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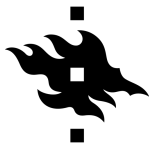
“The more industrial, the less natural” - Consumer perceptions of natural food

Master's Thesis
Food-related Behaviour
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Abstract Objectives The term natural is highly ambiguous and there is no clear definition, what actually is natural food. Nowadays the term is widely used in the food industry, for example in product packaging and marketing. However, as there is no common understanding for the term or any regulations of its use, it could cause confusion amongst consumers. This research was set out to explore consumers' perceptions of natural food. The main objective of this study was to form an understanding of the meanings consumers give to natural food and how they categorize foods as natural and unnatural. Methodology This research is qualitative in nature. To assess the research topic, ten thematic, semi-structured interviews were conducted with urban Finnish women aged 23-32 years. They were generally open to new foods, hence less neophobic. As part of the interviews a categorization task was presented, in which the participants were asked to categorize 30 different protein sources from natural to unnatural. The purpose of the categorization task was to assist in revealing how consumers categorize foods, or more precisely protein sources, as natural and unnatural. Key findings The main findings were that consumers categorize foods as natural based on three various aspects: 1) processing, 2) additives and 3) packaging. Furthermore, three different meanings were found to be associated with naturalness of food: 1) healthiness, 2) familiarity and 3) locality. The study offers contributions to research concerning the perceived naturalness of food and the definitions of naturalness. It presents insights of the consumer group of urban Finnish women, who are generally open to trying new foods linking the previous research on the perceived naturalness of food to a new consumer group and cultural context. The study offers some interesting insights especially for developers of novel food products. It also offers possibilities for future research; for example there seems to be noteworthy differences between the perceived naturalness of plant-based and animal-derived protein sources. Additionally, the research reveals there is a need to further study the value conflicts concerning the perceived naturalness of food and other ideals.			
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Tiedekunta Maatalous-metsätieteellinen tiedekunta	Koulutusohjelma Ihmisen ravitsemuksen ja ruokakäyttäytymisen maisteriohjelma	
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Tiivistelmä Tavoitteet Sana luonnollinen on hyvin monitulkintainen eikä ole olemassa selkeää määritelmää, mitä oikeastaan on luonnollinen ruoka. Termiä kuitenkin käytetään nykyisin laajalti esimerkiksi elintarvikkeiden pakkauksissa ja markkinoinnissa. Termin luonnollinen käyttöä ei ole millään lailla säädelty ja sitä voi siksi käyttää hyvin monin tavoin, mikä voi aiheuttaa kuluttajien keskuudessa hämmennystä. Tämän tutkimuksen tarkoituksena on kartoittaa kuluttajien näkemyksiä luonnollisesta ruuasta. Tavoitteena on muodostaa ymmärrys kuluttajien luonnolliselle ruualle antamista merkityksistä sekä siitä, miten kuluttajat kategorisoivat ruokia luonnollisiksi ja epäluonnollisiksi. Metodologia Tutkimus on luonteeltaan laadullinen. Aineistona on käytetty kymmentä puolistrukturoitua teemahaastattelua, joissa haastateltiin suomalaisia kaupunkilaisia naisia iältään 23-32 vuotta. Haastateltavat olivat yleisesti ottaen avoimia uusille ruoille eli toisin sanoen vähemmän neofobisia. Osana haastatteluja käytettiin apuna kategorisointitehtävää, jossa osallistujien tehtävänä oli kategorisoida 30 erilaista proteiiniinlähdettä luonnollisesta epäluonnolliseen. Kategorisointitehtävän tarkoituksena oli auttaa paljastamaan, millä perusteilla kuluttajat kategorisoivat ruokia (tai tarkemmin ottaen proteiiniinlähteitä) luonnollisiksi ja epäluonnollisiksi. Löydökset Tutkimus paljasti, että kuluttajat kategorisoivat ruokia luonnollisiksi kolmen eri ulottuvuuden kautta: 1) prosessoinnin, 2) lisäaineiden ja 3) pakkauksen. Lisäksi luonnolliseen ruokaan liitetään kolmenlaisia merkityksiä: 1) terveellisyys, 2) tuttuus ja 3) paikallisuus. Tutkimus vahvistaa aiempien tutkimusten näkemyksiä luonnollisuuden määritelmistä ja yhdistää aiempia tutkimuksia uuteen kuluttajaryhmään ja kulttuuriseen kontekstiin. Tutkimus tarjoaa mielenkiintoisia näkemyksiä erityisesti uusien ruokatuotteiden kehittäjille. Se tarjoaa myös kiinnostavia jatkotutkimusehdotuksia; esimerkiksi tutkimuksen perusteella vaikuttaa siltä, että käsitykset kasvipohjaisten ja eläinperäisten tuotteiden luonnollisuudesta eroavat toisistaan huomattavasti. Lisäksi tutkimus tuo esille, että jatkotutkimuksia tarvittaisiin erityisesti arvokonflikteista, joita esiintyy luonnollisuuden ja muiden ideaalien välillä.		
Avainsanat Luonnollinen ruoka, luonnollisuus, kuluttajatutkimus, laadullinen tutkimus		
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1. Introduction

Nowadays people talk a lot about how food should be "natural". If you pay attention in the supermarket, you notice that the term natural is also widely used in product packaging and marketing claims. However, the term natural can be understood in several various ways and there is no clear definition. There is no common understanding, what actually is natural food and what people mean by that term. This vague definition for such a common term sparked my interest to explore, what consumers really mean when they call for natural food.

Unlike for the term organic, which is strictly regulated in the EU, there are no legal standards for the term natural. Because of the loose regulations, the term is used in several different ways when marketing food products. For example, Katja Solla (2015) wrote on the webpage of Finnish news Yle that she found 13 different claims connected to the idea of naturalness when shopping in a supermarket. Amongst these were for instance "no additives", "all natural", "natural flavours", "no added preservatives" and "real flavours from the nature". When she took a closer look of the labels, it turned out that even if the label said for example "no preservatives" the product could still contain additives and aromas. This can certainly be very confusing to the consumer.

Both in literature and in everyday talk several different terms are used simultaneously to describe food that is somehow perceived as more intact and/or closer to nature. For example terms "natural", "pure", "clean" and "authentic" are often used intertwined and naturalness is thus a highly ambiguous term (Siipi, 2013). Naturalness can also refer to sustainable, traditional or organic farming methods, presence of fresh and raw ingredients or time for preparing and cooking food (Asioli et al., 2017). Nowadays natural food is trendy and it is also connected to local and organic foods that are often praised in the media (Tiusanen, 2018). Because there is no clear definition for the term natural, there is a risk that consumers misinterpret the term and its connections with for example healthiness (Siipi, 2013).

Natural products are often considered as more attractive and of higher quality, correlating positively with purchase intentions (Binninger, 2017; Rozin et al., 1999). Consumers also often connect natural food with healthiness, tastiness and environmental-friendliness (Falk, Bisogni & Sobal, 1996; Rozin et al., 2004; Siipi, 2013). Product packaging and labels act as important cues communicating naturalness of a food product (Binninger, 2017; Siegrist & Hartmann, 2020). Marketers also seem to have realised the power of labels such as “natural” or “fresh”, since claims like this are frequently used, also in products containing additives (Lwin, Vijaykumar & Chao, 2015). Therefore naturalness is also interesting, since clearly food industry can benefit from highlighting the naturalness and thus making their products more attractive.

There is somewhat of a paradox. On one hand people like author Michael Pollan (2010/2008) encourage people to eat only things what their great grandmother would recognize as eatable, on the other hand we need food (technology) innovations to tackle major challenges like climate change, obesity and malnutrition. Additionally, even though many consumers want to eat natural and unprocessed foods, they also do not want to spend excessive time cooking and often resort to convenience foods (e.g. Asioli et al., 2017). Therefore it is vital to understand, how people define natural food and what aspects impact the perceived naturalness of a product. This understanding can be used for instance to help innovators to gain wider consumer acceptance of novel food products. However, an interesting thought is that while food industry often benefits from consumers perceiving their products as natural, at the same time they enhance the view that natural is somehow better by emphasizing naturalness, as Siegrist and Hartmann (2020) point out.

In this research I chose to use and focus on the term natural, but I will also draw from research concentrating on the other terms used to describe the phenomenon. I will first explore how consumers generally choose and categorize foods, before focusing on the term natural and how consumers make sense of natural food. I will also investigate how food transforms from natural to unnatural in people’s perceptions, since exploring what destroys naturalness can be a good way to gain insights of what is considered natural (Rozin, 2005).

I chose to concentrate especially on different protein sources and how consumers categorize them as natural and unnatural. Protein sources are interesting, because especially meat and dairy products are major causes of environmental change (EEA, 2013 as cited in Lehner et al., 2016) and therefore we need novel food (technology) innovations particularly in regards of protein sources. It is interesting to explore, whether there could be differences between plant-based and animal-derived protein sources when it comes to the perceived naturalness. This is also a topic that has not been previously researched.

To assess my research topic I conducted ten thematic interviews with urban Finnish women aged 23-32 years. Interviews are a suitable method, when trying to understand complex phenomena and consumer motivations that might be difficult to assess using other methodologies (Malhotra & Birks, 2006). According to previous research, women tend to be more receptive to the concept of natural food and consider it as more important (Dominick et al., 2018; Roman, Sánchez-Siles & Siegrist, 2017). I aimed to interview consumers, who would be familiar with a wider set of foods and comparatively willing to try to new foods, so therefore I chose to concentrate on relatively young and urban women. Previous research has shown that they are more likely to be open to new foods (Tuorila et al., 2001). I find their views of naturalness interesting, since they could be a potential consumer group for novel food products, such as plant-based proteins.

