and Grunert, 2003) and positive correlations have been unanimously reported between health beliefs and acceptance of functional foods (Verbeke, 2005).

With this rationale in mind, this study proposes and tests a conceptual model that correlates food-related lifestyles and specific product-related beliefs (health or other) with functional food consumption among university students.

1.7 Overview of this study

Literature review is organized in three sections. To gain a better insight in motives behind consumer behaviour in general, literature on motivations, values and other important theoretical constructs is first crossed. Then, an overview of psychographic and lifestyle segmentation literature is offered, with emphasis on food-related lifestyles. Next, research on food quality perception and diet-health relationship is presented, as beliefs regarding product's quality and consumption benefits (particularly, perceived positive health consequences) are believed to be a possible determinant for functional food consumption.

Conceptual framework is then tested, addressing young students in a sample of Portuguese universities via questionnaire submission, after preliminary qualitative exploratory research, to help uncover the most common beliefs and motives behind functional food preference. Implications for food marketing companies, limitations of present research and future directions are also considered.

2 LITERATURE REVIEW

2.1 Motivations and Personal Values

Authors such as Zanoli and Naspetti (2002) have suggested that economic theory presents limitations in explaining the complexity and multidimensionality of consumer behaviour, relating to the assumption of consumer rationality resulting from the 'utility maximizing behaviour' rationale. In marketing, however, the focus of consumer behaviour studies is often consumer preference, with approaches varying from cognitive to behavioural. Whereas cognitive approaches are described as emphasizing mental structures and thinking processes, behaviourists deal primarily with direct links between characteristics of the environment and behaviour. Both approaches are widely accepted and acknowledged (ibidem, 2002) and the present investigation considers both theoretical backgrounds.

2.1.1 Motivation in consumer behaviour: goal setting and goal striving

Goals are an essential concept when addressing motivational issues, as consequence of the general agreement found in literature that much of consumer behaviour is goal-directed (Locke and Latham, 2004; van Kleef, van Trijp and Luning, 2005).

Literature suggests that the decision making process is motivated by a desired outcome or mental image toward which action may be directed (Bagozzi and Dholakia, 1999). When consumers perceive a positive connection between performance of the means and successful goal achievement, then eventually a specific course of action will be selected. According to these authors' theoretical framework, intentions provide a mental bridge between goal setting and goal striving, as well as a form of self-control during actual goal pursuit processes. If perception of risks and costs are surpassed by the perceived benefits of the possible outcome, the desired action may commence, as the personal commitment inherent in intentions is far superior to that presented in other mental states, such as beliefs and attitudes (ibidem, 1999).

Subsequently, goal pursuit usually happens in one of three conditions: may be automatically activated by responses to learned cues with little conscious self-regulation (e.g. for frequently performed consumption activities and/or low-involvement decision-making processes), which is called '*habitual goal-directed consumer behaviour*'; goal pursuit may occur, albeit in a minimal way, with impulsive acts; or targets of intents may be actions themselves, the so called '*behavioural intention'* (ibidem, 1999).

Other authors have worked on actual definitions of the concept of motivation. For example, it has been stated that "*motivation is the driving force within individuals that impels them to action*" (Schiffman and Kanuk, 2004: 87). However, for this driving force to act there must be a kind of internal tension, as a consequence of an unfulfilled need. Therefore, the alternative goals and specific patterns of action selected are a form to satisfy those needs or urges, driving individuals to engage in a certain type of behaviour.

Furthermore, a specific point is made in literature when discussing consumption goals, in contrast to other types of goals; implication is that those goals are not limited to end states or outcomes, but may also encompass experiences, events and ongoing processes (van Kleef, van Trijp and Luning, 2005). The distinction was also made between consumer goals formulated as a means to achieve a favourable end-state (*promotion goals*) or goals relating to the avoidance of an undesirable end-state (*prevention goals*).

In general, goals seem to play a key role in consumer motivation, as does beliefs about a certain (consumption) object helping the consumer to achieve them. Locke and Latham (2004) have argued that goals and self-efficacy (beliefs) constitute a motivational hub that determines the tendency to behave, in the most direct and conscious way.

Following this approach, in the case of a conscious decision process, choices are believed to be based on evaluations people make about the various behavioural alternatives mentally generated (Eagly and Chaiken, 1993). As a means to simplify everyday decisions, consumers are believed to categorize products and situations, with literature reporting that such categorization method is made through evaluative continuums that consists basically in the expression through attitudes (ibidem, 1993). These attitude-based categorization judgements can play a fundamental role in predicting actual behaviour (Connors et al., 2001; Wilcock et al., 2004) and so attitudes are amongst the most often used theoretical constructs in consumer studies, as anything that is discriminated or that becomes object of thought can

pose as an attitude object (Eagly and Chaiken, 1993). However, significant limitations were identified resulting from the use of attitudinal conceptual models to explain, on their own, motivations behind behaviour, as explained in the next section.

2.1.2 Criticism on attitudinal approaches

Over the years, social psychology has refined many definitions for the attitude concept. General attitude is defined as a psychological tendency that is expressed by evaluating a particular object or entity with some degree of favour or disfavour (Eagly and Chaiken, 1993), implying an evaluating response to stimuli. These authors named attitude as one of numerous implicit states or dispositions constructed by psychologists to explain why people react in certain ways in presence of certain stimuli. An individual does not have an attitude unless he or she responds evaluatively to an entity[5] on an affective, cognitive or behavioural basis, with disagreement being found in literature to whether the attitude structure should be organised into two or, instead, into three different classes[6] (Honkanen, Verplanken and Olsen, 2006).

One the most famous theoretical models based on the attitude construct, "*The Theory of Planned Behaviour"*, has tried to predict and explain human behaviour, based on the assumption that an individual's decision to act in a certain way could be determined from his/her own attitude towards the behaviour and whether people important to him/her supported the behaviour[7] (Ajzen, 1991). But notwithstanding, questions were raised against this theory, as it seems reasonable to postulate that people may sometimes act on their

[5] Within food studies in particular, attitude objects are often attributes such as fat, odor, texture or defined product categories such as seafood or meat (Roininen, 2001).

[6] The conative or behavioural component is the one breaking consensus. However, the most prevalent model seems to be Ajzen and Fishbein's, which views the three attitude components as independent constructs. In brief, it can be said that attitudes are multi-component entities that encompass a global evaluation, considering those components to be somewhat integrated elements, both interfering at the same time with people's general predispositions (Dubé and Cantin, 2000).

[7] The Theory of Planned Behaviour is an extension of the original Theory of Reasoned Action, developed in the 1970s, that added the influence of 'perceived behavioural control' on the 'intention' to act. The other constructs affecting 'intention' are, as described in the text, the actual 'attitude towards the behaviour' and 'subjective norm' (Ajzen, 1991).

attitudes in a relatively spontaneous manner[8], without forming an explicit intention, whether resulting from lack of motivation or from lack of opportunity, which is ignored in this model (Eagly and Chaiken, 1993).

Moreover, and despite its constant use in academic and business-oriented studies alike, attitudes are not considered motives by themselves, but mere tools for diagnosing the individual's predisposition towards a certain behavioural option (Bagozzi and Dholakia, 1999), albeit expressing an evaluation of brands or products by the consumer and in spite of its ease of operation and usefulness in predicting behaviour (Roininen, 2001).

General attitude models have failed to predict specific behaviours directed at the target of the attitude (Ajzen, 1991), such as uncovering motives for the consumption of specific product categories, and attitudinal constructs may fail to accomplish a complete explanation and understanding of how information is processed and organised (Bagozzi and Dholakia, 1999), reflecting the need to analyse a more central and abstract concept.

The generalized use of attitudes in social sciences has led to some conceptual boundaries that have often been found to be somewhat blurred and unclear (Eagly and Chaiken, 1993). Referring to several food-related attitude studies, Roininen (2001) suggests that attitudes have sometimes been confused with the concept of 'personality trait', both sharing the similarity of not being directly observable hypothetical constructs; but unlike attitudes, traits focus on the internal stimuli and are not necessarily evaluative.

According to Eagly and Chaiken (1993), attitudes toward relatively abstract goals or end states of existence may be designated as 'values', as in their perspective the conceptual distinction between the two concepts may be overestimated. Evans, Moutinho and van Raaij (1997) also stated, in an exhaustive fashion, a number of cases confusing the concepts of value and attitude. It is vital to single out, at this point, the difference between attitudes and values, which lie in a considerable number of aspects. First, values relates to a single belief,

[8] When Bagozzi and Dholakia (1999) investigated the process of goal setting, they concluded that the formation of goals in the consumer's mind may not be always as rational a process as it seems, with actions often arising automatically from non-conscious goals (e.g. biological needs) or even being guided unconsciously (e.g. the 'auto-motive' model of behaviour).

whereas attitudes consist in an organization of several beliefs around a specific object or situation. Second, a value transcends objects or situations whereas attitudes focus on some specific social object or context. Attitudes largely surpass values in number and occupy a less central position than values within one's personality make-up, to state but a few distinctive aspects (ibidem, 1997).

According to literature, attitudes are often immediately affected by environments, and thus, too unstable to explain motivations on their own (Wedel and Kamakura, 2000). Values are suggested as being a more dynamic concept than attitude, with a more immediate link to motivation, as in fact, attitudes are supposed to be motivational components only to the point that the evaluated attitude object is perceived to be positively or negatively instrumental to value attainment (Evans, Moutinho and Van Raaij, 1997). Values are considered more stable, generalizable and centrally held concepts (Vinson, Scott and Lamont, 1977), and therefore are the focus of the present investigation, as it explores the motives for functional food consumption among young students.

2.1.3 Values as motivational elements in choice situations

Having previously established that most consumer behaviour is goal-directed (Locke and Latham, 2004; van Kleef, van Trijp and Luning, 2005), it is now important to reflect on what may be responsible for choice of the desired ends or goals towards which individuals strive. Literature points towards personal values as a fundamental concept in determining such choice (Pieters, Baumgartner and Allen, 1995) and as one class of motives that can lead individuals into performing in a certain way, depending on the attractiveness of alternative goal objects and thus the motivation to attain them (Eccles and Wigfield, 2002).

According to authors, not only do values act as a powerful influence on goal setting processes but, simultaneously, regulate the methods and manner in which this striving takes place (Vinson, Scott and Lamont, 1977). Also, they are described as the deep-seated ideas that motivate behaviour, as they are relatively stable over a consumer's life span and thus difficult to alter, at least in the short term (Vermeir and Verbeke, 2004), which suggests that they are important predictors of opinions about products and issues (Worsley and Skrzypiec, 1998) and, effectively, antecedents of consumer choice (Bagozzi and Dholakia, 1999).

But one of the first breakthroughs in theory concerning values was the distinction made between *instrumental* and *terminal* values, stating that the latter relates to personal growth and desirable end-states of existence, whereas the former has a functional role in the process of achieve those end-states (Rokeach, 1973). In offering one of the first to offer a decisive definition of a personal value, the author described it as an "*enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite one*" (ibidem, 1973: 5), introducing also the notion of 'value system', as an enduring organization of such beliefs along a continuum of relative importance, contributing to each individual's self-definition (ibidem, 1973).

However, the present investigation follows another framework, one that has further looked into the role played by personal values in influencing the consumer's choice of action, building on the assumption that values are indeed providers of motivation to human behaviour in situations where choices are involved (Brunsö, Scholderer and Grunert, 2004; Vermeir and Verbeke, 2004), as are consumption environments. In this line of work, agreement was found in the idea that values constitute the most abstract level of cognition, not specific in relation to situations or objects, but nevertheless influencing the perception and evaluation of these and therefore acting as criteria people use as guidelines for evaluating stimuli (Brunsö, Scholderer and Grunert, 2004), i.e. situations, persons and objects. Thus, values are assumed to be cognitive representations of various types of universal human requirements, such as biological needs, social interaction requirements and societal demands for group welfare and survival (Worsley and Skrzypiec, 1998).

Arguing that *instrumental* values are the means of reaching a goal and often not a goal themselves (Evans, Moutinho and Van Raaij, 1997; Gutman, 1982), an alternative route has developed, offering evidence that all personal values – *terminal* or not - can and do perform as criteria for influencing evaluations or choices regarding objects (Dibley and Baker, 2001; Vinson, Scott and Lamont, 1977), which suggests the relationship between values and behaviour. Therefore, when a product is perceived as being instrumental in meeting important values, needs or goals, the level of involvement increases and the consumer is motivated to invest cognitive effort in the decision making process (Vermeir and Verbeke, 2004).

Because a consumer's self-defining values are so important, and yet so abstract, a means-end structure is believed to be developed mentally, that link important goals (ends) to specific

objects (means) that can satisfy them (Gutman, 1982), as discussed in the next section. Self-relevancy of the product, and thus the extent to which the consumer will be motivated, depends of the perceived strength of that connection (Houston and Walker, 1996).

Clearly further supporting the role played by values in motivational processes, recent research found significant common variance between motives and values, therefore suggesting that they should not be considered completely independent constructs (Geeroms, 2007). But the boundaries between values and other concepts must be taken with caution, as not unlike attitudes, occasional confusion emerges in marketing and psychology literature between values and other apparently similar constructs.

An example is the concept of 'perceived value', described as *"the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given"* (Zeithaml, 1988: 14). Another case lies is the concept of 'quality', that is also often presented as criteria for evaluation of products. Difference remains in the fact that values are clearly more individualistic and personal than quality and, therefore, a higher-level concept, better comparable to the concept of 'emotional payoff' (ibidem, 1988), involving a trade-off of give and get components.

Belief is yet another concept often used in theoretical frameworks in close resemblance to value orientations (ibidem, 1988). Beliefs are more numerous than basic values, but still possess an 'ought to' quality, being more specific than personal values, but at the same time more abstract than attitudes (Honkanen, Verplanken and Olsen, 2006). Several theories suggest that an individual's values are organised in a cognitive belief hierarchy consisting of global and domain specific values, as well as attitudes, but values are not directed towards any specific object or idea; rather, they provide standards relating to modes of conduct, goals and evaluations (ibidem, 2006).

In spite of all the theoretical argument, literature has also addressed the practical adequacy of the value construct. It is suggested that the knowledge and understanding of consumer value orientations does provide an efficient and measurable set of variables, closely related to needs, which surpasses in usefulness traditional demographic and psychographic observations (Vinson, Scott and Lamont, 1977). It has also been suggested that values directly stimulate motivation for behavioural responses and give them direction and emotional intensity, in most types of consumer contexts (Vermeir and Verbeke, 2004), with

a specifically relevant role in the food choice process, providing scripts for food behaviours (Connors et al., 2001). Considering this brief reflection on the concept of personal value and the role it may play in the food consumer motivation, a further exploration into the theoretical background supporting the present investigation follows.

2.1.4 The Means-End Chain theory

The means-end approach to consumer behaviour is considered a well developed framework to deal with consumer motivation issues (Brunsö, Fjord and Grunert, 2002; Grunert, 2005; Kaciak and Cullen, 2006). This theory builds on the assumption that it is the outcome of product choices – what the product can do for the individual - and not the product itself, that interests and motivates consumers (Gutman, 1982). The self-relevant consequences of the product or service should therefore be the focus of analysis, as the attractiveness of the product is as high as the consumer can link his perception of the product's characteristics with the attainment of his own life values (Reynolds and Gutman, 1988).

According to the Means-End Chains theory, these links between 'product attributes', 'consequences' and 'values' form chains of subjective associations, where the product is merely a means to achieve ends, as defined by the consumer (Connors et al., 2001; Grunert, 2005), the so called 'means-end chains'. Means-End Chains (MEC) is considered a model of individuals' consumption-relevant cognition structure or the organization and storage of experience and other types of information in human memory (Grunert and Grunert, 1995).

Evans, Moutinho and Van Raaij (1997) also explored the relation between consumer needs, product features and personal benefits. Actually, the conceptual framework described establishes very similar points with the means-end approach, as 'needs' are defined by the authors as close to personal values, 'features' are clearly product attributes and 'benefits' to the consumer are the consequences mentioned in means-end chains.

The means-end chains have been found to yield intuitive descriptions the hierarchical value structures believed to motivate product or brand choice, but notwithstanding the approach's popularity in consumer research, means-end chain theory's evolutionary route has not been one completely free of criticism, as challenges to the validity of its theoretical foundations

(Bagozzi and Dholakia, 1999) have been raised. The main argument presented against it is that mental processes (e.g. presumed to establish means-end connections) are not open to self-explication, thus suggesting that the linkages would be nothing more than subjective, post-hoc interpretations of previous responses. The interviewing methods used to recover those alleged mental links might be inducing the very chains supposed to be spontaneously generated (ibidem, 1999).

Scholderer and Grunert (2005) have also questioned its hierarchicity (e.g. the assumption of a three-layered chain structure) in particular, despite on the other hand reporting favourable test results for means-end chain's bidirectionality, self-relevance and automaticity[9].

Despite occasional scepticism, the means-end chain model is considered suitable to segmentation studies and to the assessment of values behind product or brand's choice (Bourne and Jenkins, 2005; Gutman, 1982), among other uses, and has been widely adopted in consumer research essentially to explain what motivates consumers to desire certain products (Grunert and Bech-Larsen, 2005).

The model permits researchers to focus on the basic aims and needs consumers have in life and how these influence choices in specific situations, revealing the goals or motivations behind consumption behaviours (Gutman, 1982; Zanoli and Naspetti, 2002). Implication is that *"the consumer is motivated to choose a product to the extent that it produces desirable consequences thereby contributing to the attainment of his or her personal values"* (Nielsen, Bech-Larsen and Grunert, 1998: 455). It is thus suggested that consumers have chains of cognitions (with an increasing degree of abstraction) linking product attributes to self-relevant consequences, and ultimately, to life values, connecting directly beliefs to behaviour. These chains have been repeatedly presented in literature as a mental representation of the basic motives that drive consumer behaviour (Kaciak and Cullen, 2006) and that is why they are a crucial reference for the conceptual model proposed by the present investigation.

[9] Automaticity stands for the assumption that activation of a chain still occurs when controlled information processing is suppressed.

2.2 Relating values and behaviour: Food-Related Lifestyles

2.2.1 Introducing lifestyles: psychographic research in Marketing

Demographic profiling has traditionally been the most common tool used in marketing research, as age, income, gender or education data are easy to obtain and analyze (Wells, 1975). Nevertheless, other approaches began to take shape, with demographics being considered insufficient. Two different research orientations enjoyed some vogue: personality studies, trying to correlate consumer behaviour with personality inventories, and motivation research, adopting small scale qualitative methods (Wedel and Kamakura, 2000). The former originated from clinical psychology, making use of psychometrics, but has never quite achieved but invariably low correlations, as well as abstract and unusable construct relationships. The latter has fared somewhat better, producing colourful portraits of consumers' needs and desires, but was criticized for its subjectivity and lack of generalizability.

It was during the 1960s that these two approaches were blended, originating a powerful mixture combining the objectivity of personality inventories with the richness of detailed qualitative motivation investigations. Several designations were used to describe this approach, from "psychographics" or "lifestyles" to "activities and attitudes"; and the need for a common *psychographics* definition became obvious, as researchers found a higher number of different definitions than articles on the issue (Wells, 1975).

As most psychographic researchers have employed precoded, objective questionnaires (self-administered or not), Wells (1975) proposed an operational definition describing psychographics as "*quantitative research intended to place consumers on psychological – as distinguished from demographic – dimensions*" (ibidem, 1975, p.197). Others have suggested it to be a portrayal of consumers' motives and various facets with measurements that could be subjected to statistical analysis (Wedel and Kamakura, 2000).

At the time, psychographics were proven to be capable of having substantial discriminative power between consumer segments, as well as having clearly higher predictive validity than demographic attributes (Wells, 1975). Psychographics' contribute has been notorious in offering new ways for describing consumers, with many advantages over alternative demographic methods. Worsley and Skrzypiec's (1998) findings even demonstrate that

consumers' opinions and motivations about food issues are more adequately explained and predicted when psychographic variables are included.