2. How do people choose and categorize foods?

In this chapter I will first explore how people generally choose foods to eat. Since this is a very wide subject, I will not go into too much detail but try to form more of a general understanding of the subject drawing mostly from sociological theories. I will then focus on food classifications and how people categorize foods. This is a key topic, since the term natural can be seen as a category used to classify foods.

As the famous saying "you are what you eat" illustrates, food is not just something physical consisting of calories, nutrients and so on, but also a matter tied to society and a

person's identity. As Hamilton et al. (1995) state, food crosses a fundamental boundary between what is outside and what is inside of us as we ingest it. Hence, people consume food both physically and mentally, consuming taste-related (gustatory) experiences, meanings and symbols as well as nutrients (Beardsworth & Keil, 1997). As Beardsworth and Keil (1997) put it, "our view of a particular food item is shaped as much by what the item means to us as by how it tastes or by its ability to satisfy the body's nutritional needs" (p.52). Fischler (1988) in turn argues that eating is tied to diversity, hierarchy and organisation of human groups and it is able to unite a group as well as differentiate it from others who eat differently. He discusses that food is undeniably tied to a person's identity: "any given human individual is constructed, biologically, psychologically and socially by the foods he/she chooses to incorporate" (p. 275).

The complex system of food choices has been studied among a vast variety of disciplines and with many different methodological approaches. As said, eating and food choices are influenced by biological, psychological, social and cultural forces and thus, there is a vast variety of different attributes considered simultaneously when making food choices (e.g. Fischler, 1988; Furst et al., 1996). Additionally, the number of different foods from which to choose from is extensive; for example, nowadays there are approximately 15 000 items in a Finnish supermarket and a consumer passes by 300 products in a minute (Korhonen, 2010). To manage in this complex system people develop personal food systems that according to Connors et al. (2001) are "dynamic set of processes constructed to enact food choices" (p. 189).

Furst et al. (1996) conducted a qualitative research and formed a conceptual model of food choice that has since then been used as a base in many studies. According to them three major components impact food choice: 1) life course, 2) influences and 3) personal system. Life course generates and shapes a set of influences, such as ideals, resources, personal factors, social framework and food context, which further develop and shape personal systems. These personal systems include dynamic value negotiations as well as more routine strategies. This process leads to a food choice and it may be either deliberate or automatic.

What is especially interesting in the context of natural food is the influence of ideals. According to Furst et al. (1996) ideals are derived from cultural and symbolic factors and they are used as standards for judging other options, for example what is ideal and what is a substitute. They state that ideals represent how things should be and reflect aspirations, values and sense of identity. Naturalness could be seen as an ideal, how food should or could be. Furst et al. (1996) suggest that ideals are most likely formed and established within life course but are subject to change, especially during life transitions.

Connors et al. (2001) used the food choice model of Furst et al. (1996) to examine how people managed values in making food choices. They found that there were three main processes used in personal food systems: 1) categorizing foods and eating situations, 2) prioritizing conflicting values for specific eating situations and 3) balancing prioritizations across personally defined time frames. In their study, there were five primary food-related values expressed by the participants: health, taste, cost, time/convenience and managing relationships. There were also frequent value conflicts and individuals used specific strategies to resolve these conflicts, which further affected future decisions. Furst et al. (1996) also state that values often conflict and only seldom can all values be satisfied in a food choice situation. Sometimes there might be one value that dominates food choices, but there can as well be a combination of values (Connors et al., 2001; Furst et al., 1996). Connors et al. (2001) note that personal food systems are relatively stable, but may be modified to fit new or revised values.

As Furst et al. (1996) state, in addition to value negotiations, people also use different strategies in their personal food systems. Strategies are the routines and rules people have developed to simplify (recurring) food choice situations. According to Falk, Bisogni and Sobal (1996) the most common strategies used in personal food choice systems include elimination and avoidance, limitation, substitution, routinization, modification and replacement. However, they state that the strategies are highly personal and each individual uses a different set of strategies. According to them, a person may have either one dominant strategy or a combination of strategies, a repertoire. Additionally, the environment has an impact on the strategies used and people use different strategies in different situations. (Furst et al., 1996.)

A significant component of food choice process is categorization or classification of foods (Connors et al., 2001; Furst et al., 2000). Perhaps the most fundamental categorization is distinguishing edible foods from inedible, foods from non-foods. According to Rozin and Fallon (1980) people use at least three different psychological types of rejections, 1) distaste, 2) danger and 3) disgust, when they classify foods as inedible. When people reject food because of distaste, it is mainly due to the taste, smell or texture of the food. Rejecting food because of danger is in turn largely due to fear of physical harm the food might cause. Rejection because of disgust is mostly due to the idea of what the food is or where its origin is. Since humans are omnivores, they tend to constantly look for novel foods but at the same time they need to be careful with new foods potentially being inedible and harmful. The term “omnivore’s paradox” is used to describe this contradiction between neophilia, “the drive to seek out novel foods”, and neophobia “the fear that novel items may be harmful” (Rozin, 1976; Fischler, 1980 as cited in Beardsworth & Keil, 1997, p. 51).

Apart from categorizing foods as edible and inedible, people have used food categorizations for as long as they have had enough food to make choices of what they want to consume (Mäkelä & Niva, 2020). Categorization of foods helps to simplify the choosing process in the complex system of food choices (Furst et al., 2000). According to Furst et al. (2000) there are multiple levels of food classifications that form a hierarchy. Outmost is the infinite pool of all possible classifications by which foods can be categorized. Inside all possible classifications, is the subset of culturally recognized classifications that are meaningful within a certain culture. Within culturally recognized classifications, there are socially significant classifications that are more limited and connected to an individual’s social network. Innermost are personally operational classifications that are the most significant classifications to an individual and routinely used in daily food choices. (Furst et al., 2000.)

According to Furst et al. (2000) “people assign to foods meanings that reflect characteristics salient within the physical, social and cultural settings they inhabit. These characteristics constitute classifications by which people organize foods in their environments” (p. 331-332). Hence, people use classifications to organize foods and physical, social and cultural settings affect the classifications. Furthermore, both

physical and social contexts were found to influence classifications. The research of Furst et al. (2000) is very much in line with Mary Douglas' thoughts that food classifications are needed to maintain social constructions and order (Douglas, 2000/1966).

Although cultural and social forces affect food classifications, food categorization is in the end very personal. Different individuals may categorize same foods very differently; for instance same food can be categorized both as healthy and unhealthy by different people. (Connors et al., 2001.) In addition, same word used to describe a food can also mean different things for different people, thus the meanings given are also very personal (Furst et al., 2000). For example, the word natural can evoke very different meanings in different individuals. Furst et al. (2000) also found out that people often use comparative language when trying to express precise meanings. People also categorize foods in relationship to other foods (Connors et al., 2001). Hence, people often categorize foods using comparisons and through what it is not (e.g. Falk et al., 2001).

Connors et al. (2001) argue that categories can be seen as the interface between personal values and foods themselves. They found out that food categorization is often based on individually defined ideals and values, and thus categories are personal. Food categories are often organized as value continuums ranging from foods that are seen to be close to the ideal to others that are further away from the ideal. Foods can also be categorized on multiple dimensions at the same time, for instance a food can be both healthy and tasty. In their study, natural was one of the terms that were used to describe healthy foods. (Connors et al., 2001.) Blake et al. (2007) also note that food categories are usually not mutually exclusive and same foods can be categorized in many different ways, often depending on the context.

Hence, foods can also be categorized according to different eating situations and different eating situations can also change food categories (Blake et al., 2007; Connors et al., 2001). For example, foods can be categorized as everyday and as festive and a food normally categorized as avoided could become desirable when eating in a festive situation. According to Blake et al. (2007) eating context influences food classifications and foods can also have several meanings within the same context. In their study

context-based category types included for example meanings related to temporal aspects of eating (such as time of the day or year), ease and time involved (convenience), places where food is eaten or obtained from and people who food is eaten with. They also note that categories can be based on features of eating other than the food itself and certain categories can dominate in certain food settings. People may also categorize different eating situations like they categorize different foods. For example in the study of Falk et al. (2001) participants categorized different eating situations as healthy or unhealthy in a similar way than they categorized foods. Thus, it is important to understand also the different contexts and eating situations.

Food categories are not stable but can change with new information, new situations, new relationships and new environments (Connors et al., 2001). As categories are fluctuating and very personal, meaning different things to different people, also the term or category of natural food is very ambiguous. I will next concentrate on the concept of natural food and its many definitions and dimensions.

3. The ambiguous term natural food

There is no clear definition for the term natural food. There are several overlapping terms that are used to describe foods that are somehow natural, authentic or pure. According to Asioli et al. (2017) naturalness is a multidimensional concept that can refer to sustainable, traditional or organic farming methods, presence of fresh and raw ingredients or time for preparing and cooking food. Siipi (2013) states that natural is an ambiguous term that is related to both authenticity and purity. Mäkelä and Niva (2020) follow Siipi's view of natural food as an ambiguous term and state that naturalness is defined in terms of how well a certain food fits to a certain diet's view of what is healthy and/or acceptable in the diet. For instance milk might be considered as natural by omnivores but a vegan most likely sees it as unacceptable for their diet and hence unnatural. A common argument against milk is that cow's milk is for calves and thus it is unnatural that humans drink it. Koojimans and Flores-Palacios (2014) also argue that it depends on the social context, what is considered as natural food.