2.2.2 Lifestyles: concept and evolution towards value-based approaches

Lifestyle has been described as the behaviour of individuals or groups of interacting people, acting as potential consumers. It relates to how people spend their money and allocate their time, interests they have, views of themselves and the world around them (Van der Zouwen, 2006). The concept has roots traceable to the work of poets and philosophers writing as early as the sixteenth century, but its use as an analytical construct dates from Thorstein Veblen's turn-of-the-century theories and from Max Weber's landmark studies of status in mid-40's (Anderson, Jr. and Golden, 1984).

But despite its popularity and wide attention received almost since its inception, the term "lifestyles" has not always been quite well distinguished from the concept of "psychographics". Some authors tried to advance an explanation offering that *psychographic research* deals with mental processes (such as personality traits, opinions, attitudes and beliefs) and that *lifestyle* regard the domain of overt activities and behaviour (ibidem, 1984).

Others have described *lifestyles* as patterns of opinions, occupations and shopping habits - developed to measure behaviour as a function of inherent individual characteristics shaped through social interactions and past experience -, whereas *psychographics* are in fact the very attempts to measure lifestyles' quantitative items, stressing the psychological dimension of consumer behaviour (Kesic and Piri-Rajh, 2003).

Lifestyle instruments have been widely used to detect major trends, in order to analyse different consumer segments, and its resulting approaches have been quick to reach fame, since Lazer first defined the concept in 1963 (Van der Zouwen, 2006). He referred to lifestyle as *distinctive mode of living*, in its aggregate and broadest sense, of a whole society or of some specific segment (Anderson, Jr. and Golden, 1984).

Levy, also in 1963, proposed a contrasting view, describing lifestyle as a large complex system composed of sub-symbols, in which (consumption) actions originate in accordance to the individual's values (Anderson, Jr. and Golden, 1984). In this sense, marketers are not

selling isolated goods, but a style of life or pieces of a larger symbol that can help consumers achieve their personal values and fulfil their life goals, and so, lifestyles are confirmed as a possible construct that helps linking motives (represented by values and goals) with patterns of behaviour.

2.2.3 Means-end theory of lifestyle: from values to behaviour

However, in spite of its advantages, literature reveals persistent conceptual and operational imprecision with the lifestyle construct, handicapping research and ultimately undermining lifestyles' usefulness as a segmentation variable (Anderson, Jr. and Golden, 1984).

From early days, lifestyle segmentation was applied on data collected through a large battery of Likert-type statements covering consumers' Activities, Interests and Opinions (AIOs), sometimes also including some demographic variables (Wedel and Kamakura, 2000). But researchers argued that AIOs, like most attitude-based constructs, are not very stable, as they are considered to be very influenced by the consumer surrounding context, and present a complete lack of theoretical foundation, as well as little published evidence of validity (Lastovicka, 1982; Scholderer, Brunsö and Grunert, 2002; Van der Zouwen, 2006).

On the opposite hand, other researchers have suggested that product benefits (consequences) intervene between values and product attributes, in a hierarchically order of proximity towards actual and specific behaviour (Reynolds and Gutman, 1988). Following this approach, values were considered a very useful basis for psychographic segmentation, as values are less numerous, more central and more immediately related to motivations than attitudes or personality traits (Vinson, Scott and Lamont, 1977).

Values are assumed to represent motivations, but it is generally accepted that they cannot be measured or inferred, neither predict behaviour directly, needing some kind of quantitative construct to be invoked in order to do so (Brunsö, Scholderer and Grunert, 2004). This can be explained due to the fact that values and motives usually operate on a person's behaviour without his/her conscious awareness and are endogenous dispositions which cannot be directly observed, and should be assessed indirectly (Geeroms, 2007).

Lifestyle has been proposed and successfully tested as such construct, particularly in the food marketing area (Brunsö, Scholderer and Grunert, 2004; Scholderer, Brunsö and Grunert, 2002). Thus, when an intermediate construct is available, structured response formats, like Likert scales, have been recommended for measuring the strength of consumer values and motives for behaviour (Geeroms, 2007).

In accordance to this approach, a new groundbreaking definition of lifestyle has been presented, consistent with the above-mentioned "means-end approach" to consumer behaviour. Lifestyle is then proposed as "*an intervening system of cognitive structures that link situation-specific product perceptions to increasingly abstract cognitive categories and finally to personal values*" (Brunsö, Scholderer and Grunert, 2004: 665). The essential assumption is that lifestyle can be used as a measurable and strict mediator between values and situation-specific behaviour (Scholderer, Brunsö, Bredahl and Grunert, 2004).

Lifestyle segments based on value-type instruments are likely to be quite stable over time (Wedel and Kamakura, 2000) and findings show that personal values, shopping styles and motives underlying food choice may be more effective predictors of preference patterns than membership of any social demographic category (Ares and Gámbaro, 2007; Worsley and Skrzypiec, 1998). Additionally, lifestyle factors are believed to increase consumption of novel food products like functional foods (Bhaskaran and Hardley, 2002). Based on these suggestions, value-based segmentation appears to be a particularly useful tool for identifying segments that differ in broad patterns of buying and consumption, such as food products.

2.2.4 Food-Related Lifestyles

2.2.4.1 Presenting the Food-Related Lifestyles instrument

As purchase motives driving the food quality perception process and food choice have been found to differ substantially between consumers (Brunsö, Fjord and Grunert, 2002), the usefulness of distinguishing between segments has become evident. Following the means--end tradition of linking values and motivations to behaviour through the lifestyle construct, the Centre for Research on Customer Relations in the Food Sector (MAPP Institute, in

Denmark) have proposed a new instrument for specific use in the food marketing context, called “Food-Related Lifestyles”.

According to this approach, lifestyle is regarded as a mental construct that explains - but is not identical with - actual behaviour, relating a set of food products to a set of values (ibidem, 2002). Its authors state that lifestyles “transcend” individual products or brands, but may be specific to a product class, making sense to work on a food-related lifestyle (Reid, Grunert, Li and Bruwer, 2000). Also, they argue that food-related lifestyles refer to enduring dispositions to behave (not to single behavioural acts) and that it should have an intermediate place between values and product perceptions or attitudes, with testing for meaningful relationships with values proven successful (Brunsö, Scholderer and Grunert, 2004).

This instrument has been thoroughly tested over the years and is considered cross-culturally valid (Kesic and Piri-Rajh, 2003; Van der Zouwen, 2006), as extensive analyses of its psychometric properties indicate that the factorial structure is practically universal across European food cultures and remarkably stable over time (Brunsö, Scholderer and Grunert, 2004; Scholderer, Brunsö, Bredahl and Grunert, 2004).

The Food-Related Lifestyles instrument is composed by a 69-item questionnaire, with all questions being rated on a seven-point Likert scale, attempting to explain behaviour towards food products through examining an individual’s lifestyle, looking at the importance of five interrelated aspects (Kesic and Piri-Rajh, 2003; Reid, Grunert, Li and Bruwer, 2000; Scholderer, Brunsö, Bredahl and Grunert, 2004; Van der Zouwen, 2006):

- *Ways of shopping*. Importance of product information, attitude towards advertising, joy of shopping, speciality shops, price criteria, shopping planning.
- *Cooking methods*. Involvement with cooking, innovativeness, convenience, family involvement, spontaneity, woman’s task.
- *Quality aspects*. Health, price-quality relationship, novelty, organic foods, tastiness, freshness.
- *Consumption situations*. Snacks and meals, social event.
- *Purchasing motives*. Self-fulfilment, security, social relationships.

2.2.4.2 Food-Related Lifestyle consumer segments

Previous research accomplished in various European and non-European countries has lead to the identification of five basic cross-cultural food consumer segments, which have been found to be stable over time (Van der Zouwen, 2006). A brief description of these segments follows:

- Careless food consumer – Considerably less interested in all quality aspects than other consumers, this segment shops spontaneously, are specially uninterested in health and ecological products, and prefer fast and easy meal preparation. The only aspect that may raise some interest is experience new food products (if they don't require any effort in the kitchen) and price is of lesser importance than in any other group. It might be assumed that these consumers have above average motivation to choose functional foods, not only for their low price sensitivity (as functional foods tend to be premium priced), but also for the 'novelty' and 'low time-consuming' factors of these type of products, despite their relatively low interest in health matters.

- Uninvolved food consumer – Like the name suggests, these consumers are not particularly interested in any aspect of food consumption, except perhaps of price and the social aspect. Really uninvolved in food and meals, as well as product information or speciality shops, they apparently do not use foods to achieve their basic life values.

- Rational food consumer – This group uses speciality shops, product information and shop planning a lot more than others; they are clearly price-conscious and privilege the healthiness of foods. Rational consumers believe in food-disease prevention and its impact on personal health; they like challenging recipes and food products helps them to achieve basic values such as self-fulfilment, recognition and social belonging.

- Conservative food consumer – Among all consumers, the ones identified in this group tend to be the most price-conscious, the most positive to advertising and the most involved in food shopping. Food must be fresh and healthy to these consumers,

as well as tasty, and novelty is not particularly important; this aversion to innovative products is reflected by the careful planning. Despite this group's health preoccupations, their traditional shopping behaviour and aversion to "industrialized" goods (as the opposite of 'fresh') suggests that they might have a low interest in functional foods.

- Adventurous food consumer – These consumers are also positive about advertising, speciality shops and shopping lists, apparently enjoying the whole shopping process. They are the most focussed on healthy, natural and innovative products, even sacrificing the taste aspects. Unanimously positive correlations between those beliefs and functional food purchasing interest have been reported (Van der Zouwen, 2006), so their acceptance of the concept can be expected. They score high on recognition by cooking, on eating out (with less tendency to snack) and are quite involved with food to experience new and non-conservative ways.

Understanding how the different segments react to foods with health claims is proposed as a starting point; previous research suggests that functional foods might not be accepted by all consumers and functional products should be tailored for certain groups, considering the conditional form of acceptance registered among European consumers (Ares and Gámbaro, 2007).

2.3 Food quality perception and product-related beliefs

Researchers such as Grunert and Bech-Larsen (2005) have indicated beliefs as major constructs used in describing human cognitive structure. Often viewed as an association between two cognitions, attention has been concentrated on beliefs relating the behavioural options to their consequences, which constitutes a solid possible base for explaining behaviour in choice situations (ibidem, 2005). Moreover, it was maintained that it is at the belief-level that one can learn about the factors inducing different courses of action across different individuals (Ajzen, 1991).

Beliefs have been proven to influence and predict food choice (Roininen et al., 2001; Wilcock et al., 2004); so, the subjects' beliefs toward functional foods as a source of

favourable effects (health-related or other) must be explored, having previous investigations in other countries presented evidence that food shopping motivations could be closely connected to the cognitive salience of health concerns (Worsley and Skrzypiec, 1998).

Eccles and Wigfield (2002) have also offered very supportive evidence of the theoretical basis which stipulates that expectations (about the behaviour) does provide motivation towards actual behaviour. Outcome expectations - or beliefs that a certain act will lead to a certain outcome – are a major part of this model.

Having in mind the previous sections of this investigation, the process through which consumers mentally link concrete product attributes, perceived benefits and fundamental purchase motives or life values is believed to be what allows the uncovering of the motivations behind food choice. In the specific case of foods promoting health benefits, *healthiness* is not a tangible product characteristic or a short-term palpable consequence; so, quality expectations must be inferred from concrete *cues* that may help consumers perceive the healthiness of food products (Brunsö, Fjord and Grunert, 2002), while related to beliefs about those health benefits. These beliefs ought to be more determinant for functional food choice than mere sensorial appeal, as authors have suggested. It thus seems relevant to briefly review some basic notions about quality cues and quality perception as understood by food consumers, before advancing to the focus on product-related beliefs' impact on functional food choice.

2.3.1 Introducing the concepts of expected and perceived food quality

Food quality has been an important topic for the past decade or so, with constant public debate, all over EU, over a variety of food scares and food safety issues, like genetically modified organisms (GMOs) in food production or the BSE disease, for instance (Grebitus and Bruhn, 2006). However, there seems to be an abundance of ways in which the term "quality" is used, despite the growing general agreement that it should include both an *objective* and a *subjective* dimension (Grunert, 2005).

Quality can be defined broadly as "superiority" or "excellence" (often referring to the physical characteristics built into the product) and it is typically dealt with by engineers and

food technologists (ibidem, 2005). *Perceived quality* can be explained as the consumer's judgement about a product's overall excellence or superiority[10]. Perceived quality is therefore a distinct issue from objective or actual quality, as it represents a higher level abstraction instead of a specific product feature; it is a global judgement made on a consumer's evoked set of criteria and this assessment in some cases might even resemble attitude (Zeithaml, 1988).

Consumer perception of quality is considered determinant for shopping behaviour and product choice (ibidem, 1988) and authors stress that consumer's quality expectations are dependent on their perceptions, but also on their needs and goals (Grebitus and Bruhn, 2006), establishing the connection between motivational elements and certain *quality cues* (or at least, their evaluative interpretation as made by the consumer).

There are indeed many interacting influences on food choice, which is far from being a simple process, as quality expectations are formed based on quality cues or pieces of information available to the consumer (De Carlos et al., 2005). These include intrinsic cues (also called "sensory attributes") and extrinsic factors, some even resulting from consumer culture and behaviour towards the product (Bogue, Delahunty and Kelleher, 1999).

Intrinsic cues involve the physical composition of the product and cannot be changed without altering the nature of the product itself (colour, form or smell are examples of such). Extrinsic cues, on the other hand, are product-related but not part of the physical product itself. They are *external* to the product and could be, for example, price, retail outlet or brand name (Bruhn and Grebitus, 2004). When search attributes are present in the process of evaluating a food product, prior to its acquisition, they are usually important quality indicators; but in their absence, however, consumers depend exclusively on extrinsic cues (Grebitus and Bruhn, 2006; Zeithaml, 1988).

[10] This conceptual framework builds on Lewin's theoretic approach, dating from 1936, which defines quality as *instrumentality*, as quality is comparable to the extent to which an object will achieve a desired end. Despite the boundaries between technical superiority of products and consumer perception, authors often argue that even the "measurable and verifiable superiority on some predetermined standard" may have some decree of subjectivity. Measures of specifications are actual (rather than perceptual), but based on managers' views of what should be measured.

In the moment of consumption, most intrinsic attributes can be appreciated and therefore become accessible as quality indicators, confirming or not previous expectations[11]. Zeithaml adds that when the consumer has little previous experience with the product (or no experience at all) or has insufficient conditions or interest to readily evaluate the intrinsic attributes (because of time pressures, for instance), again extrinsic clues will be used in replacement, which are favoured in situations of uncertainty. Also, literature shows that consumer preferences are often strongly influenced by context, whether is the current set of other comparable alternatives - *local context effect* -, or influence motivated by previous options, the *background context effect* (Burton and Creyer, 2004).

Several models have been proposed exploring, on one hand, how consumer forms quality expectations based on the available cues and context effects and, on the other hand, how these expectations are compared to the actual food preparation and consumption experience, generating (or not) consumer satisfaction.

2.3.2 The Total Food Quality Model and the major food quality dimensions

The Total Food Quality Model integrates the multi-attribute and hierarchical approaches to quality perception, combining at the same time an explanation of both the motivation and intention to purchase, and the consumer satisfaction obtained (Brunsö, Fjord and Grunert, 2002). It was considered an attempt to provide a common framework for the various approaches addressing the consumer's food quality perception impact on food choice (ibidem, 2002). It proposes two major dimensions on which food quality perception can be analysed. Horizontally, there is a time dimension, distinguishing quality perception before and after purchase; while the vertical dimension deals with inference-making, how consumers find out which properties of a food product are desirable by linking them to basic motivators of human behaviour, integrating the means-end approach and assuming that

[11] Quality has traditionally been described, in several streams of consumer marketing and services marketing research, as a comparison between consumer expectations and perceptions of performance based on those expected dimensions or criterion.

quality is not an aim in itself, but rather desired because it helps satisfy purchase motives or values (Grunert, 2005).

Extrinsic cues such as label information and packaging may generate expectations about exceptionally high eating pleasure, giving the consumer a feeling of luxury, a value sought by some individuals. Those positive consequences expected from buying a certain food product will be offset against the negative consequences, such as monetary cost. This trade--off will determine the intention or not to buy. After the purchase, the consumer will have a quality experience, influenced by many factors such as the sensory characteristics of the product, the way it has been prepared, situational factors (like the time of day, mood and type of meal) and even previous experience. Some researchers suggest that expectation itself has an impact on determining the experienced quality of any product (Brunsö, Fjord and Grunert, 2002). Finally, the confrontation between quality expectation and experience is believed to determine consumer satisfaction, and consequently the probability of buying the same product again.

Research has found that the vast majority of European consumers, when asked openly about what they regard as food products of "good quality", always answer radiating around four central concepts: taste (or other sensory characteristics), health, convenience and production/farming process attributes (Grunert, 2005). These concepts have been described as the four basic quality "dimensions" – both expected and experienced – which cover most aspects of food choice and appear to be universal, at least in western industrialized countries (Brunsö, Fjord and Grunert, 2002). These four dimensions should not be regarded as independent, but rather as interrelated, and it is the difference between their relative importance to each consumer that is the very foundation of the food-related lifestyle segments described in the previous section of this review.

In another study, health (or physical well-being), taste, cost, convenience and managing relationships emerged as the most frequently considered food related values (Connors et al., 2001), in general more or less uncovering the same basic motives behind food choice, and specifically confirming health as a key motive for a significant part of Western consumers.

2.3.3 Health-related beliefs and Functional Food consumption

The concept of health is definitely a broad one which may be addressed from different scientific perspectives including social, psychological and nutritional. Diseases are seen more and more as a consequence of an individual's own behaviour rather than as a result of the environment (Urala, Arvola and Lähteenmäki, 2003) and so perception of the strong influence that nutrition may have on people's well-being is widespread, as well as general knowledge and concern of the health risk behind bad diets (Steptoe, Pollard and Wardle, 1995).

But however extensive nutrition education campaigns in many Western countries have been, in trying to reduce the gap between dietary recommendations and actual population dietary habits, success has been moderate at best (Roininen, 2001). When studying the reasons behind this gap, investigators have concluded that a person will only change his/her food choices, when he/she feels the advice as personally relevant for him/herself (as in matching his/her values and lifestyle) and, at the same time, has sufficient knowledge about the consequences of adopting or not a healthy eating pattern (Steptoe, Pollard and Wardle, 1995).

This line of research makes the importance of diet and health-related beliefs even more evident in influencing dietary patterns. In fact, healthiness is one of the most frequently mentioned reasons behind food choices in EU countries (Lappalainen, Kearney and Gibney, 1998; Roininen et al., 2001), but is not an immediately observable motive, as it is usually impossible for the consumers to evaluate on their own, at least in the short run, which explains why health claims dependence on credence characteristics (Brunsö, Fjord and Grunert, 2002).

Most health-related qualities belong to the category of credence qualities (Grunert, 2005), as results are long-term and unavailable at the time of purchase, and thus tend to lose out to experience qualities. As these are increasingly fed by consumer's experience with the product, the original motivation for functional food consumption may fade away, which has been considered a threat to this product category. Nevertheless, the dominance of the health aspect in the food-related lifestyle has been shown to significantly affect functional food acceptance (Bech-Larsen and Grunert, 2003).