The research of Christine Knight (2012) demonstrates particularly well, how naturalness is defined in terms of social context and diet. She conducted a research on naturalness in low-carbohydrate diets and found many interesting contradictions. In general, in low-carbohydrate diets naturalness is seen as the most desirable attribute food can have and such diets claim to exclude processed foods. However, this seems to be defined in terms of how well a food fits into the diet. For instance, consumption of “natural” fats such as whole-fat cheese and butter is encouraged, even though they are processed from milk. Refined, processed grains in turn are not seen as natural and thus should be avoided. Hence, foods low in carbohydrates are more undoubtedly seen as natural, because they fit into the low-carbohydrate diet. (Knight, 2012.)

Solenn Thircuir (2020) in turn used the theories of Claude Lévi-Strauss (1965) on cooking to explore raw food diets and the ideal of natural eating. Lévi-Strauss used a term *gusteme* to describe bipolar cultural classifications of food, such as everyday and festive. To describe the distinction between nature and culture, he used a culinary triangle, where cooked is at the top of the triangle and below are raw and rotten. Raw can be seen as the pristine state of food, which either becomes cooked or rotten. According to Lévi-Strauss cooking can be seen as a transformation method of how food becomes culture, while raw or cooked food becoming rotten is a natural transformation. Thircuir (2020) argues that raw food diet can be seen as a movement towards the ideal of nature and natural food, and thus away from cooked and cultural food. According to her the idea is to eat directly from nature, ingesting the healthful power of it and becoming more connected to the environment.

The view of nature as superior to culture can also be seen in vegetarianism (Twigg, 1979). Julia Twigg (1979) argues that vegetarian food can be seen as natural, since “unlike meat, it comes to us directly in the category of foods – we pluck it from the trees” (p. 23). According to her, there is a hierarchy of foods, where red meats are the highest in status, followed by white meats, then other animal products and below all of these vegetables. She also states that natural is one of the words with heavy emotional loadings (in addition to words like pure, wholeness and goodness) and when words like this are applied to food they tend to have indefinite, ambiguous meanings.

Because there is no clear definition, there is a risk that consumers misunderstand the term natural and its connection with for instance healthiness (Siipi, 2013). Yet, Rozin et al. (2004) found out that even if artificial foods are presented as healthy as natural foods or if consumers are informed that they are chemically the same, consumers still prefer natural foods. Consumers also tend to associate naturalness positively with the quality of the food (Rozin et al., 1999). Moreover, Rozin et al. (2004) found in their research that natural foods are generally considered as more desirable, in contrast to non-natural, artificial or processed foods. According to them, natural foods are seen as healthier, tastier and better for the environment and naturalness is an important factor for many consumers. This is in line with the research of Dominick et al. (2018), who discovered that the label “all natural” was associated with improved taste, nutrition, safety and animal welfare for most food products studied.

Tiusanen (2018) says that nowadays natural food is trendy and according to her study organic and local foods are often praised and valued in media instead of being criticised. She states that there are four major discourses: trendiness, purity, authenticity and nostalgia that legitimize the consumption of organic and local foods. She argues that authentic food can be seen as emphasizing simplicity, quality and sincerity, as opposed to complex processed foods. It is often connected to the origin of the food and historical traditions.

Rozin et al. (2004) argue that there are two types of justifications for natural preference: instrumental and ideational. Instrumental justifications refer to the particular advantages of natural foods; that they are preferred because they are thought to be for example healthier or better for the environment. Ideational justifications in turn mean that natural foods are preferred just because they are seen as fundamentally better, for instance more moral or just right. Out of these, ideational justifications are argued to be harder to change than instrumental. (Rozin et al., 2004.)

As naturalness means different things to different individuals and because there is such a wide variety of associations, it is a very difficult concept to measure or quantify (Meyer-Höfer, Nitzko & Spiller, 2015). Asioli et al. (2017) and Roman, Sánchez-Siles and Siegrist (2017) have conducted literature reviews trying to grasp how preference of

naturalness influences consumers. It is notable, that the majority of studies concerning food naturalness have been conducted in developed countries, where for instance food safety is usually not as big of a concern as it might be in developing countries.

In their research Asioli et al. (2017) defined six factors that drive consumers' preferences for natural food products based on a literature review. These are categorized into socio-cultural factors, intrinsic characteristics, extrinsic characteristics, biological and physiological factors, psychological factors and situational factors. Furthermore, the factors are divided into different sub-factors. When it comes to socio-cultural factors, they list that ideational and instrumental reasons, cultural differences and knowledge of legal meaning of natural products influence consumers' preferences towards natural food products. Regarding intrinsic factors, they state that healthiness, absence of certain negative intrinsic characteristics (such as additives), sensory attributes, the presence of fresh and raw ingredients and the degree of product processing can all be considered as motivating factors. In turn, product sustainability, packaging and labels are all extrinsic product characteristics that influence the perception of natural food. When it comes to biological and physiological factors, the authors state that sex influences the preference of natural food; women are more receptive to the concept of natural food. Health worries in turn are found to be an important psychological factor as are perceptions of chemicals in food. Regarding situational factors, both the type of store and additional information provided by employees has been found to influence the perception of naturalness. (Asioli et al., 2017.)

Roman, Sánchez-Siles and Siegrist (2017) conducted a systematic review that investigated the importance of food naturalness for consumers. They found out that when it comes to food products, naturalness is crucial for the majority of consumers across (developed) countries. They also stress the ambiguous nature of the term natural food and how as a result preference for naturalness has been measured in various ways in research. According to them the items used to measure the importance of naturalness can be categorized into three categories: 1) the way food has been grown (food origin), 2) how the food has been produced (technology and ingredients used) and 3) the

properties of the final product (most common properties connected with naturalness are healthiness, tastiness, freshness and eco-friendliness).

When it comes to socio-demographic factors, gender and age are the only factors that have been found to have an impact on the perceived importance of naturalness (Asioli et al., 2017; Roman, Sánchez-Siles & Siegrist, 2017). Women and older consumers tend to consider naturalness as more important, when compared with men and younger counterparts (Roman, Sánchez-Siles & Siegrist, 2017). Women have also been found to be more receptive to the packaging label “all natural” (Dominick et al., 2018). Regarding psychological factors, Roman, Sánchez-Siles and Siegrist (2017) conclude that consumers’ values are important and idealism, tradition as well as universalism are positively related to the perceived importance of naturalness, whereas hedonism and power are negatively related. Furthermore, they suggest that personality traits are not strongly related to the perceived importance of naturalness.

Additionally, Roman, Sánchez-Siles and Siegrist (2017) state that health interest is positively associated with the perceived importance of naturalness, while positive attitudes towards chemicals, novel technologies and functional foods are negatively correlated with it. Moreover, attitudes towards traditional and organic foods are also related with the perceived importance of naturalness. Food neophobia is also related and there is a correlation between the perceived importance of naturalness and a negative perception of novel food technologies, although for new food products this is unclear. Hence, more neophobic people seem to perceive naturalness as more important. (Roman, Sánchez-Siles & Siegrist, 2017.)

Falk, Bisogni and Sobal (1996) found that eating natural/unprocessed foods was one of the predominant themes of healthy eating definitions. Hence, also according to their study naturalness is frequently linked with healthiness. In their study, participants defining healthy eating as eating natural/unprocessed tended to use general descriptions (such as fresh) instead of very specific ones to describe healthy foods and the term processed was most often used when describing unhealthy foods. Regarding eating situations, eating at home was seen as a way to control the preparation and ingredients used. Social factors such as society and culture were important experiential

sources, while informal channels such as family members or food labels were important information sources for those emphasizing naturalness as healthy eating. (Falk, Bisogni & Sobal, 1996)

The ideal of natural food has also been linked with weight management and healthiness in that sense (Niva, Jauho & Mäkelä, 2013). Niva, Jauho and Mäkelä (2013) studied ideals of eating regarding weight management amongst Finns and discovered there was a conflict between natural and artificial foods. Naturalness was frequently mentioned as the ideal of food and consumers used the term mostly to refer to foods that were somehow basic, comparatively little processed and consisted of only one or a few ingredients. They argue that: “in this sense, the classification natural/unnatural seemed rather unambiguous” (p. 16).

Moreover, Falk, Bisogni and Sobal (1996) discovered that people emphasizing naturalness relied mostly on the strategy of avoidance. Asioli et al. (2017) also state that when it comes to purchasing natural and organic foods, consumers are motivated by avoidance instead of approach. For instance, they want to avoid additives or chemicals. This can be seen in the research of Rozin, Fischler and Shields-Argelès (2009), who asked subjects to define naturalness and the most commonly mentioned features were: no chemicals, no alterations and no additives. When combined into larger categories, the biggest categories were no processing and no additives. In the next chapter, I will go more in detail of these definitions and look closer what makes natural food turn into unnatural in consumers' perceptions.