A global EU survey, based on representative samples from fifteen countries, has reported that older and less-educated respondents present worse knowledge of any aspects of a healthy diet, in comparison to those who have a university education (Lappalainen, Kearney and Gibney, 1998). The same survey's results shown Portuguese population to mention convenience aspects (lack of time and preparation methods), self-control, resistance to change, cost and taste as the major barriers towards healthy eating, which might be confirmed comparing functional food consumption levels among different food-related lifestyles segments. Other researchers have found significant association between health concerns and level of education (Bogue, Delahunty and Kelleher, 1999), further suggesting students' better comprehension of functional foods' health claims, whose strength (and resulting credibility) have been exposed as the main factor affecting these products' acceptability among consumers (Urala, Arvola and Lähteenmäki, 2003).

It can be expected that functional foods are highly enjoyed by most consumers, in part because of their health-promoting ingredients, which allegedly constitutes an easy way to follow a healthy lifestyle and prevent disease, both undeniably appreciated aspects[12] (Urala and Lähteenmäki, 2007). But the issue is not that simple. To a large extent, marketing functional foods has been shown to depend on whether consumers are aware of the positive health effects of these products and believe in them (Brunsö, Fjord and Grunert, 2002; Frewer, Scholderer and Lambert, 2003; IFIC, 2005; Verbeke, 2005). If a certain functional food product makes a claim about its beneficial impact on health and well-being, this statement will be readily accepted by the consumer only if it easily fits into an already existing belief structure, or else it will require further information processing before it can be integrated into previously existing beliefs (Urala, Arvola and Lähteenmäki, 2003), which may even lead to cognitive dissonance and to altogether rejecting the product claim.

However, considering the lack of research based on primary data concerning the motives driving young consumers' food choices, it has not been demonstrated that the beliefs associated with functional food consumption are *exclusively* related to health claims (Ares and Gámbaro, 2007). There can be indeed other types of product-related beliefs influencing

[12] According to these authors and to IFIC reports on this matter, functional foods usually present two types of claims: they may promise "reduction of diseases risk" or the so called "enhanced function claims".

choice. Furthermore, the most recent investigations have suggested that the acceptance of this type of food is related to beliefs about the product attractiveness in general, not only to its promised health effects (Van Kleef, van Trijp and Luning, 2005); these authors, for example, have demonstrated through regression analysis that the global beliefs (not only health-related) concerning functional foods constitute the explanatory variable that better explains the 'intention to try' these products.

Thus, the present investigation must first uncover, by exploratory work, which are the strongest beliefs mentioned by young students who regularly consume some kind of functional food product. Qualitative techniques, discussed in the next section, have been found appropriate for the elicitation of such beliefs.

2.4 Qualitative research: Laddering and Focus Group

2.4.1 The laddering interview method

The laddering technique[13] is described as permitting a deep understanding of consumers' preferences and motivations concerning a given product class, in the context of in-depth interviews (Dibley and Baker, 2001; Reynolds and Gutman, 1988). At least two different views for what this technique is supposed to achieve can be found when crossing literature, as Grunert and Grunert (1995) synthesize. The *cognitive structure* view sees Means-End Chains as a model of consumers' consumption-relevant cognitive structure, and thus laddering is described as a technique useful for determining how experience and other types of information are stored and organized in human memory. The *motivational* view is that this technique is concerned with obtaining information about consumers' buying motives,

[13] First presented by Hinkle in 1965 and published by Bannister and Mair three years afterwards, this technique was originally developed as a means of accessing people's personal systems of meaning, consisting of probing techniques which force respondents up a growing ladder of abstraction, and thus eliciting the constructs people use to organize their world (Bourne and Jenkins, 2005; Dibley and Baker, 2001).

giving valuable insights by prompting buyers to reflect on their shopping motives in an untypical fashion, one which supports what the present study aims to achieve.

The laddering method is based on the assumption that it is possible to find entry points into a person's construct system and follow a pathway up the hierarchy to the most superordinate constructs (Bourne and Jenkins, 2005). The simple and associative links start at a relatively concrete level of product's attributes and go all the way through to bridge them with abstract meanings of existential importance, with respect to self - like personal values - allowing a deep insight into consumers' underlying motivations, regarding the acquisition or consumption of specific products or brands. This is possible because its procedure makes easier for the consumer to naturally reveal his/her personal reasons, those motivating choice, that otherwise would be impossible to retrieve from memory (Dibley and Baker, 2001; Reynolds and Gutman, 1988; Zanoli and Naspetti, 2002).

Laddering methods diverge between more "open" approaches, restricting as little as possible respondents' natural flow of speech, or *soft laddering*, and interviewing techniques where respondents are forced to produce sequential "ladders" of increasing levels of abstraction, one by one, or *hard laddering* (Grunert and Grunert, 1995). The 'soft' approach is described as being advantageous when respondents' cognitive structures are too weak or too elaborate, about the issue at hand. Nevertheless, it gives respondents more freedom, increasing the extent of cognitive processing on the interviewer side, as he/she has to relate the answers given to the means-end model, which may introduce biases. Sometimes, as noted in literature, people may deviate from the theme discussed, whether by retrieving episodic instead of semantic information or by immediately starting to elaborate on an answer, interrupting the ladder and randomly alternating between levels of abstraction. All this requires further processing by the interviewer, before coding the data obtained (ibidem, 1995).

In sum, as Grunert and Grunert point out, the choice between 'soft' and 'hard' laddering can therefore be viewed as a balance between the unwanted biases introduced by the interviewer's own cognitive processing or the equally undesirable excessive influence resulting from his/her involvement during the interview itself. 'Softer' methods are considered more adequate whenever respondents' involvement or previous experience with the product is considered too low or his/her cognitive structure is very elaborate, for example because of being an expert in the issue. The less researchers know about respondents'

cognitive categories, the more recommendable ‘soft’ laddering becomes. Whatever the approach selected, the basic goal is to get the respondent to answer and then to react to that response, by using a series of direct probes based on mentioned distinctions initially obtained from perceived differences between brands of products (Reynolds and Gutman, 1988).

2.4.2 The Focus Group method

Focus group is a qualitative method, representing one of the most widely accepted and used techniques in market research (Morgan, 1998). This method allows mediators to give importance to each individual voice, encouraging dialogue in the group and listening to individual concerns, although it is not appropriate for obtaining data on the representativeness of a particular point of view (Padel and Foster, 2005). Focus groups are careful planned sessions of group discussion about a certain topic or issue, in which researchers learn about the perceptions, feelings, values and ideas of participants concerning a specific area of interest. Morgan (1998) emphasizes, in his review on the subject, that literature describes focus groups as lasting from 90 to 120 minutes and having anything from 6 to 15 participants, representing a wide spectrum of opinions and personal characteristics, which provides enough different opinions to stimulate a discussion without making each participant compete for time to talk.

The previous author mentions that this kind of interview explores human tendencies, as attitudes and perceptions (about products, for instance) are developed in part by interaction with others, as we are all a result of our own environment and influenced by people around us. Advantages of using focus group interviews in the present study include being a socially oriented procedure that can capture the dynamic nature of social interaction, in a way that one-on-one interviews are unable to explore. Also, the moderator is allowed to probe the issues he/she considers to be the most important, with the extra flexibility of being able to explore unanticipated questions, which would not possible in more structured questioning sentences.

Finally, some authors refer to focus groups as having high face validity, as being particularly recommendable when conducting exploratory or preliminary studies and when the purpose is

to uncover factors relating to multifaceted motivations (Krueger, 1994; Padel and Foster, 2005). This technique was selected for use in the exploratory study, considering the possible insights into the way consumers are willing to trade-off between values when they make food purchase or consumption decisions, completing the information gathered during laddering interviews.

2.5 Conceptual Background

To understand why consumers prefer one brand to another and how values influence consumption patterns, it has already been suggested that a new framework is needed; one integrating deep-rooted personal values, consumption values (which according to authors, are in fact consequences from usage) and beliefs relating them to product attributes (Vinson, Scott and Lamont, 1977). The following approach relies on two major constructs, both of which are hereby proposed as determinants of motivation for consumption choices.

2.5.1 Food-Related Lifestyles

Some authors suggest that personal values are linked to (goal-directed) action through specific goals and behavioural routines (Brunsö, Scholderer and Grunert, 2004a). Lifestyles have been proposed and successfully tested as such mediator, relating values to behaviour (Scholderer, Brunsö and Grunert, 2002). Additionally, as values have been assumed to provide motivation for human behaviour in situations where choices are involved, analysing their relations to aspects of Food-Related Lifestyles can help obtaining a deeper understanding of the motives behind certain food options (Van der Zouwen, 2006). Effectively, since Food-Related Lifestyle determinants have been identified as important when considering food purchasing motives in general, it seems plausible to assume that they will also relate to the purchase or consumption of Functional Foods (Brunsö, Scholderer and Grunert, 2004b). Therefore, comparing the consumption levels of the different Food-Related Lifestyle (FRL) segments found amongst the Portuguese students' sample, for several

categories of Functional Food products, is proposed as a viable strategy to determine if lifestyle aspects can be considered significant behavioural determinants.

(H1, H2, H3) Consumption levels for Functional Foods differ significantly across different FRL segments, for each product category.

2.5.2 Attractiveness of Functional Foods

It was previously concluded that the consumer is motivated to choose a product to the extent that it produces desirable consequences thereby contributing to the attainment of his/her personal values (Nielsen, Bech-Larsen and Grunert, 1998). Self-relevancy of a product has been demonstrated as being closely related to the connection of the product's attributes to important and desirable consequences, and ultimately, to the consumer's life values (Grunert and Bech-Larsen, 2005; Houston and Walker, 1996). This rationale is in line with the Means-End Chain model's assumption that explicitly linking consumers' preferences or needs and product characteristics can uncover consumers' goals and purchase or consumption motivations (Zanoli and Naspetti, 2002). The approach has gained even more momentum after Grunert and Bech-Larsen (2005) presenting statistical evidence that what they called the 'weak hierarchical model' – which links directly objects of choice and attributes, consequences and values, one at a time, through a belief system – provides a better explanation for evaluating the attractiveness of options than more traditional attitudinal approaches. Other authors, using several different statistical procedures, have recently demonstrated that consumers use *a priori* beliefs about the product's attributes or benefits to infer about the product's performance (van den Heuvel et al., 2007).

Following Grunert and Bech-Larsen's conclusions, the conjoint influence of the strength of beliefs relating product to outcomes - and the personal evaluation or self-relevancy of those outcomes - are valid constructs for explaining the attractiveness of consuming a certain product. According to their investigation, products must be directly linked to each relevant attribute, consequence and value, to determine belief strength. The sum of all beliefs'

strengths should determine the attractiveness of the product (Grunert and Bech-Larsen, 2005).

Conversely, authors in the past have suggested that there could be better predictors of attitudes towards concrete product attributes or behaviour than values (Wells, 1975). This is an important factor, which must be ascertained before proceeding. Addressing the values' usefulness in the model, Grunert and Bech-Larsen (2005) have tested through regression and found evidence that the inclusion of both consequence and value beliefs significantly add explanatory power to the model. The laddering method has been recommended for eliciting those beliefs. This conclusion confirms a previous study, in which values have already been successfully tested as increasing the explanatory power of product choices, especially for heavy-users (Perkins and Reynolds, 1988). In line with this theoretical framework, the following hypotheses can thus be formulated:

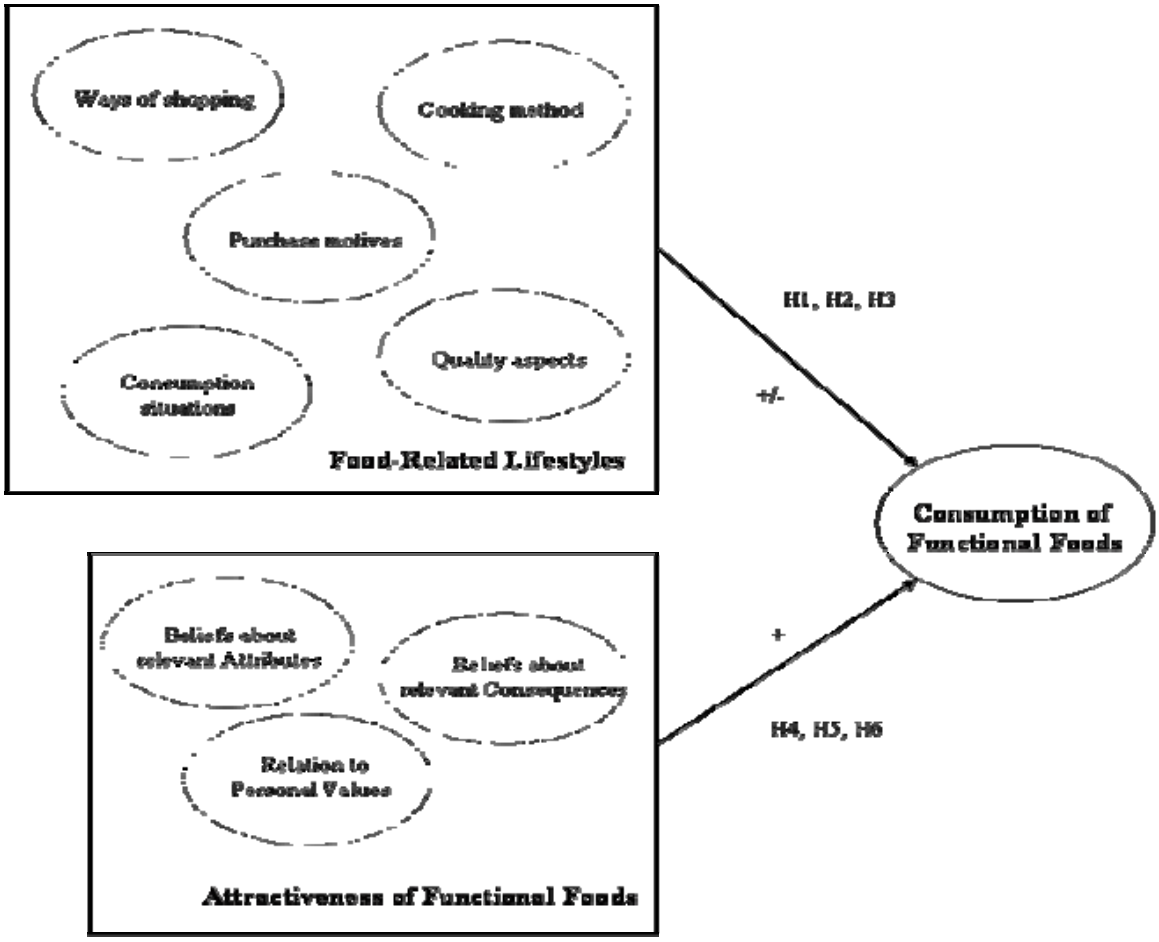
(H4, H5, H6) Consumers with stronger beliefs about the Attractiveness of Functional Foods have higher consumption frequencies for these products.

2.5.3 Model for testing

The following conceptual model presents the relation between the two major constructs proposed as possible motivational determinants for behaviour and the self-reported consumption of Functional Foods. Each major construct is formed by the combined influence of several sub-constructs or dimensions, as shown earlier.

Figure 1

Conceptual model for explaining Functional Food consumption, among young Portuguese students.



3 METHODOLOGY

3.1 Exploratory study

3.1.1 Study overview

Before developing the questionnaire (intended to collect measured data on respondent's food-related lifestyles and beliefs, as well as functional foods' consumption levels), an exploratory study was undertaken as described, due to the lack of previous marketing research on the subject, in order to gain a better comprehension of the motivations regarding functional food choice by Portuguese students. This methodology is in line with some published studies, which try to explain consumers' choice option attractiveness, employing a combination of qualitative techniques to elicit beliefs from a small number of respondents, and then use a subset of beliefs generated in a survey-type study on a larger sample (Grunert and Bech-Larsen, 2005).

The main problem that could arise is building on the rationale that beliefs generated in the exploratory part of the investigation generalize to the population with which the survey is being done. The precaution recommended by Grunert and Bech-Larsen was to guarantee that respondents from the qualitative study and from the quantitative survey are obtained from the same population, recommendation which has been followed in the present study.

In-depth qualitative interviews have been completed using the laddering method, as previous results had shown this method to be successful in eliciting consumers' beliefs and motives relating to a specific product category or brand (Dibley and Baker, 2001; Reynolds and Gutman, 1988). A focus group session was also undertaken to provide additional insights about students' motivations and values influencing the choice or rejection of functional food products.

More specifically, the intended objectives of this exploratory work were to:

- determine which functional food products (categories and brands) are more commonly mentioned and enjoyed by Portuguese students, whether during open discussion or individual interviews;
- identify the attributes of these products that are perceived to be important by young consumers who regularly buy and/or consume functional food;
- identify the type of consequences sought and personal values which motivate interest in these attributes of functional food;
- assist in the development of the questionnaire forms the second stage of this study.

3.1.2 Laddering

3.1.2.1 Data collection

According to recent studies (Bourne and Jenkins, 2005; Grunert and Bech-Larsen, 2005), around 20 interviews are usually necessary to identify an adequate number of ladders. Dibley and Baker (2001) add that in qualitative research, adequacy and appropriateness of data are of greater concern than the number of subjects involved in data collection.

Possible respondents were randomly approached inside university facilities - located in four different Portuguese cities[14] - and invited to participate, after verbally confirming fulfilment of two requirements: that respondents were university students and that frequently consumed (or, in some cases, *occasionally* consumed and clearly enjoyed) at least one functional food product, from the shortlist described in the next section. 20 laddering interviews were carried out, 13 to female students and 7 to male respondents. The average age of this sample was 23 (ranging from 19 to 31 years).

[14] Interviews were conducted with students from universities in Lisboa, Santarém, Leiria and Aveiro.

3.1.2.2 Choice of products

The following table lists the most commonly accepted functional food products, among consumers from industrialized countries.

Table 1

Functional food products considered as having the highest awareness and acceptance, in some of the most recent academic and market research studies available.

Source and year	Functional Foods mentioned
AC Nielsen, 2005	Whole grain or high fibre products, iodine enhanced cooking salt, cholesterol reducing oils/margarines, fruit juices with added supplements/vitamins, yoghurts with acidophilus/probiotics, milk with added supplements/vitamins, bread with added supplements/vitamins, fermented drinks with beneficial bacteria, soya milk and cereal folate.
Nutraingredients.com, 2006	High-fibre products, probiotic yoghurts, vitamin/mineral fortified foods, cholesterol lowering foods and energy drinks.
Van der Zouwen, 2006	High-fibre products, probiotic yoghurts, whole grain cereals, cholesterol lowering foods and vitamin/mineral fortified foods.

Eight different functional food product categories were selected as being the most commonly sold in Portugal, based on research findings and point-of-sale observation. Therefore, the shortlist used in the exploratory study included:

- Probiotic yoghurts
- Whole grain bread or toast
- High-fibre/whole grain cereals

- Cholesterol lowering foods (usually margarines or oils)
- Fruit juices with added vitamins (and/or antioxidant properties)
- Cookies with digestive claims
- Milk with added supplements
- Soya milk

Specific brand names were cited as examples for each product category mentioned[15], with the exception of whole grain bread or toast and soya milk. The reason for these exceptions is that preliminary work concluded that no brand, selling these products, is well-established enough in Portugal to surpass its own product category name in global awareness. The examples made comprehension easier during the actual interviews, as some of these product categories display somewhat technical designations that are unfamiliar to most students.

3.1.2.3 Interview procedure

As described earlier, laddering consists of a one-on-one interview technique used to develop an understanding of how consumers are motivated into consumption acts, by translating product attributes into meaningful associations with respect to self, following the Means-End Theory tradition (Gutman, 1982; Reynolds and Gutman, 1988).

Interviews were executed in private rooms, usually inside the University campus, in clearly "non-hostile" and quiet environments, so that students would not feel threatened, distracted or otherwise compelled to give anything but totally honest answers. To enhance their will to be introspective about the questions at hand, students were briefed that there would be no right or wrong answers, that anything said would be considered valid, as the only objective was to understand the motives driving some of their food consumption choices. To avoid eventual loss of motivation during the interview process, it was initially stated that many of

[15] For the complete set of brand names and product types used during the interviews, please see APPENDIX 1.

the questions would seem obvious and too basic, but specific guidelines had to be followed in order to reach the research goals.

Interviews began by asking respondents to identify which (if any) of the functional food brands most commonly found among Portuguese retail chains was part of their dietary habits, using the shortlist described earlier. Picking on one of those categories, respondents were asked to provide a preference order for that category's brands and then asked about the main differences, in their own perception, between the first and second mentioned brand (or the functional food brand, when not placed among the top two positions), and about which of those distinctions bear the most importance for him/her personally. Afterwards, key distinctions were used as a laddering base, one at a time, following the method already described, until a higher-level concept could not be reached (usually detectable when a respondent continued on repeating what he/she had already said on the previous comment). This was carried out by using primarily a series of directed probes, typified by the *"Why is that important to you?"* question, trying to determine linkages between the key elements across the *Attributes-Consequences-Values* chain. The approach used to collect data was primarily "hard laddering", as it minimizes biases resulting from cognitive processing on the interviewer's behalf, therefore increasing objectivity (Zanoli and Naspetti, 2002).

3.1.2.4 Coding and analysis

After completion of all interviews, a detailed coding and analysis procedure was followed. The responses given by each individual were numbered, examined and classified as "Attributes", "Consequences" or "Values" accordingly. Individual ladders were identified and traced for each respondent, with ladders ranging in length from 3 to 6 steps. Afterwards, having traced all the ladders, contents were translated from Portuguese to English and a summary list was produced describing all direct and indirect relations between elements. This list was used to draw up Implication Matrices, which display the number of times each element led to another element. Both direct and indirect relationships were displayed, with the number of direct relationships appearing to the left of the decimal point and the number of indirect relationships to the right of the decimal point.

The global Implication Matrix, based on individual matrices for each product category referred, was then used to construct a Hierarchical Value Map (HVM), which is a graphical representation of connections (Dibley and Baker, 2001) and a cognitive map to visualize links or associations across different levels of abstraction (Reynolds and Gutman, 1988). HVM is the most popular approach to analyzing data obtained through laddering interviews and represents data in their least distorted form, which depends only on the choice of the 'cut-off level' (Dibley and Baker, 2001; Kaciak and Cullen, 2006).

In order to represent the aggregated ladders in the most uncluttered and clear way possible, the cut-off level was defined at 4, which means that only direct and indirect relationships mentioned by four (or more) respondents were plotted on the HVM. Non-redundancy was guaranteed by ignoring the direct links between Attributes and Values that were, at the same time, directly and indirectly connected. Some authors maintain that there are no theoretical rules to guide the selection of the cut-off level and thus it should be defined empirically (Dibley and Baker, 2001; Grunert and Grunert, 1995). In the present study, cut-off was settled at 4, following indications that as many as two-thirds of all relations among elements should be accounted for (Reynolds and Gutman, 1988). This was the most easily readable and non-redundant solution possible, for the data obtained.

3.1.2.5 Results and Discussion

Although 20 interviews were conducted, with some participants ladders were produced for more than one functional product category, obtaining a total number of 30 usable cases. A global frequencies table[16] is available to show the number of mentions, by functional food category, for each product attribute, consequence and personal value. The number of connections between concepts (attributes, consequences and values) can be found in the Global Implication Matrix[17]. Only total values were used, in order to produce a unique HVM

[16] Presented in APPENDIX 2.

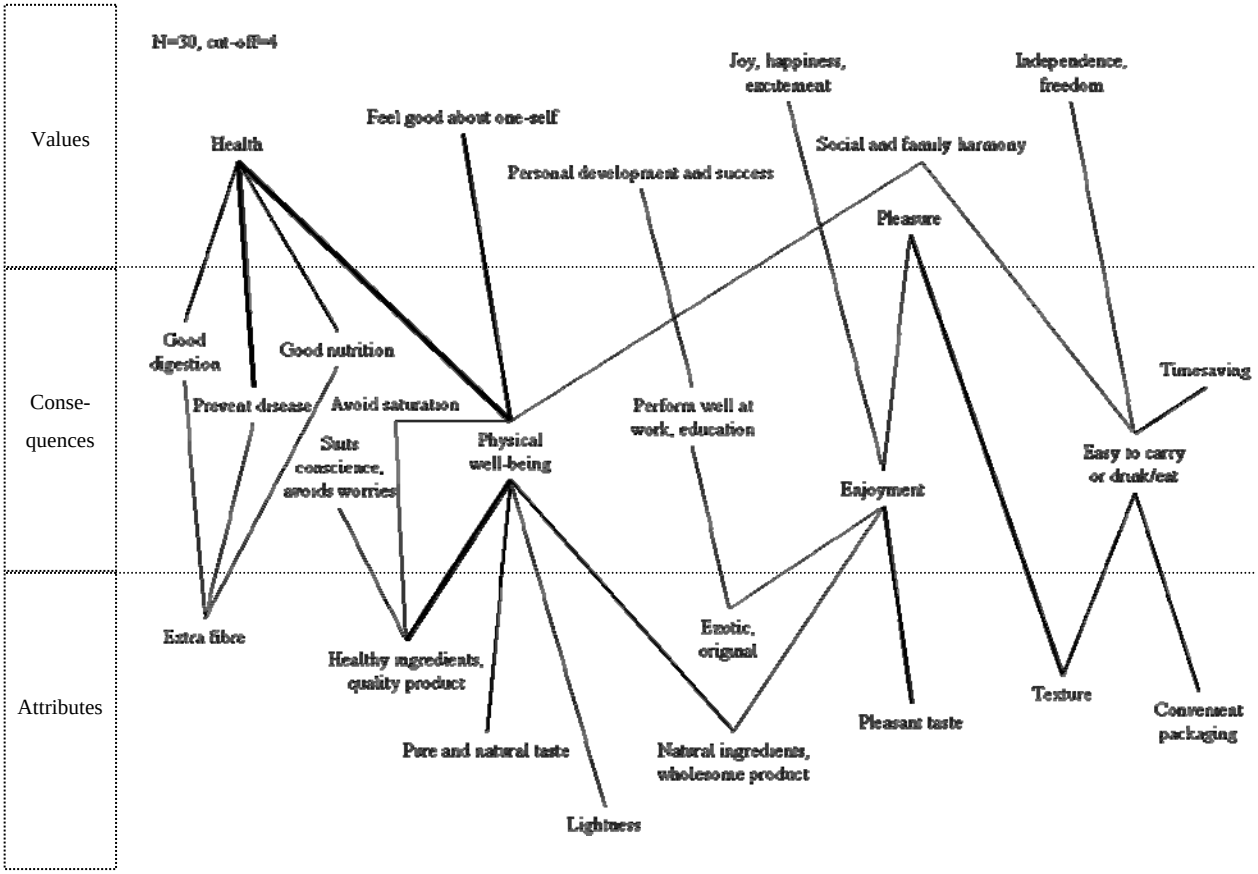
[17] Presented in APPENDIX 3.

that could resume the functional food consumption motivational structure found among the 20 respondents.

Functional food preference was unanimously associated with health benefits, such as *physical well-being* or *preventing disease*, with all respondents indirectly arriving at the value of personal *Health*. Whereas *physical well-being* was often inferred from clues suggesting the *naturalness* and *lightness* of products, as well as the perceived *healthiness* of its ingredients, the interviewed students found more difficulty in connecting the prevention of disease to any concrete product attribute. *Pleasure*, *happiness* and pure *enjoyment* were also often mentioned as consumption motives, linked both to sensorial attributes (texture and taste) and to 'psychological' ones (exoticness and wholesomeness). During interviews was possible to conclude that most students were not ready to adopt a product, even when believing in its health claims, unless they believed that their hedonistic desires would also be satisfied, which is not surprising for this age group.

Figure 2

Global hierarchical value map, synthesizing responses given for all product categories, broad coding.



Although the *convenience* dimension was excluded from the HVM at the present cut-off level, several 'utility' aspects appeared when analysing responses. Practical *packaging* and (drinking) *texture* were related to convenient *product transportation* and, indirectly, to *timesaving* advantages that could help individuals achieve their *independence* goals.

Another interesting finding is that *naturalness* of product composition, texture and appearance are fundamental aspects of functional bread and juice preference, even surpassing (for the functional juice) health claims as the primary choosing motive, whereas *extra fibre* emerged as the single most well known functional ingredient, and thus, health claims for whole-grain cereals have emerged as probably displaying the highest credibility and awareness, among the 20 students interviewed. The frequent connection (both direct and indirect) between *extra fibre* and *health* suggests the strong and well-rooted presence in the students' cognitive structure. Surprising was the association between the *exoticness* of products and having a *good performance*, which is curious at the very least and has emerged in several interviews.

3.1.3 Focus Group

3.1.3.1 Objectives and procedures

The original purpose behind this session was to gain a better understanding of motives supporting functional foods' acceptance (or rejection) by Portuguese students, as well as to confirm if the functional food categories most often mentioned during laddering interviews were in fact identified as the most popular ones, during group discussion.

Krueger (1994) suggests that focus group should be characterized by homogeneity, but with sufficient variation among participants to allow for contrasting opinions. In this study, participants were recruited to reflect a range of different attitudes (and levels of knowledge) towards functional foods, different academic areas, but all participants were university students, with ages ranging between 21 and 29 years. Group size was six, with 3 male and 3 female participants, and the discussion followed a semi-structured route, as literature reports that less-structured approaches should be considered when exploratory purposes need the

group to reveal more of their perspective on the research topic (Morgan, 1998). Specific guidelines were nevertheless prepared and used to prevent that the debate followed an erratic route[18]. The discussion was recorded and fully transcribed, so that comments could be linked to individual participants. The session occurred in Lisbon, on the 7th March 2007.

3.1.3.2 Main findings and Discussion

Concerning the very concept of 'healthy lifestyle', most students spontaneously mentioned aspects such as no smoking, low consumption of alcohol, getting a good night sleep and sports. Additionally, everyone agreed that good eating habits are essential to maintain a good health, particularly for students and others with sedentary lives. However, when questioned about the main obstacles for pursuing a healthy diet, 'lack of time' was often mentioned. Some complained against timetables that made difficult eating at regular hours, others talked about breakfast as an important meal that sometimes was missed, mostly for laziness.

- *"In the old days, my mom always prepared healthy food, complete meals and the like… now I have to take care of it, and there's no time to be that careful about cooking, only if I go to the bakery or something… On the other hand, we now have a macrobiotics canteen; we can even choose the day to go eat macrobiotic food or normal food." (Ana Maria, 24)*

- *"We are in a rush; it's what is more at hand... A healthy lifestyle demands more time and availability, maybe even more money." (Sérgio, 23)*

Macrobiotic and organic foods were sometimes mentioned, as examples of healthier foods. When the functional food shortlist was introduced into the discussion, it became clear that this designation was unknown to all students, although the specific functional food products were indeed recognised. Some confessed enjoying whole-grain cereals or probiotic yoghurts (avoiding only because of the higher price). When inquired about their consumption habits, every participant identified one or two functional products as options they favoured, but

[18] The focus group script and materials used are shown in APPENDIX 4.

avoided due to price issues, mostly. Thus, functional food habits seem to be yet in an experimental stage, for these young consumers, without stabilized consumption or buying patterns.

- *"Maybe the Compal fruit juice and the Actimel thing. But I don't abuse much of the bad foods thing, so I don't need to compensate." (Pedro, 23)*

- *"If those cereals were cheaper, it would be all the time! But those [digestive] cookies, only if I really liked the taste, which I don't." (Alexandre, 29)*

- *"Because of my religion, I would not be eating meat during the Easter period, so now I'm buying more of those cookies, because they are richer and more nutritious." (Ana Maria, 24)*

Scepticism was found about the health claims exhibited by some functional food brands, but if a certain product complies with students' demands in terms of taste and convenience, then the "rational" argument of healthiness can have some effect. Nevertheless, when ending the session, final remarks were still about price and visible doubts about the health benefits promised by some of those products.

- *"I don't care for quick effects and sensationalisms; it has to be during a certain period of time." (Jessica, 26)*

- *"Yeah, things only have effect if you take them regularly and in the right amount." (Ana Maria, 24)*

- *"They don't motivate me, personally. If they weren't expensive, I'll try them out, I can try anything… But for example, I see milk is white and has calcium; I don't need extra calcium. It's not because they say it has ten times more calcium that I'm going to drink it." (Sara, 21)*

In conclusion, the 'functional foods' broad category is definitely not recognised by these students, with confusion persisting differentiating against *light* or *low-calorie* products, organic foods or even healthy ingredients in general. Although they seem unaware of the product category as a whole, they do spontaneously mention most of the available brands and have already tried at least some of them.

"Whole grain cereals", "probiotic yoghurts" and "antioxidant juices" have been confirmed as the most frequently bought functional foods by the focus group participants. When challenged to debate the reasons for choosing those products (and also for *not choosing* others), there seemed to be a balance between *believing* in what those products can do for them as consumers, and a positive match between functional products and the consumption routines or *food lifestyle* already practiced by the students. This conclusion further supports both major constructs as possible motivational determinants of functional food consumption.

3.2 Quantitative study

3.2.1 Study objectives and design

In order to uncover motivations for consuming functional food products, two major constructs have been prepared to be used as possible determinants of consumption, as suggested by literature and confirmed during the exploratory study. Food-related lifestyles and beliefs about Functional Foods have been measured. The first construct was intended to allow us to investigate the relationship between different segments and functional food consumption, thus revealing if issues relating to lifestyle, personal goals or values could be considered motivational elements for this kind of consumption. The second construct aimed at investigating if specific beliefs about Functional Foods' attractiveness could be pointed out as the source of motivation for consumption. Consumption for functional cereals, yoghurts and juices has been measured, as exploratory work suggested that a generic 'functional food' category might not be recognized or understood by students, confirming previous literature recommendations (Makatouni, 2002). These three were the functional products more commonly mentioned among participants.

3.2.2 Questionnaire

3.2.2.1 Food-Related Lifestyles (FRL)

The original instrument, consisting of 69 items, has been extensively tested for the past years and successfully applied to samples collected in the UK, Denmark, France, Germany, Spain,

Croatia and other non-European countries (Brunsö, Scholderer and Grunert, 2004b; Kesic and Piri-Rajh, 2003; Reid, et al., 2000; Scholderer et al., 2004; Van der Zouwen, 2006).

The FRL survey was carefully translated from English to Portuguese, considering recommendations by four different translators. The dimension "Whole family" is clearly not applicable to young students and has therefore been excluded from this study. The FRL major construct included sub-constructs "Ways of shopping", "Cooking method", "Purchasing motives", "Quality aspects" and "Consumption situations". So, this section of the questionnaire consisted of 67 food-related lifestyle items, with all questions rated on a seven-point Likert scale, ranging from "completely disagree" (1) to "completely agree" (7), as shown on APPENDIX 5. Pre-test showed the need to modify item number 8, which was originally "Shopping for food is like a game to me" and was corrected to "Shopping for food is an entertaining activity", in order to improve the students' comprehension of the item.

3.2.2.2 Attractiveness of Functional Foods (AFF)

The resulting suggestion, from the focus group session and laddering interviews, that Portuguese students may not yet be familiar with the concept of Functional Foods, as the name itself required a previous explanation, but also the considerable difficulty in distinguishing 'foods with health claims' from other food products, are somewhat contradictory to findings in other European countries, albeit with samples, in those cases, usually taken from the general population or from household shopping deciders. It would not be therefore recommendable to use 'Functional Foods' as a designator in the present study or to inquire respondents on Functional Foods' product group as a whole.

Therefore, to avoid an unnecessarily long questionnaire, three different functional food categories were chosen from the ones mentioned during the exploratory study, in order to be used in the survey. Although the qualitative study is not intended to be representative of the students' population, whole grain cereals, probiotic yoghurts and antioxidant/added vitamins fruit juices were confirmed as the best accepted categories amongst participants of both the laddering interviews and the focus group session. The attributes, consequences and values used for measuring the 'attractiveness' construct are thus the ones that have been most often mentioned by respondents, during the laddering interviews, in relation to these products.

This section of the questionnaire included a total of 30 items (10 for each product), with 12 referring to Attributes, 9 to Consequences and 9 to Values, as shown on APPENDIX 5. A seven-point Likert scale was selected, as tested by Grunert and Bech-Larsen (2005), ranging from "extremely unlikely" to "extremely likely". Strength of beliefs determining choice option attractiveness have been measured with this scale before, with Cronbach's Alpha of, respectively, 0.94 and 0.92 for British and Danish samples. The exact phrasing of the belief sentences was prepared following previous research (ibidem, 2005), starting with *« For me, buying […] would mean that I […] »*. After pre-testing, it was decide to include an additional written explanation, prompting respondents to answer « *[…] even if they do not consume the mentioned products* », in order to satisfy a common doubt exhibited by some students.

3.2.2.3 Consumption of Functional Foods

Several options have been evaluated for measuring the behavioural items, as shown next.

Table 2

Constructs and scales considered for measuring the behavioural option.

Constructs	Source	Scales
Frequency of use of functional foods	Urala, Arvola and Lähteenmäki (2003)	(Seven-points): "I don't use", "A few times a year", "A few times a month", "Once a week", "A couple of times a week", "Daily", "I don't know"
Food-Related Behavioural List	Scholderer, Brunsö and Grunert (2002)	(Seven-points): "Never", "Less frequent", "1-5 times every six months", "1-3 times a month", "1-2 times a week", "3-4 times a week", "Every day or almost every day"
Functional foods acceptance	Verbeke (2005)	(Two Likert-scaled items): "Functional foods are all right for me as long as they taste good"; "Functional foods are all right for me even if they taste worse than their conventional counterpart foods".
Consumption of functional foods	Van der Zouwen (2006)	Nominal scale ("please mark all that apply").

The first scale/construct was selected, as it seemed to be thorough enough, but at the same time simple to understand and apply. During pre-test, students appeared to be quite comfortable with this scale and the option "I don't know" was never selected, which further confirmed this to be an adequate scale for meeting the research objectives. The selected scale was applied on the three chosen product categories.

The *Food-Related Behavioural List* is also quite thorough, but the items "Less frequent" and "1-5 times every six months" could turn out to be too confusing for students to answer correctly. Verbeke's *FF Acceptance Scale* evaluates preference against conventional food products, which is a very unclear distinction in the mind of Portuguese students, as exploratory research showed.

3.2.3 Sampling procedure

As was previously described in the Introduction section of this thesis, University students were selected for analysis as target group, due to the fact that the understanding of the diet-health relation (Van der Zouwen, 2006) and awareness of functional foods (IFIC, 2005) have both been shown to be both positively associated with formal education. Students were thus approached in Universities in the Greater Lisbon area, for convenience reasons.

3.2.4 Data collection

Pre-test was conducted for two days with 25 university students, with implications in the measurement instruments presented in the previous section. Pre-test observation determined that the questionnaire took between 4 and 8 minutes to complete.

Using the final version of the questionnaire, data were collected from $N = 596$ students; the mean age of respondents was 21 years (ranging from 18 to 35) and 62% were female. Data collection occurred in 16 different Universities, all situated in the Greater Lisbon Metropolitan Area for convenience reasons, from April 16th to May 11th. Prospective

respondents were randomly approached and invited to participate, after confirming that they were indeed university students. Work was conducted in Universities from a wide group of academic fields, including Engineering and IT, Business and Management, Marketing and Communications, Law, Pharmacy School, Educational Sciences, Arts, Medicine School, among others, in order to guarantee a diversified base of opinions.

3.2.5 Data analysis

Data analysis was conducted using SPSS 12.0 for Windows and all tests were conducted at a significance level of 0.05. The FRL major construct has been examined in three steps. With exploratory purposes, factor analysis has been applied to the 67-item seven-item scale in order to reduce the number of variables to a more manageable set, retaining as much information as possible, but making the remaining variables (factor scores have been saved as variables) meaningful and easier to work with.