4. How does food become perceived as unnatural?

After looking into the concept of natural food, an interesting question remains: how does food transform from natural to unnatural in consumers' perceptions? There are of course no univocal answers, since the term natural is ambiguous itself. Rozin (2005) argues that a good way to gain insights of what is considered natural is by seeing what destroys it. Since food neophobia and negative perception of novel food technologies have been linked to perceived importance of naturalness (Roman, Sánchez-Siles &

Siegrist, 2017), I will first discuss these concepts before exploring the impacts of processing, additives and presentation of information.

People tend to be conservative towards unfamiliar foods, avoiding novel foods (e.g. Pliner & Hobden, 1992). The term food neophobia is used in scientific literature to describe the tendency to avoid new foods. Pliner and Hobden (1992) developed and validated a food neophobia scale that has since been used in several studies to quantify this individual characteristic. For instance, Tuorila et al. (2001) studied food neophobia amongst the Finnish population and found out that gender, age, education and the degree of urbanization had an effect. According to their study, men and elderly (66-80 years old) were more neophobic than women and other age groups. Furthermore, increased education and the degree of urbanization decreased food neophobia scores, meaning that highly educated and urban subjects were less neophobic. (Tuorila et al., 2001.)

The research of Tuorila et al. (2001) also suggests that food neophobia has an impact on the willingness to try foods regardless of the familiarity, high food neophobia leading to diet with less variety. They also stress the importance of tasting and how it significantly increases the willingness to try a food. They argue that tasting could be especially beneficial for highly neophobic people, especially if the tasting experience is positive. Pliner and Hobden (1992) in turn have proposed that adding familiarity to unfamiliar food could decrease neophobia. This makes sense, since familiar foods are often better liked than unfamiliar (Tuorila et al., 2001).

In addition to novel foods, people also tend to be careful towards novel food technologies and the term food technology neophobia is used to describe this personality trait. Food technology neophobia is shown to be only weakly associated with food neophobia (Cox & Evans, 2008). According to Cavaliere and Ventura (2018) higher levels of food knowledge increases the acceptance of novel food technologies and thus consumers with more food knowledge have lower food technology neophobia scores. They also found out that higher interest in sustainability tends to lead to higher food technology neophobia scores. This is an interesting finding, since the purpose of many

novel food technologies is to increase sustainability, but in consumers' perceptions sustainability and innovations do not match that well.

In general, people have limited knowledge when it comes to commercial food production and nutrition. This can generate suspicion about safety and nutritional content leading to criticism of processed foods in general, even though processing does not inevitably correlate with the nutritional content. (Weaver et al., 2014.) Unlike in many other areas, technological applications regarding food are often seen negatively and production with minimum human interference is seen as desirable, hence food naturalness is a preferred attribute (Rozin, 2005). Natural food can be seen as an opposite to industrialized food and so the term has been around as long as industrialized food has existed. According to Lupton (1996) the opposition of natural and artificial food can be interpreted as a reaction to the insecurity or uncertainty caused by global food production. Preference of natural foods can thus be seen as returning control of body and environment to the consumer (Lupton, 1996). This is in line with the views of Thompson (2004), who has investigated the natural health marketplace and argues that natural health consumers see themselves as asserting control over their bodies through natural health consumption. Furthermore, some natural health consumers interpret many common foods as pollutants for the body and there is a relatively strong criticism towards modern technology (Thompson & Troester, 2002; Thompson, 2004).

When shifting from traditional agriculture to industrial food production during industrialization in the 19th century, food production was not well regulated and product adulterations and other manipulations, such as harmful additives or watering down products, were common and hard to supervise (e.g. Beardsworth & Keil, 1997; Haydu, 2012; Weaver et al., 2014). According to Haydu (2012) there have been concerns about safety and integrity of commercial foods at least since 1830s and adulterated food was seen also as a moral problem. Over time, food supply has become increasingly reliable, while consumers have become more and more detached from the food production and its processes (Beardsworth & Keil, 1997).

Beardsworth and Keil (1997) state that nowadays there are doubts about the moral acceptability of the modern food system and its control over the natural environment, while at the same time it assures adequate food supplies that were not guaranteed before modern food production. They also argue that modern food production only includes a small proportion of the working population and thus it is unfamiliar and somewhat concealed for most consumers. Despite the growing reliability and safety of modern food systems, food anxieties among consumers persist. (Beardsworth & Keil, 1997.)

Nowadays food safety is taken as given in many societies and it is often overlooked that many technological innovations assure it (Siegrist & Hartmann, 2020). As said, technological applications to food are usually seen as negative and minimum human intervention in production is seen as natural and therefore positive (Rozin, 2005). Naturalness can be seen as lack of human influence (Siipi, 2013). According to Rozin (2006) processing alone can decrease the perception of naturalness of a food and it affects it more than the material content. However, Evans, de Challemaison and Cox (2010) concluded in their study that both process and content have an impact on perceived naturalness and their findings suggested that content is more important than the process. Hence, it seems both process and content affect the perception of naturalness, but it is not completely clear which of them has a greater impact. As highly processed foods are perceived to lack naturalness, they are seen as negative (Roman, Sánchez-Siles & Siegrist, 2017).

Furthermore, the type of processing matters and the strength of how a processing method affects naturalness varies. For instance, chemical changes have been found to reduce perceived naturalness more than physical changes (Evans, de Challemaison & Cox, 2010; Rozin, 2005) and genetic modification reduces perceived naturalness most strongly (Rozin, 2005). Moreover, mixing alike things is perceived more natural than mixing different things; for example mixing different sorts of mineral waters is seen as more natural than mixing calcium to orange juice (Evans, de Challemaison & Cox, 2010; Rozin, 2005). Even though processing alone can decrease perceived naturalness (Rozin, 2006), Aboud and Gomez (2015) discovered that human contact (imagined) in the production process could increase the perception of naturalness. According to them,

handmade food products are seen as more natural than machine-made food products. Tiusanen (2018) states that handmade products can be seen as a form of sincerity, while industrial mass-production is often seen as suspicious, making the origin of the food unclear.

Perhaps one of the most important features that affect perceived naturalness is the use of additives (Rozin, Fischler & Shields-Argelès, 2009; Scott & Rozin, 2017). It is interesting that adding something to a food product decreases the perceived naturalness more than removing something, even if it is the same thing (e.g. fruit pulp). It also does not matter, whether the added substance is something that is considered healthy, since it affects perceived naturalness in a similar way as adding something that is considered unhealthy (e.g. adding vitamin C versus adding sugar). Moreover, the dose of the additive only has a relatively small effect on perceived naturalness, especially compared to inserting versus not inserting an additive. Hence, the absence of additives is a key feature of the meaning of natural. (Scott & Rozin, 2017.)

Additives can be linked to contagion and the idea of purity (Rozin, 2005; Rozin, Fischler & Shields-Argelès, 2009). When something is added to a food, it contaminates it by reducing purity, while removing something from a food does not have the same effect. According to Douglas (2000/1966), dirt can be seen as material in a wrong place. So it could be that an additive in food might be seen as something that does not belong to it and thus relates to dirt. Rozin, Fischler and Shields-Argelès (2009) speculate that it might be the idea of something going inside that leads to unnaturalness; for example inserting a single gene to a species makes it largely unnatural, while domestication of species does not have similar effect regardless that it has required a lot of human involvement. Additives and gene technology can be seen as material going into wrong place, leading to contamination and impurity.

It is also crucial how information is presented in regards of how natural a food is considered and labels can have a great impact on consumer acceptance (Dominick et al., 2018; Siegrist & Hartmann, 2020). As Asioli et al. (2017) note, consumers often assess products relying on heuristics, such as the length of the ingredients list or ingredient names (e.g. do they sound chemical or unfamiliar). It has been shown that foods with e-

codes are seen as less natural than if the same information is presented in written form without the codes (Evans, de Challemaison & Cox, 2010; Siegrist & Sütterlin, 2017). In addition, chemical names tend to reduce the perceived naturalness; for example when the same ingredient is presented in chemical form it is considered less natural than when it is presented in common language (e.g. baking soda vs. sodium bicarbonate) (Chambers & Castro, 2018). Aschemann-Witzel, Varela and Peschel (2019) propose that ingredients should be presented so that they are well understood and communication efforts on the package to make ingredients perceived as more familiar, natural and harmless could be an effective strategy to make consumers see them more positively. Additionally, stressing health benefits of naturalness in product packaging has been shown to increase its attractiveness more than stressing environmental benefits of naturalness (Binninger, 2017).

5. Research questions and methodology

Consumer perceptions of food naturalness have mainly been studied using quantitative research methods (e.g. Evans, de Challemaison & Cox, 2010; Rozin, 2005; Rozin, 2006; Scott & Rozin, 2017). I chose to use a qualitative approach in attempt to grasp the deeper meanings people give to natural food. As Eriksson and Kovalainen (2011) state, individually constructed reality can only be accessed through social constructions such as language and shared meanings. This research falls into the constructionist philosophical position, meaning that it is interpretive in nature and there are many possible and potentially meaningful interpretations of the data. Thus, the findings presented are my interpretation of the data as a researcher and do not construct generalizable knowledge.