To evaluate sampling adequacy for factor analysis, two measures were used: Kaiser-Meier-Olkin (KMO) and Bartlett's test. The former compares simple and partial correlation coefficients, in order to uncover how large is the explication presented by a variable that was already offered by another variable; while the latter helps to evaluate if the original variables are, in fact, independent. After validation of key assumptions, principal component analysis was employed, as conceptually is based on the total information contained in each variable, transforming them into new, non-correlated factors inferred from the original input variables. The factor loadings (regression coefficients) obtained linked the factors to the original variables, helping to interpret the resulting solution. Varimax was selected for rotating the factors, as it tends to load high on a small number of variables and low on others, making interpretation easier and the factors uncorrelated (Aaker, Kumar and Day, 2004).

Afterwards, these new variables were subsequently employed in hierarchical clustering to establish students segments. Squared Euclidean Distance was selected, so that smaller distances were minimized (lower than one) and bigger distances expanded. Ward's method was used for linkage to minimize within-cluster variation, as it is generally less affected by random noise in the data (ibidem, 2004; Wedel and Kamakura, 2000). Discriminant analysis

was then performed to confirm the segments found and to further develop the cluster profiles on the basis of the average factor scores.

Finally, the first three hypotheses were tested to determine if functional food consumption is significantly different between segments. ANOVA was selected for this effect, after validation of its key assumptions - Normality (using the One-Sample Kolmogorov-Smirnov test) and Homogeneity of Variances (using Levene's statistic) – and *post-hoc* testing was to take place to determine which segments (if any) presented higher consumption frequencies, in case of positive confirmation of any of the three hypotheses formulated.

As for the relation between strength of consumer beliefs (representing FF attractiveness) and FF consumption, the correlation was measured using Pearson's regression coefficient, which measures the degree to which there is a linear association between intervally-scaled variables. Failure to reject the null hypothesis (p=0) implied the absence of any linear association between dependent and independent variables. Beliefs about product attributes were summed to calculate a belief strength index for that product and the same procedure was adopted for beliefs concerning product consumption consequences and its relation to personal values. These global beliefs' strengths were then entered as independent variables, in order to determine their explanation power, following the MEC approach (Grunert and Bech-Larsen, 2005). The model assumes that variables are metric.

4 RESULTS

4.1 Behavioural items

Respondents did not show much hesitation about stating their product usage levels, with less than 1 per cent selecting "I don't know" for cereals and juices and 1.8 per cent for yoghurts, when asked about their frequency of consumption.

Although a fifth of the sample reported no consumption at all of cereals (the most frequent "I don't use" answer of the three product categories), this is also the functional food product with the higher number of daily consumption cases[19]. Incidentally, almost half the sample reported frequent consumption (at least "once a week") for all three functional food products, with the antioxidant juices revealed as the most widely accepted product, despite the whole grain cereal's higher number of *everyday consumers*.

4.2 Exploratory analysis of FRL

4.2.1 Factor Analysis

4.2.1.1 Appropriateness of data for Factor Analysis

Before factor analysis was conducted, the data were examined for their appropriateness for such procedure. Confirmation of strong interrelationships amongst the explanatory variables was indicated by Kaiser-Meyer-Olkin measure of sample adequacy (KMO statistic = 0.801), together with Bartlett's test of sphericity[20], which yielded a chi-squared test statistic of

[19] About 19% of the sample reports daily consumption of functional cereals, against rates of 14% for yoghurts and 11% for juices. The complete consumption frequency table is offered in APPENDIX 7.

[20] Bartlett's test of sphericity tested the hypothesis that the correlation matrix came from a population of independent variables.

14967.255 with 2211 degrees of freedom. This resulted in the rejection of the null hypothesis, that the test variables are not inter-correlated, at the 5 per cent significance level.

The use of these sampling adequacy measures for the total data set of 67 items demonstrated the applicability of a data-reduction technique. KMO and Bartlett's results suggest that there was a high enough degree of association between the input variables to indicate the presence of different factors. Given the high levels of multicollinearity, factor analysis was used next to identify underlying constructs.

4.2.1.2 Operationalising exploratory Factor Analysis

Factor analysis was applied to the data with exploratory purposes, as a preliminary analysis of dimensionality, and as a data reduction technique to reduce multicollinearity and to prepare data for input into the clustering procedure.

A good factor structure was expected, as there was a good sampling of both variables and subjects, and a ratio of subjects to variables higher than 2:1. The sample size could guarantee the robustness of principal component solutions.

Choosing the adequate number of factors to extract is typically an issue that raises much debate, as no criteria can be considered perfect for decision. It is generally agreed that the Kaiser criterion of an *eigenvalue greater than one* is the most appropriate to define the correct number of factors (Pestana and Gageiro, 1998), and therefore only those factors with eigenvalues greater than unity were considered.

Eighteen dimensions were extracted using principal component analysis, and were interpreted after a Varimax rotation[21], as shown in APPENDIX 8. The rotated factors are thus uncorrelated, with communalities and ability to reproduce the original correlation matrix unchanged from the original factor analysis. The Varimax rotation method simplifies the factor structure, thereby improving the interpretation of latent factors by removing

[21] The Varimax rotation is achieved by maximizing the sum of the variances from the squared factor loadings within each factor.

ambiguities so often problematic in unrotated solutions (Reis and Moreira, 1993), and is the most popular rotation method for minimizing the number of variables with high loadings on the same factor (Pestana and Gageiro, 1998).

The factors yielded explain approximately 65.4 per cent of total variance of the original variables. Although this is far from being the most satisfactory solution – hence the high number of factors extracted and the relatively low variance percentage explained - the intent was merely to simplify the information obtained, for use in the subsequent cluster analysis. Therefore, factor analysis was not supposed to be a conclusive stage of the data analysis.

Furthermore, literature requires that the factors yielded explain at least 60 per cent of the total variance (ibidem, 1998), which is clearly achieved in the current solution, and other solutions were even experimented, forcing the extraction of an inferior number of factors, but arriving at unacceptable scenarios, considering the very low amount of variance explained in those cases. This issue may not be entirely irrelevant and will be further discussed on a latter stage of this thesis.

4.2.1.3 Interpretation of the factors yielded

Dimensions were named with respect to the items which had the highest loadings, as they represent the variables that correlate highly with each factor (Reis and Moreira, 1993).

In the APPENDIX 8 the Rotated Component Matrix is offered, with the respective factor loadings[22] on which the interpretation of dimensions or factors was based.

[22] Factor loadings indicate the correlation level between the original (input) variables and the factors yielded; therefore, they are the key for understanding the nature of a particular factor (Proença, 2000; Reis and Moreira, 1993). Furthermore, squared factor loadings can give us the percentage of variance in each original variable that is explained by a factor.

Table 3

Definition of the factors yielded after extraction.

	Factor	Stronger correlations
1	Self-fulfilment in cooking	*Interest in cooking, self-fulfilment, interest in new recipes. Negative correlations with convenience aspects and snacking (1 item).*
2	Freshness of foods	*Freshness and taste aspects, smaller correlations with price vs quality and health. Negative correlation with convenience.*
3	Social occasions	*Importance of foods in social relations and events.*
4	Preference for organic foods	*Organic foods, health, product information and speciality shops.*
5	Hedonism	*Taste, self-fulfilment, social relations (1 item), health (1 item).*
6	Importance of ingredients	*Product information, health and speciality shops (2 items).*
7	Woman's domain	*Woman's task and negative correlation with shop enjoyment (2 items).*
8	Preference for familiar foods	*Security and negative correlations with novelty and new ways.*
9	Price consciousness	*Price and smaller correlation with price vs quality.*
10	Convenience	*Convenience and smaller negative correlations with items from enjoyment in shopping and cooking, interest in cooking, planning, health and freshness.*
11	Use of shopping list	*Shopping list and smaller correlations with planning (2 items) and shop enjoyment (1 item).*
12	Advertising influence[23]	*Attitude towards ads.*
13	Snacking	*Snacks vs meals, convenience and social events (1 and 2 items, respectively). Smaller negative correlations with items from shop enjoyment, shopping list, interest in cooking, novelty and health.*
14	Shopping joy	*Shopping enjoyment and smaller correlations with items from self-fulfilment and social events.*
15	Shopping expertise	*Speciality shops. Smaller correlations (1 item each) with planning, organic foods, social events, social relations (negative).*
16	Value-for-money	*Price vs quality, shopping list (1 item) and shop enjoyment (1 item).*
17	Shopping planning	*Planning and security (1 item).*
18	Naturalness of foods	*Health, new ways and novelty.*

4.2.2 Cluster and Discriminant Analysis

Five clusters were considered, after reviewing literature and the dendrogram results. 516 cases were considered valid and grouped in clusters, without replacing the missing values. Test results for Box's M indicate rejection of the null hypothesis of equal covariance between clusters, and Wilks' lambda suggests that there may be significant differences between group means (both on APPENDIX 9). Cluster interpretation and profiling is based

[23] Also includes "word-of-mouth" influence.

on each group's centroid, analyzing each canonical function's correlations with the 18 factors previously extracted. Cluster proposed designation, description and estimated dimension are offered, according to the outputs presented on APPENDIX 9.

Table 4

Dimension of each cluster found in the present sample.

Cluster	Young chefs	Uninterested	Demanding adventurers	Light naturalists	Green traditionalists
% of sample	32.2	19.4	26.7	14.3	7.4

- The young chefs

With the highest self-fulfilment in cooking, the members of this segment are the ones that give the biggest importance to freshness and social occasions. They care somewhat about pleasure and have some degree of involvement in the whole shopping process in general. Despite this, they clearly dislike advertising and are also not very adept of snacking.

- The uninterested food consumer

This type of consumers has considerably lower scores than anybody else on anything relating to cooking activities, social occasions and fresh food products. Their shopping is not very organised, they are careless about food composition or quality and not even convenience interests them very much.

- The demanding adventurers

Consumers belonging to this segment care significantly more about freshness and quality of ingredients than about convenience or pleasure. They are the most open-minded about new recipes or foods, as well as to advertising, and they regard the shopping list as a very useful tool. They get quite aware of price and, although they clearly dislike cooking, they are not happy about fast-food either. A significant part of this segment (around 74%) is of the female gender, clearly above sample average proportion.

- The light naturalists

These consumers appreciate freshness, (sensorial) pleasure and advertising. They are extremely adept of snacking and light-meals, as well as of familiar foods, as long as they display natural ingredients. They are the most practical about their food choices and do not particularly enjoy shopping. This segment scores high on the *value vs money* factor.

- The green traditionalists

Consumers in this segment are rather conservative (they score quite low on innovativeness items and regard meal shopping and cooking as woman's activities) and give more importance to knowing what they are eating than to the price/quality relation, indicating low price sensitivity. They are the most excited about organic foods and the ones that care the least about pleasure. With the exception of organic foods, they do not exhibit any strong preferences, not for fresh products, neither for natural ingredients. They seem quite meticulous and loyal about their choices, but they dislike the whole shopping process, indulging in snacking activities when necessary, but considering that meals should be planned in advance. Unlike the rest of the consumers, these are mostly male individuals (around 85 per cent of the sample).

4.3 FRL segments and functional food consumption

(H1) Different FRL segments have different consumption levels for whole grain cereals.

Confirmed. The null hypothesis was rejected for functional cereals (F = 0.732), indicating that for young Portuguese students, affiliation in a specific FRL segment can indeed be a possible determinant of consumption for this product[24] and supporting H1.

(H2) Different FRL segments have different consumption levels for probiotic yoghurts.

Not confirmed. Notwithstanding, ANOVA's null hypothesis was not rejected for probiotic yoghurts (F = 3.897), indicating that no statistically significant differences of consumption levels were found between FRL segments. H2 was unsupported.

(H3) Different FRL segments have different consumption levels for functional juices.

Not confirmed. Conversely, the young students' FRL failed confirmation as determinant of consumption for antioxidant and extra vitamin juices (F = 2.928). Thus, H3 was also refuted.

Using ANOVA as a test of means' equality across the five FRL segments, significant differences between any of the five clusters were measured. Confirmation of the hypothesised determinants was found only in the case of whole grain cereal consumption, although further explanation was still required to understand which segments display above or below average levels of consumption. Post-hoc testing was conducted for this effect, with Scheffe's test selected because of the unequal cluster sizes. Results demonstrate that all segments are significantly different from one another for whole grain cereal consumption.

[24] Complete test results presented in APPENDIX 10.

Going from heavier to lighter rates of cereal consumption, the correct segment order is: *Young chefs*, *Uninterested*, *Light naturalists*, *Demanding adventurers*, *Green traditionalists*.

4.4 Functional food attractiveness and consumption

(H4) Consumers with stronger beliefs about the Attractiveness of whole grain cereals have higher consumption frequencies.

Confirmed. Results show empirical confirmation of the significant explanation power that product-related consumer beliefs hold towards determining FF consumption frequency (r = 0.931). Furthermore, strong correlation between beliefs and behaviour was confirmed for beliefs of all three different types: attributes (A), consequences (C) and personal values (V)[25].

(H5) Consumers with stronger beliefs about the Attractiveness of probiotic yoghurts have higher consumption frequencies.

Confirmed. Results for functional yoghurts go in the same direction as for cereals (r = 0.932), with beliefs concerning A/C/V all testing as having β parameters significantly different from zero.

(H6) Consumers with stronger beliefs about the Attractiveness of functional juices have higher consumption frequencies.

Confirmed. Like the two above-mentioned hypotheses, regression results clearly support statements regarding A/C/V beliefs as strongly (and positively) correlated with consumption (r = 0.910).

[25] Complete test results offered in APPENDIX 11.

With respect to the independence of residual terms, no reasons to suspect any autocorrelation were found in this sample's results, with Durbin-Watson's statistic turning out close to 2.0 for all three hypotheses. Collinearity may be a problem, however, affecting interpretations about the exact nature of the relation between individual beliefs (attributes, consequences or values) and the dependent variable. In fact, for all three product categories tested, tolerance levels were high for beliefs concerning product attributes, but were quite lower for beliefs concerning consequences and values. In the present study, these results were not considered an obstacle for hypotheses verification, as what was under test, in the first place, were the global belief's strength for each product and its correlation with behaviour.

5 DISCUSSION AND CONCLUSIONS

5.1 Discussion

The alignment of product offerings with the needs and preferences of each food consumer segment has been pointed out as a priority, due to the increasing competition in the food sector and highly demanding decision processes undertaken by consumers nowadays. Because of this, further scientific research is recommended, one that allows a better understanding of what specific consumer groups value in each product category (van den Heuvel et al., 2007).

Therefore, the purpose behind this study was to investigate the motives driving Portuguese university students' consumption (or rejection) of functional food products.

A review of the literature points towards personal values and beliefs as important theoretical concepts to consider, when aiming to gain a better insight in consumer motivations and preferences. Motives and values have been described as stable and deep-seated levels of cognition, influencing people's perception and evaluation of objects or needs, and ultimately motivating behaviour altogether in choice situations, constituting the reason for pursuing a certain course of action (Brunsö, Scholderer and Grunert, 2004; Pieters, Baumgartner and Allen, 1995; Vermeir and Verbeke, 2004; Worsley and Skrzypiec, 1998).

In order to allow measurement of the actual influence of motives and values over consumer preferences, the need to connect personal values and situation-specific product perceptions and behaviour was identified by previous researchers, as these constructs often operate below the individual level of consciousness (Brunsö, Scholderer and Grunert, 2004; Geeroms, 2007; Scholderer, Brunsö and Grunert, 2002). Lifestyles have been proposed and succesfully tested by as such mediating construct (Bhaskaran and Hardley, 2002; Urala and Lähteenmäki, 2007).

Following the means-end approach to consumer behaviour, it has also been suggested that what motivates consumers are the self-relevant consequences of consumption and not the product itself (Gutman, 1982; Reynolds and Gutman, 1988). Hence, it is believed that a

product's attractiveness is as high as the consumer is able to link his/her perception of the product's characteristics and benefits with the attainment of his/her own goals and life values (Brunsö, Fjord and Grunert, 2002; Grunert, 2005). This approach has been widely adopted to reveal motivational determinants for consumer choice and behaviour (Grunert and Bech-Larsen, 2005; Zanoli and Naspetti, 2002).

Literature recommends that analysis of the desirability of a personal goal should be completed with a goal-relevance examination process, so that a goal associated with desirable consequences does not suddenly loose its attractiveness *"when scrutinized in the context of a competing goal"* (Bagozzi and Dholakia, 1999: 31).

The conceptual model proposed in the present study integrates the attractiveness of specific consumption objects (e.g. beliefs about functional food products) with the mental construct that tries to explain behaviour, by defining the consumer's priorities in terms of *ways of shopping*, *cooking methods*, *quality aspects*, *consumption situations* and *purchasing motives*, measuring its food-related lifestyle (FRL) and thus linking values to product perceptions or attitudes (Reid, Grunert, Li and Bruwer, 2000). Both major constructs (product attractiveness and FRL) have been successfully tested in past investigations and so are here examined as possible motivational determinants for consumption.

Considering the (already described) lack of available research addressing young students' food choice motivations and the apparent absence of similar marketing investigations in Portugal, an exploratory study was first undertaken in order to elicit the most common product beliefs perceived to be important by young functional food consumers, and to determine which functional food products should be included in the quantitative stage of the study, as suggested by authors (Grunert and Bech-Larsen, 2005).

Two qualitative research methods are described as the most appropriate for this objective and have often been used during similar investigations to support subsequent questionnaire design: laddering interview and focus group (Bourne and Jenkins, 2005; Dibley and Baker, 2001; Grunert and Grunert, 1995; Krueger, 1994; Pavel and Foster, 2005; Reynolds and Gutman, 1988).

Conclusions from exploratory work confirmed that a generic "functional foods" category was not recognised among participants, with *whole grain cereals*, *probiotic yoghurts* and

antioxidant fruit juices selected as the three most enjoyed functional foods, for both focus group and laddering interview participants. Therefore, these three products were selected for the questionnaire, with the product-related beliefs most often mentioned by students during exploratory work, used for measuring the product's attractiveness.

With respect to the quantitative stage of the study, findings suggest that for this student's sample (N = 596), although the lifestyle major construct may be influencing some dietary habits, the associations established with functional foods' consumption frequency were far from conclusive. Empirical confirmation of specific FRL segment membership as determinant of consumption was only found for whole grain cereals. In this case, results indicate that the members of the *young chef* segment eat whole grain cereals significantly more often than every other segment, followed by the *uninterested* food consumer.

A closer analysis suggests that the young consumer who is willing to eat whole grain cereals frequently has a somewhat disorganised shopping process, knows what he/she wants disregarding shopping lists or advertising, and has significantly below average price consciousness, not opting for the cheapest or most advertised brand of cereals. Economy and convenience may not be important values in these young students' life and very conservative consumers are probably not strong adopters of functional cereals.

But results from testing the relation between FRL segment membership and whole grain cereals consumption should be taken cautiously, as for other functional food products no relation as confirmed. It has not been demonstrate beyond doubt that FRL is a motivational determinant for consumption; for instance, young students may be too dependent of shopping choices that they do not control, as it is expectable that some (or even, most) of them may still be living with their families. Nevertheless, it can be assumed from the results that for these FRL segments, when the brand of cereals achieves positive acceptance by the consumer, has a huge probability of becoming their first choice, which translates into a very high consumption frequency.

As for beliefs about the product's attractiveness, findings clearly supported the working hypotheses that higher consumption frequencies should be found among consumers with stronger beliefs. The observed relationships between beliefs and behaviour were significant for all three functional food products and for all kinds of consumer belief (Attributes,

Consequences and Values), which further confirms previous findings (Grunert and Bech-Larsen, 2005), albeit focussing on a different population group.