5.1. Research questions

The concept of food naturalness grasped my interest, because as already stated, naturalness is a very ambiguous term that can mean different things to different consumers. As the previous literature review shows, consumer perceptions of food naturalness have been studied before but I find it is still a rather little researched area. It

is also surprisingly little researched area in the Finnish cultural context considering that especially the purity of Finnish food has traditionally been emphasized, as Mäkelä and Niva (2020) discuss in their article. As naturalness is very closely related to purity, it is interesting to study the perceptions of food naturalness in the Finnish cultural context and whether the perceptions are in line with the results from previous research conducted in other countries, such as Rozin, Fischler & Shields-Argelès (2009).

I find the concept of food naturalness is especially interesting, when it comes to new food innovations. Food (technology) innovations are crucial, when it comes to tackling major challenges like environmental change, obesity and malnutrition. Food and drink, especially meat and dairy products, have been stated as one of the three most environmentally relevant areas of consumption (EEA, 2013 as cited in Lehner et al., 2016). Willett et al. (2019) even argue that there is evidence of food production being the largest cause of global environmental change in general, when all effects such as greenhouse gas emissions, land and water use and chemical pollution, are taken into account. Therefore, food consumption plays a critical role in global sustainable development. Considering that especially meat and dairy are major causes of environmental change, I decided to concentrate particularly on protein sources. Against this background, it is interesting to explore how natural or unnatural consumers see different sorts of protein sources and whether there is a difference between plant-based and animal-derived sources.

Since natural can be seen as a category to classify foods, I wanted to utilize a categorization task to be able to grasp the meanings people give to natural food. People use classifications to organize foods (Furst et al., 2000) and categories can be seen as the interface between personal values and foods themselves (Connors et al., 2011). Categorization can thus reveal values and meanings behind perceptions of naturalness. I decided to focus on protein sources also because concentrating on one nutritional category most likely makes it a little easier to categorize foods based on perceived naturalness.

As Rozin (2005) states, a good way to gain insights of what is perceived as natural is to explore what destroys it. Therefore I think it is also important to investigate the

perceptions of unnaturalness. Understanding what makes food unnatural could help for example food technology innovators to gain wider acceptance of novel food products. Lack of naturalness can lead to consumer rejection of novel foods (Tuorila & Hartmann, 2020), so therefore it is important to identify how people categorize foods as natural and unnatural.

Based on these delineations, I have defined three research questions:

1. What kind of meanings do consumers give to natural food?
2. How do consumers categorize protein sources as natural and unnatural?
3. How does food become perceived as unnatural?

5.2. Research method

I chose to use a qualitative research approach in order to understand the meanings and definitions consumers give to natural food. According to Eriksson and Kovalainen (2011) qualitative research is suitable, when trying to understand consumer behaviour in a certain context. Qualitative research is often contrasted with quantitative research and defined by comparison (e.g. Eriksson & Kovalainen, 2011). However, according to Alasuutari (2011) qualitative and quantitative methods should not be seen as opposites but rather as a continuum. Eriksson and Kovalainen (2011) note that there is a lot of internal variety, when it comes to both qualitative and quantitative research. For example, within qualitative research there are research interests of language, discovery of regularities or recurrent patterns and understanding of meanings (Eriksson & Kovalainen, 2011).

Alasuutari (2011) points out that in qualitative research the research material is often viewed as a whole, unlike in quantitative research, where there are often different variables. Qualitative research usually does not follow a strict research plan and typically there are no pre-defined assumptions or hypothesis (Eriksson & Kovalainen, 2011). Eriksson and Kovalainen (2011) describe qualitative research as circular process,

in which the researcher moves back and forth between the different phases actively reflecting the research process as a whole.

I chose to use semi-structured, thematic interviews as my research method. Eskola and Suoranta (1998) suggest that the researcher needs at least some sort of knowledge of the research topic, when forming the interview guidelines. I formed my interview guidelines after I had familiarized myself with plenty of existing literature about the perceived naturalness of food. In thematic interviews, the themes of the interview are pre-defined, but unlike in structured interviews the questions are not in a certain form or order (Eskola & Suoranta, 1998). In my interviews the main theme was the naturalness of food. However, I did also discuss food more in general with the interviewees to guide them into the subject. According to Eskola and Suoranta (1998) using themes can also help to assure that similar things are discussed with all of the interviewees, which makes the data a little more constructed.

Thematic interviews are usually guided with some sort of a list of themes and thus there are no pre-defined questions (Eskola & Suoranta, 1998). Despite being thematic in nature, my interviews resembled semi-structured interviews as I had a set of pre-defined questions that I asked all of the interviewees. However, the order in which I asked the questions and their exact form varied a little, since I wanted to keep the interviews conversational and encouraged the participants to talk freely and in length.

In addition to the pre-defined questions, I presented the participants a categorization task, where I asked them to categorize 30 different protein sources from natural to unnatural. I told them to make as many categories as seemed logical to them. Hence, they were not obliged to make only two categories for natural and unnatural items, but could make more categories ranging from the most natural category to the least natural.

I had selected the items based on my research on existing literature and tried to include a rather equal amount of plant-based and animal-derived protein sources. I also included a few examples of novel food innovations. I had searched pictures of the selected food products from online and printed them out on paper. The chosen items and pictures can be found in the appendix 2. The main purpose of the categorization

task was to help to reveal the meanings according to which people categorize foods as natural and unnatural. Originally I had 40 different items to categorize but after the first two interviews I decided to cut them down to 30, since there appeared to be too many similar items and the amount of items was too extensive.

5.3. Data collection and analysis

I conducted ten thematic interviews and each interview lasted around 25-60 minutes. The average duration of one interview was 38 minutes. Interviews are a suitable method, when attempting to understand complex phenomena and consumer motivations that might be difficult to assess using other methodologies (Malhotra & Birks, 2006). I chose to interview women, since according to previous research they tend to consider naturalness as more important and are more receptive to the concept of natural food (Domick et al., 2018; Roman, Sánchez-Siles & Siegrist, 2017). I also chose to interview relatively young and urban women, since I aimed to interview comparatively less neophobic individuals. According to Tuorila et al. (2001) men and elderly tend to be more neophobic than women and other age groups and urban individuals tend to be less neophobic than rural. I wanted to interview less neophobic individuals, because they are more likely to be familiar with a wider set of foods and also more likely open to new foods. Their views of naturalness are especially interesting, because they could be a potential consumer group for new food innovations such as plant-based proteins. Most of the interviewees said they like to try new foods and were open to novel food products.

The participants were recruited using snowballing method, meaning that I first recruited suitable acquaintances and further their acquaintances. This helped to make the interview situations comfortable and conversational. The participants were aged 23-32 years old, lived in Helsinki (8), in a smaller city in Uusimaa (2) and lived alone (3), with a partner (3), in a shared apartment (3) or with a family (1). Most of them were highly educated (6 holding a Master's degree) and their professions varied. Two of the participants were currently university students and two of the participants worked within the food industry. Three of the participants identified themselves as vegetarians,

two said they tried to eat less meat, one was on a gluten-free FODMAP diet and the rest did not follow any specific diet. The interviews were held in comfortable places, such as homes or a working space at the university, to ensure a relaxed setting.

Table 1: The characteristics of the participants

H1: 29 years old, elementary school teacher, lives in a shared apartment, vegetarian
H2: 31 years old, physiotherapist, lives weekdays alone and weekends with a partner and a child
H3: 23 years old, currently unemployed, studies in open university, lives alone
H4: 28 years old, physicist, lives alone, vegetarian
H5: 30 years old, researcher in university, lives in a shared apartment, vegetarian
H6: 23 years old, chemical technology student, lives with a partner
H7: 23 years old, food science student, works in a grocery store, lives in a shared apartment
H8: 32 years old, graphic designer, lives with a partner
H9: 27 years old, program manager in university, lives alone
H10: 29 years old, marketer in food industry, lives with a partner

The interviews were conducted in October 2020. They were recorded with a permission of the participants and made up 378 minutes of recorded data in total. I used the voice recorder in my mobile phone to record and store the audio data. The amount of interviewees may seem somewhat limited, but I found that the data was saturated after ten interviews. As Eskola and Suoranta (1998) point out, qualitative research often focuses on quite a small amount of informants and aims to analyse them thoroughly. They also state that the amount of data is adequate, when it does not produce relevant new information anymore and thus is saturated (Eskola & Suoranta, 1998).

Before starting the actual interview, I asked the participant a permission to record the interview. I told them that the data would be handled as anonymous and thus it is not possible to recognize an individual participant in the research. Only I as an interviewer would know who the participants were. I told them that I would save the audio data in my phone and transcribe it into textual data, which would be stored on my computer.

The textual data would be treated as anonymous and could be shared with other parties, who might be interested in the research. I did not set a time limit of how long the data would be stored.

I began all of the interviews by asking the participant to describe what good food means to them, what kind of food consumers they are and what they value in food. After the more general discussion about food, I presented them the categorization task. I presented pictures of 30 different protein sources and asked them to categorize the items according to whether they thought the products were natural or unnatural. They were free to form as many categories as they wished, meaning that they were not obligated to categorize them just in two categories, natural and unnatural, but could form more categories ranging from the most natural category to the least natural. I also asked them to point out if there were any products they were not familiar with and in that case told them more about the products.

I encouraged them to speak their views aloud and freely as they did the categorization task. This can be referred as think-aloud method, which has originated from psychological research (see e.g. Van Someren, Barnard & Sandberg, 1994). Voicing their thoughts helped me to understand, why the participant categorized the items like they did. Following the suggestions of Van Someren, Barnard and Sandberg (1994), I tried to interfere with the thought process of the categorization task as little as possible to avoid influencing the course of the task.