For all three products, it seems like an essential condition for acceptance that the consumer can positively link specific product attributes (like having high-quality ingredients) with physical well-being benefits, helping the individual in his/her goal of having or maintaining a good health. But for whole grain cereals and antioxidant juices, it can be concluded that young students are only ready to adopt these products when they feel that it can help achieve both their health and pleasure personal goals. Only believing in the product's health claims does not seem to be enough to guarantee acceptance, unless the product is also perceived to be enjoyable and pleasing at a sensorial level.

While texture and extra fibre properties seem to be as important as taste for regular consumers of whole grain cereals, for antioxidant juice consumers the naturalness and pleasantness of taste may be the decisive qualities for perceiving the product as a way to help achieve their goals of having a good health, a sense of pleasure and harmony.

For probiotic yoghurts, correlations between consumption and believing in the product's health claims were also quite significant. But unlike the other two categories, results suggest that consumers with a higher motivation for these functional foods are not seeking to satisfy their hedonistic needs. Instead, they seem to value an independent and self-confident lifestyle and thus look for convenient, innovative high-quality food products that can help them to take care of their own health and well-being. Health claims, natural ingredients and a wholesome texture appear to be key attributes to confirm the young consumers' expectation of an yoghurt that helps them to satisfy their health goals.

5.2 Managerial implications and contributions

Previous investigations had suggested that the *functional component* present in the functional food product's ingredients constitutes an added value, but hardly determines the consumer choice by itself (Menrad, 2003). The present study further confirms this assumption, regarding young students' food choices, which suggests that other motives may be playing a

more significant role in influencing the food consumption routines of students in the Greater Lisbon area.

Elsewhere, research had already shown that younger consumers were unlikely to switch to functional foods as a major disease preventative initiative alone, with participants of previous studies not even considering functional food products as being part of the '*healthy foods'* category (Bhaskaran and Hardley, 2002). According to the research conducted by these authors, only one fifth of the young group of consumers reported that health attributes did influence their purchase decisions; taste, quality, price and convenience were the primary motives driving food consumption.

When reviewing other studies, conclusions seem to confirm that, although positive health properties can be an added value in a product, the assumption that maintaining everything equal in a specific product and adding health claims will increase results, should not be made by companies managing food brands (Bech-Larsen and Grunert, 2003). These authors established that - in Denmark, Finland and USA at least - several segments of the population base their perception of a food product's healthiness more on the nutritional qualities of the base-product, than on any type of health claims.

The authors arrived at the conclusion that, in some cases, health claims would even be counter-productive when used to enrich certain products, in situations where the enrichment and the product were not naturally associated in the consumer's mind (ibidem, 2003), therefore harming the base-product's *wholesome* image. So, the successful implementation of a "*healthy, but all other things equal*" sales proposition can be an impossible strategy.

At this point, it seems reasonable to argue that results from the present investigation could be used to support marketing positioning decisions regarding functional food brands and their respective communication strategies, when targeting populational groups with close resemblance to the young students group, as findings present several implications for the food industry. Hence, the results obtained with the students' sample seem to confirm findings from previous studies already described.

First of all, food marketers may indeed develop a positive health image to strengthen their functional brands, but should avoid a pure medical or clinical positioning, as other criteria seems to be vital for these consumers' decisions. Results obtained with the present sample

suggest that there might be a significant potential market to be explored in young students, who desire products that can fulfil their hedonistic and physical well-being needs simultaneously, but health claims alone will not necessarily guarantee success.

With effect, results indicate that for some functional food products – like whole grain cereals and antioxidant fruit juices – marketers should emphasize *sensorial* attributes at least as much as health claims. When targeting students, food producers must appeal to their *pleasure* and *harmony* values, as it can clearly enhance the demand for functional food products, and can otherwise lead to product rejection altogether.

On the other hand, results suggest that young consumer segments who dislike innovative food products or who display high levels of price consciousness should not be targeted. Therefore, according to findings, promoting product experimentation and delivering point-of-sale 'try-and-buy' activities may be more effective than massive hard-selling advertising investments for the target segments, without disregarding commercial opportunities in university cafeterias, snack-bars or restaurants.

Furthermore, for companies selling whole grain cereals, analysis points towards *texture* as a decisive product attribute, in order to generate consumer satisfaction, which should also not be underestimated by companies distributing or producing probiotic yoghurts. While extra fibre properties are a clue for building a healthiness perception concerning cereals, young consumers seem to relate a fresh, crisp texture with both pleasure expectations and confidence in the product's quality. Cereal marketers in Portugal should, according to results, focus on a sense of pleasure and well-being, reflected at a personal, hedonistic level, transmitting the message that their brand of cereals can help the young consumer to feel good about him/herself and suggesting both texture and taste as the key attributes confirming those quality expectations.

As for functional juice brands, results suggest that it can be effective to transmit a sense of well-being *around others*, building on the concept of (social) harmony and a pleasurable experience shared with others. Companies should emphasize both taste and naturalness of the product in their communication and promotional activities, as it seems reasonable to assume, according to results, that both attributes are strongly linked to the young consumer's value of pleasure. The naturalness of the fruit juice may even be more relevant to infer the

product's healthiness than any specific health claim, but taste will remain as the decisive criteria.

With respect to probiotic yoghurts, having conclusions from this research indicated that health claims do have a stronger relevance in the young consumer decision process for this product category, brand communications should transmit the notion that these products can help the consumer to satisfy its need of feeling physically well, presenting self-confident characters that take care of their own health. Independence and health are key personal values for the most promising segments of young consumers and both the product's properties and communication (including packaging) should help the target groups to make the association between the yoghurt's health claims, wholesome texture and the benefit of physical well-being (and, hence, consumer satisfaction).

Finally, it can also be suggested that (like healthiness) convenience is not enough of a stand-alone selling proposition for functional foods. Marketers should not neglect practical packaging or product usage, as they could be in a competitive disadvantage (particularly for products often consumed out of home, like yoghurts or juices), but mere convenience should not be the core benefit.

5.3 Academic contributions and recommendations for future research

The present work has demonstrated the existence of significant correlations between product attractiveness and consumption frequency, suggesting that beliefs about product attributes, consequences and relation to values can indeed be motivational determinants of consumer behaviour.

However, students may still be in the process of maturing their food-related lifestyle, resulting from which FRL items presented such low self-correlation levels (hence the high number of factors extracted); these findings warrant a systematic examination of the causes of such FRL data structure. Students may be too dependent of circumstances that they do not control (like monetary restrictions or depending of their families' food choices) or may still be building their individual identity as consumers, which might affect their dietary patterns, explaining some of the contradictions found when working with this population group. It

would be useful and desirable to test the same methodology with a wider range of food product categories, in order to examine if similar FRL patterns can be found and to confirm the explanation power of the 'product attractiveness' construct.

Future research is also needed to confirm the theoretically based hypotheses proposed in the present thesis, on which some light has hopefully been already shed here, but requiring that present results are compared with data collected from young non-student individuals or with young students from Universities located in other areas of Portugal.

Another interesting avenue for future research lies in applying the same conceptual model of consumer motivation proposed here, but to other population groups. Functional foods are globally identified as the highest growth food product category (Bech-Larsen and Grunert, 2003; Frewer, Scholderer and Lambert, 2003; Verbeke, 2005), and with an increasingly ageing population in most developed countries (Van der Zouwen, 2006), foods with health benefits are expected to increase even further its acceptance. Elderly segments and household food shopping decision-makers should constitute interesting groups for research.

Additionally, authors have argued that the motivation to act depends mainly on the value attached to the consequences of one's behaviour (Eccles and Wigfield, 2002). More work seems justifiable on how the links between expectancies and values affect consumer behaviour and choice. In spite of this, the present focus on beliefs, lifestyles and goals has definitely allowed motivation and consumer behaviour researchers to learn much about the reasons why individuals choose to engage (or not) in a certain direction.

5.4 Limitations and criticisms of the present research

Given that this sample is not representative of the global Portuguese student population, generalizations beyond the scope of the sample at hand are speculative. The present study was only conducted in Universities situated in the Greater Lisbon metropolitan area; future studies should consider testing these hypotheses with young students from other areas, as mentioned previously, before reaching any final conclusions relatively to the students' decision process or food preferences. Hence, the objective of this thesis was not to quantify the segments existent in the total Portuguese student population, but instead to understand

the motives driving functional food consumption, working with a mere portion of the student population.

Furthermore, factorial analysis to the FRL major construct extracted no less than eighteen factors, which can be considered excessive (particularly considering the low percentage of total variance explained), but as pointed out on a previous section of this thesis, the purpose for using this method was merely to explore and simplify the data, in order to apply the subsequent cluster and discriminant analyses, and test the different FRL segments for their functional food consumption levels.

Means-end chain theory presumes a threefold categorization of knowledge, with perceptions of product attributes, psychosocial consequences and values taken as units of knowledge, which has raised occasional concerns with its underlying psychological assumptions. Followers of this approach propose that the mental maps produced by the laddering technique represent intrapsychic processes; however, other authors have argued that this perspective takes for granted the existence of certain mental states and processes, without questioning its validity. According to Bagozzi and Dabholkar (2000), the presumption that the linkages (from attributes to consequences, all the way to personal values) in the laddering map represent inferences, as they actually exist in the minds of consumers, can be questioned. The argument is that mental processes are not open to self-awareness, but instead constitute subjective, post hoc interpretations of one's own patterns of behaviour.

Also, recent studies have reported situations where means-end relations run both ways (not only *Attributes » Consequences » Values*, but also vice-versa), demonstrating the non-hierarchical means-end structures as a real possibility, which further feeds the doubts about the hierarchicity assumption (van Rekom and Wierenga, 2007). According to these authors, MEC theory is definitely an appropriate approach for motivational studies of consumer behaviour, but an element in a MEC should be considered more important when it occupies a central position (hence the higher number of links to other elements), than when it holds a superior, more abstract position (like traditional MEC structures suggest). This line of thought has proposed MEC as a 'network' structure instead of an hierarchical, three-layered system of links, which may raise some criticism regarding the use of HVM diagrams as the key analytical tool. However, Pieters, Baumgartner and Allen (1995) had previously offered evidence suggesting that the knowledge obtained through analysis of consumer goals would not be as complete or thorough without the analysis of each MEC element (A-C-V) and its

respective links in a structural, hierarchical perspective, essential for the uncovering of motives behind consumption choices.

The matter of overemphasizing rational, cognitive processes in motivation (at the possible expense of affective or other processes), against which future investigators must be cautioned, has also generated some criticism, which has been offered during this thesis. In spite of this, the means-end chain approach is one of the most widely adopted for the assessment of the motives driving consumer decisions and choices (Bourne and Jenkins, 2005; Grunert and Bech-Larsen, 2005) and has been considered suitable for exploring the influence that life goals, values and needs exert over consumption behaviours (Gutman, 1982; Zanoli and Naspetti, 2002).

5.5 Final conclusions

Motivational research is a scientific field where precise conceptual definitions are still not fully accomplished and the boundaries between constructs are unclear. A complete, thorough theoretical framework is yet to be globally accepted, one that is able to comply with the practical requirements of consumer research.

In spite of the limitations recognised in the previous section, this thesis hopes to address this issue, by offering a modest contribution, using objective, measurable research tools to analyse the relation between behaviour and complex, abstract concepts like motives and values.

For this effect, it focuses on the most aware, well-educated segment of the next generation of consumers – the young University students – and on a remarkably dynamic and innovative food concept, one that will probably continue to generate substantial profit growth for years to come, for food producers and distributors alike, the *functional foods* product category.

By aiming to gain a better comprehension of the motives driving functional food consumption among Portuguese students, this investigation addresses issues where authors have found surprisingly little scientific research available that can effectively support food companies in their marketing decisions (van Kleef, van Trijp and Luning, 2005; Verbeke, 2005).

Conclusions confirm previous research conducted with several population groups across other countries, demonstrating that young Portuguese students are also motivated by the consequences or benefits resulting from product usage and by the link established between such self-relevant consequences and the consumer personal, life values.

In the process of conducting an exploratory stage, one able to elicit the individual beliefs that students have regarding each functional food product used in this study, a three-layer chain structure has been identified, connecting product attributes, consequences and personal values. Results from the quantitative stage of the study confirmed that the higher the evaluation students make about each one of these three elements, for a certain product, the most attractive that product is for actual consumption. Hence, the means-end chain model has therefore been found suitable for explaining the motives behind students' consumption of functional foods.

Finally, results and implications offered here should not be considered merely a starting point, as product-related beliefs and value-based approaches (like the Food-Related Lifestyles construct) have clearly multiple possible applications and a vast usefulness for explaining consumer choices, across all kinds of product categories, and for several population groups. And considering current competitive pressures and constant changes to consumer trends, this kind of understanding of the motives behind the target segments' choices may be the difference between building brands based on sustainable premises or simply adding yet more items to the already long list of new-product failures.

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7 APPENDICES

7.1 Appendix 1: Shortlist of functional foods used during laddering interviews.

Functional Food category	**Most common brands in Portugal**
Probiotic yoghurts	*Danone Activia, Danone Actimel*
Whole grain bread or toast	*(Not applicable)*
High-fibre or whole grain cereals	*Kellogg's All-Bran*
Cholesterol lowering foods	*Becel (margarine, yoghurt and oils)*
Fruit juices with added vitamins (and/or antioxidant properties)	*Compal Vital, Compal Essencial, Knorr Vie*
Cookies with digestive claims	*Triunfo Proalimentar*
Milk with added supplements	*Mimosa Extra Cálcio, Mimosa Digestão Fácil*
Soya milk	*(Not applicable)*

7.2 Appendix 2: Broad content codes and their respective frequencies.

N = 30	**Total**	Cereals	Cholesterol and others	Bread	Soya products	Yoghurt	Juice
Attributes							
A1_Healthy ingredients, quality product	**24**	5	2	4	2	3	8
A2_Pleasant taste	**19**	4	1	4		2	7
A3_Texture	**18**	7		2	2	4	3
A4_Natural ingredients, wholesome prod.	**17**	2		4	1	3	7
A5_Pure and natural taste	**13**		2		1	1	9
A6_Lightness	**12**		2	3	2	1	4
A7_Extra fibre	**11**	7		4			
A8_Exotic, original	**9**			1		2	6
A9_Convenient packaging	**9**	1		1	2	1	2
A10_With health claim	**7**	1	1			4	1
A11_Low salt or sugar	**6**	2					4
A12_Recommended by doctors	**4**	1	2			1	
A13_Fresh (texture)	**2**	2					
A14_Easy to find brand	**1**						1
Consequences							
C1_Physical well-being	**28**	7		4	2	6	9
C2_Enjoyment	**23**	5		4	2	3	9
C3_Prevent disease	**13**	3	2	4			4
C4_Timesaving	**12**	2			2	3	5
C5_Easy to carry or drink/eat	**11**				2	6	3
C6_Suits conscience, avoids worries	**11**	2	2	2	2	2	1
C7_Good nutrition	**9**	1		4			4

	Total	Cereals	Cholesterol and others	Bread	Soya products	Yoghurt	Juice
C8_Perform well at work, education	**8**	3	1		2	1	1
C9_Avoid weight-gain	**8**	4		4			
C10_Avoid saturation	**7**	1		2		1	3
C11_Good digestion	**6**			3	2	1	
C12_Discover new things	**5**			1		4	
C13_Take care of oneself	**5**			2		2	1
C14_Efficient, quick effect	**3**	1				2	
C15_Able to consume more often	**2**					2	
C16_Avoid waste	**2**						2
C17_Does not need butter	**1**			1			
C18_Compensates excesses	**1**	1					
Values							
V1_Health	**30**	7	2	4	2	6	9
V2_Pleasure	**22**	7	2	4			9
V3_Feel good about one-self	**19**	7		4	2	6	2
V4_Independence, freedom	**18**	4	2			6	6
V5_Social and family harmony	**18**	3			2	6	7
V6_Self-confidence/ respect/fulfillment	**17**	4	2		2	6	3
V7_Joy, happiness, excitement	**16**			4	2	5	5
V8_Personal development and success	**13**	4				5	4
V9_Convenience	**9**					5	4
V10_Balance, serenity	**4**						4

7.3 Appendix 3: Global Implication Matrix for functional food products.

	A1	A2	A3	A4	A8	A10	A13	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
A1		1		1				11,2	2	3			0,4	3		0,1	0,4	1		0,1	1			0,1		2,2	0,3	0,4	0,1	0,2	0,1	0,1	0,3	0,1	0,2
A2					1				7		0,1		0,1		1,1	0,1			1,1					1		0,1	7,5			0,1	0,1	1,3	0,1	0,2	
A3		1	2				1		7		0,1	3,2						1								0,3	1,7		0,4	0,3	0,1	0,3		0,1	0,2
A4		1		2		1		2,3	3,1	1	0,1		1,1	0,1		1	0,2		0,1			0,1				0,7	0,4	0,3	0,1	0,3		0,3	0,5	0,3	
A5		3		1				4,1	1	0,1	0,2		0,2	1,1				1		1						1,9	1,2	0,1		0,1				0,2	
A6				1				3,1	1	0,1			0,1	1			0,1	2								0,3	0,1	1,3		0,1	0,2	0,1			
A7								2		2			1,1	1		2									1	0,1 1		0,1				0,2			
A8		2							2,2						4				0,2								0,2					0,5		0,1	
A9			1						0,1		0,3	5	0,3	1		0,1	0,2						0,1				0,1		0,1	0,1		0,1	0,1		
A10	1							1,1		2			1,1							1						0,3		0,1	0,1		0,2	0,2			
A11								1	1						0,1											0,1									
A12								2		1							1									0,2		0,1			0,2				
A13																											2								
A14											1																						0,1		
C1								2		1			1,1				4,3									12,3		8,1	0,1	0,4	1,1	0,2	0,3	1	0,2
C2								0,1							1		0,1					1				1	13	1			1	0,4	0,1	0,1	
C3													2							1						9,3			2		1				1
C4													2				1,1											0,1	1	2			2	2	
C5											3,2	3	0,2				0,1	1					1						1,3	1,3			0,1	1,1	
C6																	0,1									1		1		1		3			1
C7								1			1		0,1			1		1								2,4			0,2	0,1		0,1	0,1	0,2	0,2
C8									1										2							1	0,1					1			
C9								1			1		0,2				0,1				1					0,1		1,2				0,1			
C10																													1		1		2,1		
C11								2		1			0,1													2,3		0,2	0,2	0,2	0,1	1			0,2
C12								0,1									0,1					0,1										0,1			
C13																										1		1			0,1				
C14								1					1				0,1											1,1			0,1				
C16											1																					0,1			
C17													0,1			1																0,1			
C18																										1									
V2																																3			
V3													1				1									2				2,1	1,1	3	1		1
V4																										1									
V6																																1			
V7																														1	1	1			
V8																															1				
V10																										1									

7.4 Appendix 4: Focus group script and materials.

Opening	*Please tell us your name, age and university.*
Introduction	*What does it mean to you to have a "healthy lifestyle"?*
Transition	*To what length do you consider a good diet as an important part of having a good health?*
Key-question	*Please go back to the time when healthy eating habits didn't even cross your mind. Maybe your eating habits suffered some changes recently, as you joined the university. What are/were the main barriers in following a "healthy diet"?*
	And what are/were the main factors favouring good eating habits?
	(Pause to show functional food list – see below - and briefly explain the definition of 'functional foods')
Transition	*Are any of these products familiar to you? Have you tried some of them? Do you like any of them?*
Key-question	*What would motivate you to try some of these products more often?*
Conclusion	*We are currently investigating motives behind functional food choice by university students. Do you care to add anything else that could help us?*

Probiotic yoghurts

Whole grain bread or toast

High-fibre/whole grain cereals

Cholesterol lowering foods

Fruit juices with added vitamins (and/or antioxidant properties)

Cookies with digestive claims

Milk with added supplements or soya milk

7.5 Appendix 5: Questionnaire items and scales.

Food-Related Lifestyles - *From "completely disagree" (1) to "completely agree" (7).*

Ways of Shopping

Importance of product information

To me product information is of high importance. I need to know what the food product contains

I compare product information labels to decided which brand to buy

I compare labels to select the most nutritious food

Attitudes towards advertising

I have more confidence in products that I have seen advertised than in unadvertised products.