After the categorization task we discussed the views behind the sorting more in depth and why the participant considered some items as natural and some not. Then we discussed different themes around naturalness such as food processing, additives, novel food technologies, food origin, packaging and organic food. The participants were encouraged to talk freely and in length, but I guided the interviews with a set of pre-defined questions. In the end I took a picture of the categorized food items to aid the analysis.

I decided not to present the specific results of the categorization task and how the participants categorized the individual products, even though I could have formed for

example a table showing the results for each specific food item. However, the point of the categorization task was not to analyse the individual items themselves, but how people categorize food products in general and what sorts of meanings they give to naturalness of food. The items acted more as examples and the categorization task helped to reveal the meanings given to naturalness of food.

For data analysis I transcribed the interviews in verbatim into textual data. All of the interviews were conducted in Finnish, because it is advisable to perform the interview in the native language of the participant to ensure rich data. This however means that I had to translate the citations into English when writing this research. Hence, the reader should be aware of this as the voice of the participants is diluted to some degree because of the translation.

After transcribing the data I started the analysis by reading it through several times. As Alasuutari (2011) suggests, I focused on searching common characteristics that would be valid across the whole data. Alasuutari (2011) states that there are two phases in qualitative analysis: simplification of observations and solving a riddle. Following his suggestions, I started the simplification process by making “raw” observations from the data, trying to find common features and further combined them into larger categories based on the features I found. I had a separate word document, where I noted down observations from the textual data. I first selected several interesting notes, parts and quotes from the interviews and grouped them into different sets according to what I thought they had in common. I noticed that different themes started to emerge from the data and named these themes. As qualitative analysis usually requires, I performed multiple rounds of reading, interpretation and analysis (e.g. Eriksson and Kovalainen, 2011). After I had found and named themes that emerged from the data, I re-read the interviews, which made me better understand the themes found and helped me to find possible new themes.

From the categorization task and the discussions around it I was able to form three themes, according which food was categorized as natural. I decided to name these themes as: 1) processing, 2) additives and 3) packaging. In addition to these, I was able to create three other themes, with which natural food was associated and named them

as: 1) natural food as healthy, 2) natural food as familiar and 3) natural food as local. These themes can be interpreted as the meanings natural food was given. I will next present my findings in detail.

6. Findings

6.1. Categorizing food as natural

One of the key characteristics of my research was the categorization task, where I asked the participants to categorize different protein sources from natural to unnatural. As noted by Connors et al. (2001), food categorization is very personal and this was also apparent in my study. All of the participants categorized the food items differently, although there were common characteristics as well. The most common way was to categorize the items into three different categories, while some participants formed fewer and some more categories. However, not all participants formed separate categories but some spread the items out as a continuum. One participant in turn separated animal-derived and plant-based protein sources as different categories and then formed several categories within those categories.

Food categories are often organized as value continuums ranging from foods that are seen to be close to ideal to others that are further away from the ideal (Connors et al., 2001). In my study naturalness was in a way positioned as the ideal, when I asked the participants to categorize the items from natural to unnatural. As Furst et al. (1996) state, ideals are often used as standards for judging other options, which my participants did when they considered what items are natural and what are not. This was also evident, when the participants contemplated some of the plant-based protein sources that resembled traditionally animal-derived sources. The more they thought the item was a substitute, the less ideal it was and the further away from natural they positioned it.

It has been discovered in previous studies that people often use comparative language and categorize foods in relationship to other foods and through what it is not (Connors

et al., 2001; Falk et al., 2001; Furst et al., 2000). In my study there was a comparative initial setting between natural and unnatural. The participants started to compare the different items they were given and as predicted, used a lot of comparative language when categorizing the items. Most of the participants started categorizing by setting up two clear ends – the items they thought were the most and the least natural. Then they continued categorizing the items that were not as clearly defined in their views. It was interesting how the items affected each other, when comparisons were made. For example, the participant could have categorized canned chickpeas as natural, but when they spotted dried chickpeas they perceived them as even more natural and changed the position of canned chickpeas as a little less natural.

Most of the participants started to problematize their views and choices, when categorizing the food items. Since the term natural is highly ambiguous, many of the participants began to ponder what it actually means and how it could be defined. They found the categorizing task quite difficult and noted that they were unsure of many of their choices. It was also evident that there were some value conflicts. As Furst et al. (1996) state, only seldom can all values be satisfied in a food choice situation and value conflicts are common. There might also be a combination of values that affects the food choice (Connors et al., 2001; Furst et al., 1996). For example, one of the participants found categorizing meat products hard because she also wanted to take the ethical aspects into consideration:

“H8: I don’t know about these meats, like maybe I feel somehow anxious eating them so then I don’t think they are as natural, maybe this is some kind of an ethical statement or such, it’s so uncertain what is natural and what is not, but maybe I think that it’s not natural to eat as much meat as the Finns do”

Although categorization was personal and the participants categorized the items differently, there were clear themes that emerged from the categorization task and the conversations. All of the participants used the degree of processing when they defined what is natural and what is not. They also defined it in terms of whether something had been added to the food item. Hence, additives influenced the perceived naturalness.

Additionally, they considered the influence of packaging and it had a clear impact on how natural the food item was seen. I will next go through these three themes more in detail.

6.1.1. Influence of processing

"H9: The more industrial, the less natural"

As many previous studies have found, the degree of processing is one of the most important features that define the perceived naturalness of food. In my study I asked the participants to categorize different protein sources from natural to unnatural and all of them used the degree of processing as the most significant aspect influencing the perceived naturalness. All participants started to make categories based on how processed they thought the items were. They frequently opposed the word natural with the word processed or industrial. This finding is very much in line with Rozin (2006), who discovered that processing alone decreases the perception of naturalness.

"H6: When I think of natural I instantly think about foods that are not very processed, for example some vegetarian foods could be such, that first comes in my mind...or that sort of products that would not be so processed maybe"

"H7: When I think of natural what comes in my mind is maybe meats and beans and such that are like edible as they are"

According to Siipi (2013) naturalness can be seen as lack of human influence. According to my findings, natural food is seen as something that comes as directly from nature as possible. Thus, the less human influence there has been the more natural the food is perceived. When it comes to meat products, all of the participants categorized game meat as more natural than other meat products. Many of them pointed out that it felt more natural, since it had not been raised as food like other meat products and thus there was less human influence. Furthermore, most of them stated that there was also a difference whether fish is wild or raised, wild fish being more natural. With plant-based

foods, the most natural items were those that can be gathered directly from nature or garden, such as mushrooms and plain beans.

“H1: I maybe think about natural as how it would be when it would come from nature, for example lamb, you would kill the sheep and then take the leg and maybe cook it a bit and then you would eat it, but like it's not more processed than maybe cooked or cooled or frozen”

“H2: I somehow think that these would be like, how should I say it, they are like gathered directly from nature, whereas when I think about these meat products, they are like raised for the food production”

“H4: Well these natural things are very pure in a way, they are very plain like they are outright beans or something, like they haven't necessarily been...well maybe they have gone through freezing or such, like they have been treated or dried but they have not been cooked or processed more than that, like only preserved”

As also the previous quotes suggest, the type of processing influences the perceived naturalness and some processing methods have a stronger impact than others. Interestingly there seems to be a difference between plant-based and animal-derived protein sources. Plant-based protein sources were seen as quite natural even if they were preserved some way, as long as the ingredient was “plain” as H6 worded it. This means that the ingredient was easy to recognize and it had not been mixed with other ingredients, such as chickpeas in a cardboard box, frozen beans or dried chickpeas. This is in line with the findings of Niva, Jauho and Mäkelä (2013), who found that the term natural is often used to describe very basic foods with only one or a few ingredients. In turn, animal-derived protein sources were perceived as quite unnatural if they were preserved in any way, such as canned fish.

“H8: Canning fish, like it tastes very different for example tuna when it's fresh and when it's in a can, so maybe it's a little more unnatural when it's so...strongly preserved and then there are all sorts of plant-based protein

products, I think they have probably quite good nutritional value and such but maybe they are not in their original form anymore”

“H9: Here it’s a bit different than in meat and dairy products, you see there I had these preserved things as the most industrial versions but I don’t think similarly about these plant-based versions here, because in these plant-based products these preserved things, I talk about frozen beans, chickpeas in salted water in a can, okay that is not as natural...but like these dried chickpeas, these are like what they are, they have only been preserved like...in their own form - - yeah it’s funny how differently I think about these”

However, when plant-based protein sources were processed so that the main ingredient was no longer recognizable, they were perceived as quite or even very unnatural. Products that resembled a protein source that usually is animal-derived were seen as the most unnatural. Participants frequently used the word substitute to describe those products. There seemed to be no difference whether the participant was a vegetarian or not, although I did not have enough interviewees to make proper comparisons between omnivores and vegetarians.