I am influenced by what people say about a food product

Information from advertising helps me to make better buying decisions

Enjoyment from shopping

Shopping for food does not interest me at all

Shopping for food is an entertaining activity[26]

I just love shopping for food

Speciality shops

I like buying products in speciality stores where I can get expert advice

I do not see any reason to shop in speciality food stores

I like to know what I am buying so I often ask questions in stores where I shop for food

Price criteria

I notice when products I buy regularly change in price

I look for ads in the newspaper and plan to take advantage of them when I go shopping

I always check prices, even on small items

[26] The original questionnaire had "Shopping for food is like a game to me".

Shopping list

Usually I don't decide what to buy until I'm in the shop

Before I go shopping for food I make a list of everything I need

I make a shopping list to guide my food purchases

Cooking method

Interest in cooking

I don’t like spending too much time on cooking

I like to have ample time in the kitchen (for cooking/preparing meals)

Cooking is a task that is best over and done with

Looking for new ways

I look for ways to prepare unusual meals

Recipes and articles on food from other culinary (cooking) traditions make me want to experiment in the kitchen

I like to try out new recipes

Convenience

We use a lot of ready-to-eat foods in our household

Frozen foods account for a large part of the food products I use in our household

I use a lot of mixes, for instance baking mixes and powder soups

Planning

I always plan what we are going to eat a couple days in advance

What we are going to have for supper is very often a last minute decision

Cooking needs to be planned in advance

Woman’s task

It is the woman’s responsibility to keep the family healthy by serving a nutritious diet

Nowadays the responsibility for shopping & cooking ought to lie just as much with the husband as with the wife

I consider the kitchen to be the women’s domain

Purchasing motives

Self-fulfillment in food

Being praise for my cooking adds a lot to my self-esteem

I am an excellent cook

Eating is a matter of touching, smelling, tasting and seeing, all the senses are involved. It is a very exciting sensation

Security

I only buy & eat foods which are familiar to me

I dislike anything that might change my eating habits

A familiar dish gives me a sense of security

Social relationships

Dining with friends is an important part of my social life

Over a meal one have a lovely chat

When I serve a dinner to friends, the most important thing that we are together

Quality aspects

Health

To me the naturalness of the food I buy is an important quality

I try to avoid food products with additives

I prefer to buy natural products i.e. products without preservatives

Price/quality relationship

It is important for me to get quality for all my money

I compare prices between product variants (i.e. various brands of same product) in order to get the best value for money

I always try to get the best quality for the best price

Novelty

Well know recipes are indeed the best

I love to try recipes from foreign countries

I like to try new foods that I have never tasted before

Organic

I make a point of using organic food products

I always buy organically grown food products if I have the opportunity

I don’t mind paying a premium for organic products

Taste

Enjoying the taste of food products is important to me when I am eating

It is important to me to be able to eat delicious food on weekdays as well as weekends

I enjoy a good meal

Freshness

I prefer fresh products to canned or frozen products

It is important to me that food products are fresh

I prefer to buy meat and vegetables fresh rather than frozen

I prefer to buy meat and vegetables fresh rather than canned

Consumption situations

Snacks vs meals

I eat before I get hungry which means I am never hungry at mealtimes

In our house, nibbling has taken over and replaced set eating hours

I eat whenever I feel the slightest bit hungry

Social event

Going out for dinner is a regular part of our eating habits

I enjoy going out to dinner with my family and friends

We often get together with friends to enjoy an easy-to-cook casual dinner

Attractiveness of Functional Foods - *From "extremely unlikely" (1) to "extremely likely" (7).*

- Whole grain cereals (ex. Kellogg's All-Bran, Nestlé Fitness)

For me, buying whole grain cereals, would mean that I would get extra fibre (A)

For me, buying whole grain cereals, would mean that I would get cereals with a fresh crispy texture (A)

For me, buying whole grain cereals, would mean that I would get cereals with healthy ingredients (A)

For me, buying whole grain cereals, would mean that I would get cereals with a pleasant taste (A)

For me, buying whole grain cereals, would mean that I have physical well-being (C)

For me, buying whole grain cereals, would mean that I have enjoyment (C)

For me, buying whole grain cereals, would mean that I avoid weight-gain (C)

For me, buying whole grain cereals, would mean that I have a good health (V)

For me, buying whole grain cereals, would mean that I have pleasure (V)

For me, buying whole grain cereals, would mean that I feel good about myself (V)

- Probiotic yoghurts (ex. Danone Actimel, Activia)

For me, buying probiotic yoghurts, would mean that I would get a wholesome texture (A)

For me, buying probiotic yoghurts, would mean that I would get a yoghurt with health benefits (A)

For me, buying probiotic yoghurts, would mean that I would get a quality product (A)

For me, buying probiotic yoghurts, would mean that I would get a yoghurt with natural ingredients (A)

For me, buying probiotic yoghurts, would mean that I have physical well-being (C)

For me, buying probiotic yoghurts, would mean that it is easy to carry or drink (C)

For me, buying probiotic yoghurts, would mean that I discover new things (C)

For me, buying probiotic yoghurts, would mean that I have a good health (V)

For me, buying probiotic yoghurts, would mean that I have my independence (V)

For me, buying probiotic yoghurts, would mean that I feel self-confident (V)

- Antioxidant / added vitamin fruit juices (ex. Compal Vital)

For me, buying antioxidant fruit juices, would mean that I would get a juice with pure natural taste (A)

For me, buying antioxidant fruit juices, would mean that I would get a quality product (A)

For me, buying antioxidant fruit juices, would mean that I would get a juice with natural ingredients (A)

For me, buying antioxidant fruit juices, would mean that I would get a juice with a pleasant taste (A)

For me, buying antioxidant fruit juices, would mean that I have physical well-being (C)

For me, buying antioxidant fruit juices, would mean that I have enjoyment (C)

For me, buying antioxidant fruit juices, would mean that I save time (C)

For me, buying antioxidant fruit juices, would mean that I have a good health (V)

For me, buying antioxidant fruit juices, would mean that I have pleasure (V)

For me, buying antioxidant fruit juices would mean that I am in harmony with others (family, friends) (V)

Consumption of Functional Foods - *"I don't use" (1); "A few times a year" (2); "A few times a month" (3); "Once a week" (4); "A couple of times a week" (5); "Daily" (6) and "I don't know" (7).*

Whole grain cereals

Probiotic yoghurts

Antioxidant / added vitamin fruit juices

Personal information

Gender (M/F)

Age

7.6 Appendix 6: Questionnaire (Portuguese version).

The complete questionnaire follows in the next pages, as originally presented to respondents.

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Os dados recolhidos são anónimos e para uso puramente estatístico. Por favor, leia com atenção cada frase e assinale com X o seu grau de concordância com a mesma. Muito obrigado pela sua colaboração.

Estilos de Vida Alimentares

	Discordo totalmente						Concordo totalmente
	1	2	3	4	5	6	7
Estilos de Compra							
1. Para mim, a informação sobre o produto é de elevada importância. Preciso de saber o que o alimento contém.	__	__	__	__	__	__	__
2. Eu comparo as etiquetas informativas para decidir que marca comprar.	__	__	__	__	__	__	__
3. Eu comparo as etiquetas informativas para seleccionar os alimentos mais nutritivos.	__	__	__	__	__	__	__
4. Eu tenho mais confiança em produtos que tenha visto na publicidade do que nos não publicitados.	__	__	__	__	__	__	__
5. Eu sou influenciado(a) por aquilo que as pessoas dizem sobre um produto alimentar.	__	__	__	__	__	__	__
6. A informação na publicidade ajuda-me a tomar melhores decisões de compra.	__	__	__	__	__	__	__
7. Fazer compras alimentares não me interessa de todo.	__	__	__	__	__	__	__
8. Fazer compras alimentares é uma actividade divertida.	__	__	__	__	__	__	__
9. Eu adoro comprar comida.	__	__	__	__	__	__	__
10. Eu gosto de comprar produtos em lojas da especialidade onde possa obter o conselho de um perito.	__	__	__	__	__	__	__
11. Não vejo qualquer razão para fazer compras em lojas alimentares da especialidade.	__	__	__	__	__	__	__
12. Eu frequentemente faço perguntas nas lojas onde compro comida, porque gosto de saber o que estou a comprar.	__	__	__	__	__	__	__
13. Eu reparo quando os produtos mudam regularmente de preço.	__	__	__	__	__	__	__
14. Eu procuro promoções e faço planos para as aproveitar quando vou às compras.	__	__	__	__	__	__	__
15. Eu confirmo sempre os preços, mesmo em pequenas coisas.	__	__	__	__	__	__	__
16. Normalmente eu não decido o que comprar senão quando estou na loja.	__	__	__	__	__	__	__
17. Antes de ir às compras, eu faço uma lista de tudo que preciso.	__	__	__	__	__	__	__
18. Eu faço uma lista para orientar as minhas compras alimentares.	__	__	__	__	__	__	__
Métodos Culinários							
19. Eu não gosto de perder demasiado tempo a cozinhar.	__	__	__	__	__	__	__
20. Eu gosto de ter tempo à vontade na cozinha (para cozinhar ou preparar refeições).	__	__	__	__	__	__	__
21. Cozinhar é uma tarefa que é melhor despachar e terminar.	__	__	__	__	__	__	__

	Discordo totalmente						Concordo totalmente
	1	2	3	4	5	6	7
22. Eu procuro formas de preparar refeições invulgares.	—	—	—	—	—	—	—
23. Receitas e artigos sobre outras tradições culinárias fazem-me ter vontade de fazer experiências na cozinha.	—	—	—	—	—	—	—
24. Eu gosto de experimentar novas receitas.	—	—	—	—	—	—	—
25. Utilizo/utilizamos muitas refeições pré-cozinhadas em casa.	—	—	—	—	—	—	—
26. Os alimentos congelados representam uma grande parte da alimentação lá de casa.	—	—	—	—	—	—	—
27. Utilizo/utilizamos muito produtos já feitos, como por exemplo sopas em pó.	—	—	—	—	—	—	—
28. Planeio/planeamos sempre, alguns dias antes, o que vou/vamos comer.	—	—	—	—	—	—	—
29. O que vou/vamos comer ao jantar é muitas vezes uma decisão em cima da hora.	—	—	—	—	—	—	—
30. Cozinhar precisa de ser planeado com antecedência.	—	—	—	—	—	—	—
31. É responsabilidade da mulher manter a família saudável preparando refeições nutritivas.	—	—	—	—	—	—	—
32. Hoje em dia, a responsabilidade pelas compras e pela culinária deveria ser tanto do marido como da mulher.	—	—	—	—	—	—	—
33. Considero a cozinha um domínio da mulher.	—	—	—	—	—	—	—
Motivações de Compra							
34. Ser elogiado(a) por aquilo que cozinho ajuda muito a minha auto-estima.	—	—	—	—	—	—	—
35. Sou um(a) excelente cozinheiro(a).	—	—	—	—	—	—	—
36. Comer é uma questão de tocar, cheirar, saborear e sentir, todos os sentidos estão envolvidos. É uma sensação muito estimulante.	—	—	—	—	—	—	—
37. Eu só compro e como alimentos que me sejam familiares.	—	—	—	—	—	—	—
38. Eu não gosto de nada que possa alterar os meus hábitos alimentares.	—	—	—	—	—	—	—
39. Um prato que me seja familiar dá-me uma sensação de segurança.	—	—	—	—	—	—	—
40. Jantar com amigos é uma parte importante da minha vida social.	—	—	—	—	—	—	—
41. Durante a refeição, têm-se conversas fascinantes.	—	—	—	—	—	—	—
42. Quando sirvo um jantar aos amigos, a coisa mais importante é estarmos juntos.	—	—	—	—	—	—	—
Aspectos de Qualidade							
43. Para mim, o carácter natural da comida que compro é uma qualidade importante.	—	—	—	—	—	—	—
44. Eu tento evitar alimentos com aditivos.	—	—	—	—	—	—	—
45. Eu prefiro comprar produtos naturais (produtos sem conservantes).	—	—	—	—	—	—	—

	Discordo totalmente						Concordo totalmente
	1	2	3	4	5	6	7
46. É importante para mim obter qualidade com o dinheiro que gasto.	—	—	—	—	—	—	—
47. Eu comparo preços, entre marcas do mesmo tipo de produto, de forma a obter o melhor valor pelo meu dinheiro.	—	—	—	—	—	—	—
48. Eu tento sempre ter a melhor qualidade ao melhor preço.	—	—	—	—	—	—	—
49. As receitas bem conhecidas são sem dúvida as melhores.	—	—	—	—	—	—	—
50. Eu adoro provar receitas de países estrangeiros.	—	—	—	—	—	—	—
51. Eu gosto de provar novos alimentos que nunca tinha provado antes.	—	—	—	—	—	—	—
52. Eu faço questão de usar produtos biológicos.	—	—	—	—	—	—	—
53. Eu compro sempre produtos de agricultura biológica, quando tenho oportunidade.	—	—	—	—	—	—	—
54. Eu não me importo de pagar mais por produtos biológicos.	—	—	—	—	—	—	—
55. Apreciar o sabor dos alimentos é importante para mim quando como.	—	—	—	—	—	—	—
56. É importante para mim poder comer refeições deliciosas tanto de semana como ao fim-de-semana.	—	—	—	—	—	—	—
57. Eu aprecio uma boa refeição.	—	—	—	—	—	—	—
58. Eu prefiro produtos frescos a produtos enlatados ou congelados.	—	—	—	—	—	—	—
59. É importante para mim que os alimentos sejam frescos.	—	—	—	—	—	—	—
60. Eu prefiro comprar carne e legumes frescos do que congelados.	—	—	—	—	—	—	—
61. Eu prefiro comprar carne e legumes frescos do que enlatados.	—	—	—	—	—	—	—
Situações de Consumo							
62. Eu como a qualquer hora, o que significa que nunca tenho fome às refeições.	—	—	—	—	—	—	—
63. Lá em casa, petiscar substituiu as horas fixas de refeição.	—	—	—	—	—	—	—
64. Eu como sempre que sinto a mais pequena ponta de fome.	—	—	—	—	—	—	—
65. Jantar fora é uma parte comum dos meus hábitos alimentares.	—	—	—	—	—	—	—
66. Eu aprecio jantar fora com a minha família ou amigos.	—	—	—	—	—	—	—
67. Junto-me com frequência com amigos para desfrutar de um jantar prático de preparar.	—	—	—	—	—	—	—

Assinale com X a sua opinião, mesmo que não consuma os produtos em causa.

Atractividade dos Alimentos Funcionais

	Extremamente improvável						Extremamente provável
	1	2	3	4	5	6	7
Cereais integrais *(ex. Kellogg's All-Bran, Nestlé Fitness)*							
1. Para mim, comer cereais integrais significa comer cereais com extra fibra.	__	__	__	__	__	__	__
2. Para mim, comer cereais integrais significa comer cereais com uma textura estaladiça.	__	__	__	__	__	__	__
3. Para mim, comer cereais integrais significa comer cereais com ingredientes saudáveis.	__	__	__	__	__	__	__
4. Para mim, comer cereais integrais significa comer cereais com um sabor agradável.	__	__	__	__	__	__	__
5. Para mim, comer cereais integrais significa ter bem-estar físico.	__	__	__	__	__	__	__
6. Para mim, comer cereais integrais significa gostar do que como.	__	__	__	__	__	__	__
7. Para mim, comer cereais integrais significa evitar ganhar peso.	__	__	__	__	__	__	__
8. Para mim, comer cereais integrais significa ter uma boa saúde.	__	__	__	__	__	__	__
9. Para mim, comer cereais integrais significa ter prazer.	__	__	__	__	__	__	__
10. Para mim, comer cereais integrais significa sentir-me bem comigo(a) mesmo(a).	__	__	__	__	__	__	__
Iogurtes com ácidos activos *(ex. Danone Actimel, Activia)*							
1. Para mim, consumir iogurtes com ácidos activos significa consumir iogurtes com uma textura genuína.	__	__	__	__	__	__	__
2. Para mim, consumir iogurtes com ácidos activos significa consumir iogurtes com benefícios de saúde.	__	__	__	__	__	__	__
3. Para mim, consumir iogurtes com ácidos activos significa consumir um produto de alta qualidade.	__	__	__	__	__	__	__
4. Para mim, consumir iogurtes com ácidos activos significa consumir ingredientes naturais.	__	__	__	__	__	__	__
5. Para mim, consumir iogurtes com ácidos activos significa ter bem-estar físico.	__	__	__	__	__	__	__
6. Para mim, consumir iogurtes com ácidos activos significa ter um produto fácil de transportar e de ingerir.	__	__	__	__	__	__	__
7. Para mim, consumir iogurtes com ácidos activos significa descobrir coisas novas.	__	__	__	__	__	__	__
8. Para mim, consumir iogurtes com ácidos activos significa ter uma boa saúde.	__	__	__	__	__	__	__
9. Para mim, consumir iogurtes com ácidos activos significa ser independente.	__	__	__	__	__	__	__
10. Para mim, consumir iogurtes com ácidos activos significa sentir-me auto-confiante.	__	__	__	__	__	__	__

Sumos antioxidantes/com vitamina extra *(ex. Compal Vital)*	Extremamente improvável						Extremamente provável
	1	2	3	4	5	6	7
1. Para mim, beber sumos antioxidantes significa beber um sumo com sabor puro.	__	__	__	__	__	__	__
2. Para mim, beber sumos antioxidantes significa beber um produto de alta qualidade.	__	__	__	__	__	__	__
3. Para mim, beber sumos antioxidantes significa beber um sumo com ingredientes naturais.	__	__	__	__	__	__	__
4. Para mim, beber sumos antioxidantes significa beber um sumo com um sabor agradável.	__	__	__	__	__	__	__
5. Para mim, beber sumos antioxidantes significa ter bem-estar físico.	__	__	__	__	__	__	__
6. Para mim, beber sumos antioxidantes significa gostar do que bebo.	__	__	__	__	__	__	__
7. Para mim, beber sumos antioxidantes significa poupar tempo.	__	__	__	__	__	__	__
8. Para mim, beber sumos antioxidantes significa ter uma boa saúde.	__	__	__	__	__	__	__
9. Para mim, beber sumos antioxidantes significa ter prazer.	__	__	__	__	__	__	__
10. Para mim, beber sumos antioxidantes significa estar em harmonia com os outros (família, amigos).	__	__	__	__	__	__	__

Consumo de Alimentos Funcionais

Por favor, indique com X a frequência aproximada com que consome habitualmente cada um destes produtos.

	Não consumo	Algumas vezes por ano	Algumas vezes por mês	Uma vez por semana	Algumas vezes por semana	Diaria-mente	Não sei
Cereais integrais	☐	☐	☐	☐	☐	☐	☐
Iogurtes com ácidos activos	☐	☐	☐	☐	☐	☐	☐
Sumo antioxidante/vitamina extra	☐	☐	☐	☐	☐	☐	☐

Dados Pessoais

Sexo M___ F___ Idade _____ anos

(Fim do questionário)

7.7 Appendix 7: Sample behavioral characteristics.

Self-reported consumption frequency, in percentage, for functional food products.