“H1: I could add to the unnatural that what I really dislike is those kinds of vegan cheeses that are often coconut fat and maybe also [vegan] cold cuts, although I don’t know what those are made of, but they are somehow so processed and they try to imitate so hard and they are not healthy”

“H3: I don’t know what it is with this vegan, but these can be like very processed and if you need to add certain substances on purpose that it doesn’t naturally contain and also with these you need to mix all kinds of things together and then it’s not very natural”

“H9: I’d say here on the plant-based side there are remarkably more of these that you get directly from the nature quite easily without any production or industrializing or such, there are a lot more of them here than in the animal side, so animal-derived products seem to more easily be more...industrialized,

but what I don't like are these strange kind of meat substituting plant-based products such as vegetarian mince and h rakis and so on, they are very industrialized, much more industrialized than eggs and meats and I feel they are far away from natural then, very far away"

Regarding the type of processing, there did not seem to be a significant difference between physical and chemical changes, which previously has been shown in studies (Evans, de Challemaison & Cox, 2010; Rozin, 2005). However, this might be because there was no clear example of chemical processing in the categorization task and when discussing the theme with the participants it seemed to be quite hard for them to grasp what chemical changes meant for food. However, some of the participants did state that physical processing feels more natural if it is something like chopping the ingredients, which was in line with the previous findings that physical changes are perceived more natural than chemical changes (Evans, de Challemaison & Cox, 2010; Rozin, 2005).

"H9: Well it feels like if physical mashing is done to the ingredient itself then it somehow...chemically changes less, yeah the consistency becomes finer but it doesn't change itself when you just make a physical change, but if chemical substances are added into it then you inevitably change the chemical formulas in the ingredients so something new is generated so it's more industrial"

Additionally, it was evident that also the place where processing is done has an impact on the perceived naturalness. Tiusanen (2018) discovered that industrial mass-production is often seen as suspicious, while handmade products are considered as more sincere. According to Aboud and Gomez (2015) handmade food products are perceived as more natural than machine-made food products. I found out that foods made in a factory are considered significantly less natural than homemade foods. For example, all of the participants stated that hummus is quite natural when it is homemade, but if it is bought from a supermarket it is notably less natural. Moreover, processing methods that can be done at home are considered more natural than methods that need to be performed in a factory.

“H4: Maybe that kind of preserving methods and processing you can do at home are somehow...like you understand what happens in it, they are more okay in a way”

“H5: Yeah everything chemical and what happens in a factory is a red light for me, but if it happens in a home kitchen like you make it yourself, then it doesn't feel like processing, then it's cooking”

The findings are also in line with Falk, Bisogni and Sobal (1996), who argue that eating at home can be seen as way to control the preparation and ingredients used. Most of the participants stated that homemade feels more natural, because you know exactly what happens in the process and what ingredients are used. As the quote from H5 says, processing that is performed at home does not even feel like processing but she thinks it is cooking. Although cooking is also processing, people seem to differentiate these two terms. Processing seems to be seen as something that is performed in a factory, whereas cooking is done at home and hence is perceived more natural. As the following quotes demonstrate, the participants felt that making food yourself feels more natural than buying a ready-made product:

“H6: I feel it's maybe more natural when you make it at home, then you know what you put in there, compared to when you read the label on the side of a factory-made product packaging what it possibly might contain”

“H10: If I made for example hummus myself I would know the ingredients and I would really buy the ingredients itself, when if it's shop-bought then I don't...or well I do know if I read but if it's really made from real ingredients or is there some powder in it and such things”

As the previous quotes show, homemade feels more natural not only because it is possible to control the process but also because it is possible to control the ingredients used. The participants felt that if a product is made in a factory, it is harder to say what sort of ingredients it contains and whether they are “fresh” or “real”. This relates strongly to the theme of additives, which has been shown to be one of the main features

that impact the perceived naturalness of food (Rozin, Fischler & Shields-Argelès, 2009; Scott & Rozin, 2017). I will next discuss my findings related to the theme of additives and how they relate to the perceived naturalness of food.

6.1.2. Influence of additives

As Rozin, Fischler and Shields-Argelès (2009) and Scott and Rozin (2017) have stated the use of additives is one of the most important features affecting the perceived naturalness of food. The theme of additives also emerged from my data very strongly. In the categorization task it was one of the most evident properties the informants used to justify whether food was natural in their views. Adding something into a product clearly decreased the perceived naturalness.

“H6: Chicken strips are in my opinion somehow more unnatural than just a plain chicken meat because there is that marinade”

“H9: All sorts of things has been added in there and there are probably even more of preservative things in that, so it is much further away from natural and much closer to this kind of very industrial solution”

“H10: It [canned tuna] would be natural in a sense but then...it is in water though, like then there are all those oils and who knows what marinades in them”

However, my findings were not entirely in line with Scott and Rozin (2017), who found that it does not matter, whether the added substance is considered as healthy or not. According to their study adding something affects the perceived naturalness nevertheless. I used the example of adding vitamins to discuss how adding something that is generally considered as healthy affects the participants' perceptions of naturalness. All of them thought adding vitamins is either a good or a neutral thing and said it does not really alter how natural they see the product. This could be a result of the long history of adding vitamin D in milk in Finland. Almost all of the interviewees started to think of milk when talking about added vitamins and said it is a good thing.

Adding something that is considered as healthy could be seen more natural, since naturalness is often associated with healthiness (e.g. Siipi, 2013). I also discussed with the participants about their thoughts of adding something generally considered as natural but unhealthy, such as sugar or salt, and it was mainly perceived as unnatural unlike adding vitamins.

“H3: Well in milk for example it can be quite a good thing like you need it, especially Finns [need] vitamin D and such, so it has been proven healthy and so, if it has been studied and proven that people can use it then it’s ok”

“H4: I probably think about it so that if you also eat quite a lot of vegan [food] then it is quite necessary that they [vitamins] have been added...maybe why they don’t feel bad for myself is that you know there’s the need and it’s just the certain vitamin that has been added”

“H5: I have bought the drinks where there’s like vitamin B12 for memory or magnesium for muscles, I have fallen into that, it’s my treat

Me: So it’s a good thing then?

H5: Yes, it’s a good thing in that (laughing)”

Adding vitamins is probably seen as more acceptable and hence natural, because, as the previous quotes demonstrate, people understand the reasons why they have been added. When it comes to other additives, people tend to be more cautious and even suspicious of their safety. One of the participants even used strong words such as “poison” and “killing chemicals” to describe additives. Many of the participants directly said that they do not really understand different additives and their uses, which made them feel wary about them.

“H1: Of course I’d like to eat food in which hasn’t been added like downright killing chemicals, for example I avoid aspartame that has been proven in mice tests to cause cancer, so acesulfame K, like if I see a product contains it then I don’t buy it, I try to avoid so called poisons”

“H4: You don’t know what all happens in there, like if you don’t know what it exactly contains even if it’s kind of said in the informative labels what products contain they are still quite mystical, some e-codes and then there can be odd terms when there are all kinds of stabilising substances and such, so it makes me wonder a bit what I get from this now”

“H9: Well it’s quite nice that food doesn’t rot instantly but...it does feel a bit gross...like maybe it’d be different if you understood better what they really are the preservatives, as not just like here you have the e-codes or names, they don’t tell anything but like somehow deeper what it does to the food and what it maybe does to a human, so I’d like to understand it better but I’m not so interested that I would go and study it but like if someone told me”

Even though the participants expressed suspicion and doubts about the safety, it was also evident that the more the participant knew about additives, the more she accepted the use. Trust in the system also increased the acceptance. It seems that if the participant trusted the system, she did not feel as strong of a need to avoid additives. However, approving additives did not mean that a participant would perceive foods with additives necessarily as natural. The participants who were more approving also categorized foods with something added as more unnatural.

H8: I have never worried about them [additives], maybe in the big picture you can think that if you get a lot of additives from food is it good then but I somehow have the impression that they are quite strictly supervised in the EU and they are quite well thought like what you are allowed to use and then it’s very important for example decrease food waste so it’s important that food is preserved so that it’s not spoiled so...I don’t really understand which of them would be dangerous and which safe when some of them are just codes for normal things - - I somehow think that they supposedly have been researched”

“H7: Well if there’s a lot of them [additives] then it’s maybe a bit gross but like a few is fine and well they can be so different like salt can be listed as an additive and vitamin C and then...it’s like you notice that those who maybe

don't know anything about them are shocked like 'yuck some ascorbic acid here', then you're like yeah, very bad"

As the previous quotes indicate, the total amount of additives has an effect on the perceived naturalness. The more there are different additives, the less natural a product is perceived. This is in line with the findings of Asioli et al. (2017), who note that people tend to assess products relying on heuristics, such as the length of the ingredients list or ingredient names. My findings clearly show that a long list of additives is considered unnatural. Even the participants, who otherwise were not so concerned about them, thought that an excessive amount of them is not very good or natural. Previous research has also shown that foods with e-codes are seen less natural (Evans, de Challemaison & Cox, 2010; Siegrist & Sütterlin, 2017) and that was also evident in my study. Almost all of the participants mentioned e-codes when talking about additives and especially a long list of them was considered unnatural.

"H2: I guess it is so that the longer the list what the product contains is, the worse it is"

"H3: Well if there is an awful amount of those strange codes then it's like don't bother"

"H4: If there are a lot [of additives] then you kind of wonder that okay, doesn't sound very nice like here I eat something I have no idea what it is"

In contrast to additives, I also explored whether removing something from a food affects the perceived naturalness. Scott and Rozin (2017) have previously demonstrated that removing something does not have as strong of an effect on perceived naturalness than adding something. This was also quite evident in my study. I used the example of removing fat from milk to discuss the effect of removing something on the perceived naturalness. Most of the participants thought that removing fat from milk is a good thing and does not make milk more unnatural. They seemed to connect it with healthiness, stating that milk fat is unhealthy and thus removing it is desirable. Many also stated that milk is already processed, so removing fat does not make a big difference. However,

some of the participants thought that it does make milk more unnatural since it is more processed then. These participants did not connect milk fat with healthiness, so that might partly explain why they perceived removing it more unnatural than the others.