	Cereals	Yoghurts	Juices
I don't know	0,3	1,8	0,8
I don't use	20,3	17,3	9,9
A few times a year	15,3	14,1	14,8
A few times a month	16,8	21,6	25,2
Once a week	3,5	9,2	10,2
A couple of times a week	24,2	20,8	27,2
Daily	19,0	13,9	11,1

7.8 Appendix 8: Results from KMO, Bartlett's test and Factor Analysis.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,801
Bartlett's Test of Sphericity	Approx. Chi-Square	14967,255
	df	2211
	Sig.	,000

Total Variance Explained

	Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %
1	4,128	6,162	6,162
2	3,145	4,694	10,856
3	2,961	4,420	15,276
4	2,873	4,288	19,564
5	2,611	3,897	23,461
6	2,540	3,790	27,252
7	2,519	3,759	31,011
8	2,499	3,729	34,740
9	2,433	3,632	38,372
10	2,420	3,613	41,984
11	2,204	3,289	45,274
12	2,132	3,182	48,455
13	2,077	3,099	51,555
14	1,987	2,965	54,520
15	1,933	2,885	57,405
16	1,929	2,879	60,284
17	1,819	2,715	62,999
18	1,625	2,426	65,425

Extraction Method: Principal Component Analysis.

Communalities

	Initial	Extraction
Product Info	1,000	,643
Product Info	1,000	,759
Product Info	1,000	,753
Attitude Ads	1,000	,723
Attitude Ads	1,000	,637
Attitude Ads	1,000	,684
Shop enjoyment	1,000	,535
Shop enjoyment	1,000	,756
Shop enjoyment	1,000	,810
Speciality shops	1,000	,766
Speciality shops	1,000	,647
Speciality shops	1,000	,659
Price	1,000	,537
Price	1,000	,606
Price	1,000	,528
Shopping list	1,000	,517
Shopping list	1,000	,882
Shopping list	1,000	,876
Interest in cooking	1,000	,660
Interest in cooking	1,000	,586
Interest in cooking	1,000	,679
New ways	1,000	,665
New ways	1,000	,727
New ways	1,000	,657
Convenience	1,000	,770
Convenience	1,000	,758
Convenience	1,000	,656
Planning	1,000	,668
Planning	1,000	,685
Planning	1,000	,555
Woman's task	1,000	,747
Woman's task	1,000	,745
Woman's task	1,000	,711
Self-fulfillment	1,000	,454
Self-fulfillment	1,000	,561
Self-fulfillment	1,000	,498
Security	1,000	,593
Security	1,000	,646
Security	1,000	,534
Social relations	1,000	,697
Social relations	1,000	,617
Social relations	1,000	,528
Health	1,000	,622
Health	1,000	,580
Health	1,000	,663
Price vs Quality	1,000	,606
Price vs Quality	1,000	,673
Price vs Quality	1,000	,634
Novelty	1,000	,435
Novelty	1,000	,647
Novelty	1,000	,646
Organic foods	1,000	,737
Organic foods	1,000	,780
Organic foods	1,000	,679
Taste	1,000	,633
Taste	1,000	,605
Taste	1,000	,659
Freshness	1,000	,643
Freshness	1,000	,740
Freshness	1,000	,733
Freshness	1,000	,715
Snacks vs Meals	1,000	,596
Snacks vs Meals	1,000	,584
Snacks vs Meals	1,000	,597
Social event	1,000	,589
Social event	1,000	,526
Social event	1,000	,605

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Product Info	-,001	,063	,028	,151	,031	,750	-,029	-,028	,065	,014	,021	-,057	-,053	,078	,091	,138	,056	,088
Product Info	,014	,042	,063	,102	,010	,859	,038	-,025	,112	,058	,035	,031	,072	,015	,125	,041	,021	,009
Product Info	,057	,077	-,011	,157	-,017	,829	-,017	,009	,122	,041	,103	,067	,041	,087	,058	-,026	,014	,087
Attitude Ads	-,053	,047	,010	,030	-,042	,056	,157	,073	-,001	,027	-,049	,781	,095	,044	-,167	-,086	,095	-,033
Attitude Ads	,011	-,033	,007	-,070	,095	-,023	-,041	,003	-,025	,172	-,024	,732	,046	-,037	,170	,011	-,053	,085
Attitude Ads	-,067	,003	,107	,006	,025	,012	,043	,087	,110	,106	-,040	,761	-,018	,008	-,025	,149	,043	-,112
Shop enjoymer	,038	,059	,052	-,108	-,132	,075	-,227	-,118	-,062	-,117	-,065	-,127	-,200	,505	,009	,325	,013	,005
Shop enjoymer	,194	-,014	,040	,079	,065	,115	-,161	,022	,157	,066	,137	,030	,029	,778	,016	-,050	,074	,058
Shop enjoymer	,255	,019	,015	,007	,138	,066	-,061	,001	,119	,045	,073	,042	,081	,824	,049	-,032	,092	,018
Speciality shop	,073	,167	,128	,201	,007	,208	,181	,077	,134	,040	,090	-,011	,075	,128	,729	-,023	-,002	,067
Speciality shop	,051	,059	,041	,123	,008	,049	-,094	-,138	-,078	-,061	,032	-,045	-,071	-,131	,720	,045	,127	-,049
Speciality shop	,123	,023	,070	,223	-,031	,185	,051	,102	,234	,060	,108	,063	,090	,196	,604	-,015	,052	,194
Price	,080	-,052	,027	,030	,057	,091	,008	,104	,714	-,027	-,009	-,007	-,029	,106	,038	,154	-,029	,018
Price	,077	,042	,020	-,038	,017	,102	,060	,097	,700	,047	,168	,148	-,036	,102	,024	,146	,035	-,125
Price	-,008	,095	-,119	,029	,100	,081	,000	-,056	,679	-,052	,061	-,056	,034	,004	,071	,041	,133	,100
Shopping list	,024	-,030	-,108	,094	-,018	-,041	-,032	-,063	,021	-,104	,559	-,126	-,145	,033	,115	,322	,102	-,190
Shopping list	,044	,077	,031	-,007	,127	,083	-,115	,013	,130	-,006	,886	-,030	-,036	,061	,047	-,027	,076	,124
Shopping list	,076	,039	,054	-,020	,099	,113	-,097	-,003	,102	,022	,882	-,013	-,052	,076	,037	-,009	,125	,082
Interest in cook	,713	,037	-,059	-,013	,074	,042	,054	-,035	-,089	-,198	,054	-,123	-,127	,020	,034	,063	,092	-,218
Interest in cook	,703	,094	-,004	-,017	,132	-,017	-,079	,090	-,035	-,021	,052	,039	-,083	,131	,068	,145	,050	-,004
Interest in cook	,683	-,049	-,064	-,012	,107	-,003	-,025	-,083	-,096	-,229	,051	-,121	-,126	,123	,092	,187	-,037	-,171
New ways	,653	,045	,131	,036	-,018	,091	-,075	-,187	,116	-,007	,006	,046	,145	,022	,060	-,120	-,025	,346
New ways	,721	,089	,128	,086	,127	,098	-,125	-,179	,137	,004	-,048	,071	,015	,006	,032	-,034	,134	,243
New ways	,700	,089	,156	,045	,089	,041	-,104	-,161	,099	,011	-,071	,032	,063	,057	,068	-,024	,101	,238
Convenience	-,160	-,127	,046	,005	-,010	,015	-,023	,041	-,014	,829	-,042	,119	,084	,004	-,009	-,043	-,007	-,050
Convenience	-,053	-,218	,029	,002	-,057	,059	,036	,057	-,070	,817	,003	,076	,090	-,018	-,042	-,010	-,093	,033
Convenience	-,164	-,189	,025	,024	-,056	,033	,145	,001	,039	,680	,005	,141	,151	,084	,064	-,035	,084	-,088
Planning	,027	-,044	,023	,125	-,072	,089	,093	,081	,128	,076	,188	,090	,062	,120	-,043	-,100	,752	,016
Planning	,073	,019	-,053	-,018	-,119	-,047	,007	-,045	-,084	-,237	,131	,013	-,049	,021	,024	,161	,746	-,076
Planning	,072	-,023	-,058	,145	,118	,069	,055	,082	,145	,117	-,024	-,008	,029	,031	,235	-,066	,610	,089
Woman's task	-,050	-,016	-,031	-,013	-,009	,016	,860	,095	,041	,058	-,025	,058	,020	-,113	-,037	,015	,060	,003
Woman's task	-,038	-,132	-,095	-,004	-,104	-,004	,814	,093	-,028	,040	-,097	-,019	,104	-,120	,087	-,122	,022	-,039
Woman's task	-,043	-,044	-,065	-,013	,064	-,023	,829	,051	,027	,021	-,097	,102	-,009	-,035	,018	-,009	,045	,041
Self-fulfillment	,398	,088	,140	-,008	,312	-,034	-,030	,055	,179	,153	,052	-,023	-,080	,193	-,027	,077	-,094	-,215
Self-fulfillment	,651	,029	,003	,089	-,029	-,088	,159	,013	,105	-,181	,107	-,104	,147	,109	-,116	,026	-,073	-,124
Self-fulfillment	,365	,120	,026	,120	,512	,003	-,028	-,002	,131	,078	,100	-,041	,033	,116	,116	,074	-,052	,011
Security	-,054	,019	-,029	-,037	-,024	-,025	,078	,703	,117	,025	,012	,080	,052	,073	,033	,071	-,120	,140
Security	-,046	-,062	-,022	,019	-,102	,053	,174	,688	-,063	,166	-,029	,029	,099	-,092	-,017	,032	,199	,133
Security	-,015	,093	,138	-,008	,205	-,019	,021	,654	,124	,029	-,023	,122	-,001	,071	,035	-,028	,111	,049
Social relations	,057	,130	,792	,010	,085	,032	-,120	,044	,035	,028	,010	,011	,006	-,104	,054	,013	-,016	-,017
Social relations	,053	,071	,686	-,057	,209	,055	-,057	,002	,050	,094	,012	-,075	-,077	-,031	,036	-,009	,053	,154
Social relations	,083	,117	,547	,110	,008	-,066	-,069	,022	,019	,004	,078	,029	-,125	,006	-,211	,251	-,117	,162
Health	,049	,171	,092	,372	,200	,341	-,096	,137	,021	-,105	,008	,051	-,121	,075	,074	,313	,038	,335
Health	,026	,150	,060	,265	-,021	,200	,079	,176	-,032	-,071	,119	-,142	-,066	,082	,063	,097	,028	,572
Health	,005	,161	,049	,504	,022	,241	-,041	,009	-,020	-,157	,098	-,034	-,065	,029	,147	,190	-,021	,496
Price vs Quality	,058	,315	,137	,067	,162	,103	-,039	,028	,175	-,051	,025	,035	,029	-,045	,051	,608	-,084	,190
Price vs Quality	,111	,155	-,031	-,098	,114	,122	-,070	,000	,493	-,050	,131	,082	,070	-,004	-,019	,588	,078	-,015
Price vs Quality	,187	,215	,070	,027	,203	,071	-,030	-,007	,307	-,002	,037	,054	,016	,054	-,028	,635	,006	,012
Novelty	,051	-,092	-,197	-,108	,215	,030	-,109	-,373	-,281	-,057	-,055	-,250	-,171	-,010	,000	,069	-,028	,161
Novelty	,194	,015	,351	,124	,082	,012	-,034	-,540	,107	,107	,013	,093	,023	,117	,146	,074	,064	,229
Novelty	,258	,084	,248	,210	,106	,030	,053	-,540	,040	,103	,003	,095	-,058	,122	,055	,061	,017	,254
Organic foods	,042	,157	-,009	,806	-,025	,152	-,010	-,058	,045	,123	-,040	-,007	,079	-,039	,028	-,013	,121	-,014
Organic foods	,074	,053	-,011	,832	,003	,141	,047	,001	,013	,043	,077	-,073	,050	,017	,094	-,061	,083	,111
Organic foods	,021	-,013	,043	,769	,106	,073	-,052	-,125	-,038	-,089	-,044	,060	-,029	,031	,230	,043	,015	,058
Taste	,116	,170	,160	,085	,687	,079	-,021	-,096	-,020	,008	,088	,011	-,020	,050	,059	,218	-,013	,003
Taste	,126	,219	,156	,044	,675	,007	-,006	,093	,079	-,149	,053	,087	-,066	-,020	-,052	-,029	,021	,139
Taste	,088	,264	,081	-,065	,736	-,035	,012	-,064	,080	-,069	,036	,024	-,022	,025	-,057	,081	-,048	-,088
Freshness	,048	,760	,091	,025	,159	-,001	-,065	,048	,005	-,097	,005	-,029	-,062	,018	,105	,059	-,054	-,032
Freshness	,072	,785	,071	,156	,177	,150	,008	,005	,102	-,100	,047	,005	-,030	,010	,019	,104	-,015	,022
Freshness	,120	,770	,022	,077	,127	,032	-,043	-,048	,035	-,191	,071	,073	-,104	-,002	,059	,105	,005	,076
Freshness	,054	,766	,116	,027	,175	,052	-,101	,019	-,002	-,140	-,019	-,026	-,067	,013	,007	,139	,033	,114
Snacks vs Mea	,025	-,062	,060	-,006	-,097	-,007	-,035	,035	,070	,106	-,018	,013	,744	-,115	-,013	,002	,044	,014
Snacks vs Mea	,078	-,082	-,044	,063	-,211	,004	,049	,062	-,008	,146	-,043	,042	,696	,067	,093	-,022	-,063	-,005
Snacks vs Mea	-,130	-,075	,018	-,008	,238	,056	,095	,086	-,050	,040	-,094	,049	,682	,062	-,067	,024	,048	-,079
Social event	-,053	-,139	,450	,052	,128	,009	,092	-,034	-,197	-,004	-,143	,172	,381	,219	,150	,041	,028	,083
Social event	,011	,035	,579	-,182	,189	,017	-,007	-,148	-,169	-,061	-,043	,040	,011	,069	,223	,084	-,031	-,028
Social event	,044	,037	,684	,132	-,078	,047	,000	-,032	-,016	,010	,014	,112	,176	,126	,012	-,083	-,038	-,147

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 12 iterations.

7.9 Appendix 9: Outputs from Cluster and Discriminant Analysis.

Case Processing Summary[a,b]

Cases					
Valid		Missing		Total	
N	Percent	N	Percent	N	Percent
516	86,6	80	13,4	596	100,0

a. Squared Euclidean Distance used

b. Ward Linkage

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 4	,104	1141,584	72	,000
2 through 4	,234	730,260	51	,000
3 through 4	,412	446,970	32	,000
4	,685	190,833	15	,000

Test Results

Box's M		1810,593
F	Approx.	2,377
	df1	684
	df2	105194,6
	Sig.	,000

Tests null hypothesis of equal population covariance matrices.

Structure Matrix

	Function			
	1	2	3	4
Factor 7	,747*	,044	,508	-,007
Factor 5	-,113*	,073	,056	-,097
Factor 13	,076	,415*	-,142	-,139
Factor 18	-,074	,348*	-,090	,125
Factor 17	,035	,286*	-,169	-,132
Factor 10	-,035	,272*	,091	,032
Factor 8	,081	,253*	-,027	-,196
Factor 1	-,124	,163	,387*	-,129
Factor 3	-,063	,048	,204*	,007
Factor 15	,036	,035	,057*	,006
Factor 12	,226	,082	-,329	,462*
Factor 2	-,213	,186	,365	,379*
Factor 9	,059	,051	,029	,331*
Factor 11	,028	,038	-,068	,319*
Factor 6	-,019	,010	,124	,183*
Factor 14	-,065	-,149	,096	,173*
Factor 16	-,091	,122	,014	,156*
Factor 4	,038	,045	,060	-,063*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
Variables ordered by absolute size of correlation within function.

*. Largest absolute correlation between each variable and any discriminant function

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	1,264[a]	40,2	40,2	,747
2	,755[a]	24,0	64,2	,656
3	,663[a]	21,1	85,3	,631
4	,461[a]	14,7	100,0	,562

a. First 4 canonical discriminant functions were used in the analysis.

Prior Probabilities for Groups

Ward Method	Prior	Cases Used in Analysis	
		Unweighted	Weighted
1	,200	166	166,000
2	,200	100	100,000
3	,200	138	138,000
4	,200	74	74,000
5	,200	38	38,000
Total	1,000	516	516,000

7.10 Appendix 10: Testing H1, H2 and H3 – ANOVA and *post-hoc* test outputs.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Consumption Cereals	Between Groups	10,198	4	2,549	,732	,570
	Within Groups	2047,593	588	3,482		
	Total	2057,791	592			
Consumption Yoghurt	Between Groups	47,929	4	11,982	3,897	,004
	Within Groups	1807,848	588	3,075		
	Total	1855,777	592			
Consumption Juice	Between Groups	28,766	4	7,191	2,928	,020
	Within Groups	1444,374	588	2,456		
	Total	1473,140	592			

Multiple Comparisons

Dependent Variable		(I) Predicted Group for Analysis 1	(J) Predicted Group for Analysis 1	Mean Difference (I-J)	Std. Error	Sig.
Consumption Cereals	Scheffe	1	2	,090	,248	,998
			3	,294	,197	,696
			4	,243	,256	,924
			5	,342	,295	,854
		2	1	-,090	,248	,998
			3	,204	,234	,944
			4	,153	,286	,991
			5	,252	,321	,961

3	1	-,294	,197	,696
	2	-,204	,234	,944
	4	-,051	,243	1,000
	5	,048	,284	1,000
4	1	-,243	,256	,924
	2	-,153	,286	,991
	3	,051	,243	1,000
	5	,099	,328	,999
5	1	-,342	,295	,854
	2	-,252	,321	,961
	3	-,048	,284	1,000
	4	-,099	,328	,999

7.11 Appendix 11: Testing H4, H5 and H6 – Regression results.

Results concerning cereal consumption.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,931[a]	,867	,866	,680	1,916

a. Predictors: (Constant), Cereal_V, Cereal_A, Cereal_C

b. Dependent Variable: Consumption Freq

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1732,427	3	577,476	1248,051	,000[a]
	Residual	266,053	575	,463		
	Total	1998,480	578			

a. Predictors: (Constant), Cereal_V, Cereal_A, Cereal_C

b. Dependent Variable: Consumption Freq

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,632	,099		-6,398	,000		
	Cereal_A	-,294	,031	-,198	-9,603	,000	,546	1,830
	Cereal_C	,807	,066	,600	12,301	,000	,097	10,271
	Cereal_V	,598	,061	,466	9,832	,000	,103	9,711

a. Dependent Variable: Consumption Freq

Results concerning yoghurt consumption.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,932[a]	,869	,869	,642	2,010

a. Predictors: (Constant), Yoghurt_V, Yoghurt_A, Yoghurt_C

b. Dependent Variable: Consumption Freq

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1600,022	3	533,341	1295,748	,000[a]
	Residual	240,379	584	,412		
	Total	1840,401	587			

a. Predictors: (Constant), Yoghurt_V, Yoghurt_A, Yoghurt_C

b. Dependent Variable: Consumption Freq

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,407	,085		-4,807	,000		
	Yoghurt_A	-,442	,028	-,343	-15,950	,000	,484	2,067
	Yoghurt_C	,973	,055	,711	17,714	,000	,139	7,203
	Yoghurt_V	,634	,052	,457	12,266	,000	,161	6,212

a. Dependent Variable: Consumption Freq

Results concerning juice consumption.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,910[a]	,828	,827	,656	1,810

a. Predictors: (Constant), Juice_V, Juice_A, Juice_C

b. Dependent Variable: Consumption Freq

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1217,862	3	405,954	942,065	,000[a]
	Residual	253,381	588	,431		
	Total	1471,243	591			

a. Predictors: (Constant), Juice_V, Juice_A, Juice_C

b. Dependent Variable: Consumption Freq

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,259	,091		-2,833	,005		
	Juice_A	-,356	,026	-,326	-13,543	,000	,507	1,974
	Juice_C	,930	,067	,717	13,950	,000	,111	9,029
	Juice_V	,527	,067	,406	7,876	,000	,110	9,072

a. Dependent Variable: Consumption Freq