As discussed by Rozin (2005) and Rozin, Fischler and Shields-Argelès (2009), additives can be linked to contagion and the idea of purity. When something is added to a food, it contaminates it by reducing purity, while removing something does not have the same effect. An interesting theme, that emerged from my data and also relates to purity, is the influence of product packaging on the perceived naturalness. I will next go through this theme more in detail.

6.1.3. Influence of packaging

A noteworthy theme that emerged from my data was that packaging has an effect on the perceived naturalness of food. In the categorization task most of the participants categorized packaged items as more unnatural than unpackaged ones. Additionally, I discussed the topic of packaging with all of the participants and whether they see some packaging methods as more natural than others. Almost all of the participants mentioned that also the packaging method influences how natural they see a product at least to some extend.

H6: Well mince is the same as beef, if you think of that as a package then it looks more processed and feels more processed, so more unnatural than just that [beef]

Me: Like because it's packaged?

H6: Packaged, but then again you can get mince from a counter if you want"

One of the main purposes of food packaging is to protect the food from getting spoiled. However, while some participants stressed the importance of packaging in preventing food waste, many of the participants stated that packaging could also make a food item appear more unnatural. Especially products packaged in a protective atmosphere, such as packaged meat, were seen as unnatural. The shielding gas was seen as something impure, connecting it to the idea of additives and contagion. It is interesting that while

the purpose of the shielding gas is to ensure good hygiene, at the same time it can be considered as contaminating the product. For example mince from the counter was seen as more fresh and natural than packaged mince, even though most likely packaged mince is chemically better preserved and thus fresher.

“H9: When it’s packaged there are instantly some packaging substances and when they have been packaged in these plastic things it’s directly more industrial than...like it’s fresher when it’s from the counter but also more expensive because of that - - the more they are packaged so that they should preserve for long the more industrial is it, the more of shielding gases and such”

“H10: Yes, like all those...how do you call them that vacuum...air inside there, it instantly makes it [unnatural] because it’s like extra plus then everything that has some sort of a stock and salts and all so they affect it in my view and then...overall the packaging itself, like is it plastic or is it something you can recycle or is it maybe made of recyclable plastic or so”

The packaging material also had an effect on the perceived naturalness of food. Most of the participants noted that they see some packaging materials as more natural than others and it also impacts how natural they see the whole product. Plastic was often mentioned as an unnatural material, whereas cardboard and paper were seen as more natural.

“H1: I feel that if you for example pack like in the old days, paper and glass, it feels more natural although I’m not sure whether it is, like I try to prefer that kind of packaging methods but it is quite hard, but if you think of the time before plastic like where things were packed then...paper and cardboard and glass and metal”

“H5: Cardboard feels more natural than for example this kind of metal, I always choose chickpeas in a cardboard can than chickpeas in a metal can, it

feels more natural and for example in vegetables I always choose whole tomatoes since they are loose tomatoes and not the small tomatoes in plastic”

Like a long list of additives or chemical sounding names, also packaging could be seen as a heuristic consumers use to assess the product. Binninger (2017) studied perception of naturalness via food packaging and notes that packaging can act as an important cue communicating naturalness. She also argues that only using emotional approach such as slogans in packaging is usually not very effective. I also discussed with the participants what they think of using naturalness claims in packaging and most of them said they do not simply trust marketing claims. While some of them said a naturalness claim could evoke positive feelings, all of them stressed the importance of checking the ingredient list nevertheless.

6.2. Meanings given to natural food

Besides categorizing food as natural based on the previously presented three dimensions of processing, additives and packaging, the participants also expressed different meanings, with which they associated the concept of natural food. According to my study naturalness of food is connected with healthiness, familiarity and locality. Many of these themes have also been found in previous studies concerning the perceived naturalness of food, especially healthiness. Nevertheless, naturalness of food is still quite a little researched area and my research strengthens the findings of previous research. I will next discuss my findings regarding the themes of healthiness, familiarity and locality more in detail.

6.2.1. Natural food as healthy

It has been discovered in previous studies that naturalness of food is closely connected to healthiness. For instance, according to Falk, Bisogni and Sobal (1996) eating natural/unprocessed foods is one of the predominant themes of healthy eating definitions. Roman, Sánchez-Siles and Siegrist (2017) in turn discovered that health interest is positively correlated with the perceived importance of naturalness. Consumers also generally consider natural foods as healthier (Rozin et al., 2004). In my

research naturalness was also frequently associated with healthiness and some participants often contrasted the word natural with the word unhealthy (instead of the word unnatural), like the following quotes from the participants demonstrate:

“H1: It occurred to me that it can read ‘all natural’ for example in a nut bag, maybe if you compare it to like replacing candy with that, let’s say there are like dried fruits and then you think whether you take a bag of candy or that and then you’re like ‘hey this is more natural’ like it only contains natural things and there haven’t been added any disgusting chemicals that make me sick, so yeah it brings positive vibes...and nature’s own colours and flavours, yeah it creates a positive feeling that this must be a healthier product”

“H4: I’ve heard also organic producers talk that there would be more nutrients for example, because they have gone through a little less different...in big factories and all processes so I have the image that it is healthier in a way”

“H5: I think natural is everything that is placed on the sides of the supermarket, so vegetables, fresh bread, milk and then of course fish and meats and such on the counter, like it’s fresh and then healthy in my point of view and then the convenience food shelf is maybe the most unhealthy”

As Siipi (2013) discusses, naturalness of food may be understood as nutritive suitability for its eater and in that sense it connects to healthiness of food. However, she also states that there is a risk of consumers misunderstanding the connection between naturalness and healthiness. For example, a common confusion is that minimum processing leads to maximum healthiness. Additionally, naturalness as authenticity is also often connected to healthiness, even though authentic products are not necessarily healthier than artificial ones. (Siipi, 2013.) These misunderstandings might arise from lack of knowledge. Weaver et al. (2014) argue that commonly people have limited knowledge when it comes to commercial food production and nutrition, which can generate suspicion towards safety and nutritional content. They also state that processing does not inevitably correlate with the nutritional content of food. However, the participants

in my study frequently connected processing and healthiness of food. As the following quotes demonstrate, highly processed products were often considered as unhealthy:

“H5: Well those [convenience foods] feel so processed somehow and then unhealthy because they have been like mass-produced”

“H8: Then there are all these products that are quite processed so I don’t know whether they are natural anymore but I don’t perceive them as bad, like pulled oats or well, I think Beyond Meat is the most processed out of all the plant-based products so then it doesn’t feel at least healthy anymore”

The participants also expressed confusion and lack of knowledge regarding food production and nutrition. If the participant felt that they did not know very well how a certain product was processed, they were more likely to be suspicious of its healthiness and they more likely perceived it as more unnatural. This was also evident with the use of additives. I already discussed before, that many of the participants were wary about the use of additives and their safety regarding healthiness. In turn, added vitamins were seen as more natural, because the participants generally understood the reasons behind the use and their connection with healthiness. Many of the participants also noted that increasing their knowledge could potentially increase their approval towards the product and make it better and more natural in their views.

Naturalness can also be defined in terms of how well a certain food fits to a certain diet’s view of what is healthy (Mäkelä & Niva, 2020). I did not really explore this subject in my study, but it was somewhat evident in my participants’ discussions. However, I did not have enough participants following a certain diet, so I cannot really make clear conclusions. Yet, another theme emerged from my data that is closely related to this. In my study, natural food was also defined in terms of what was familiar to the participant and used in her diet. I will next discuss how natural food is perceived as familiar food.

6.2.2. Natural food as familiar

Even though the participants in my study were generally less neophobic and open to new food products, they still expressed views that natural food is usually something that is familiar to them. In the categorization task many of them were unsure how to categorize an item, if they did not know how it had been processed or what it contains. Hence, they found it hard to define how natural or unnatural they perceived the item, when they were not familiar with it.

“H6: For example this myco-protein from mushrooms, I don’t really know anything about the processing phases of this so it is very hard somehow to place it like...how natural I think it is or unnatural”

“H9: I don’t know about the origin of these soy protein granules or that much about the production process that I could say whether it’s natural or industrial”

When the participants were uncertain how natural they perceived the item due to it being unfamiliar, they more likely categorized it as unnatural. Thus, natural food was usually connected with familiarity. Unfamiliar food items were often items that the participant did not use in her diet regularly or at all and had therefore not familiarized herself with them. For example, one participant stated that she is not familiar with many plant-based proteins, since she is not vegetarian and thus does not perceive them as natural:

“H10: Well honestly because I’m not vegetarian in any sense, so then I haven’t really familiarized myself with them, what they actually contain...but maybe I get the image that they are quite processed, like...not very natural”

Two other participants in turn categorized food items as more unnatural because they did not like those foods that much:

“H1: This vegan cheese, I put this here as unnatural because I personally hate it”

“H4: Maybe partly because I’m not very fond of soy protein granules, so because of that it doesn’t feel very natural to me”

In the categorization task I had also examples of food items that represented novel food technologies, such as solein (a protein powder made from carbon dioxide utilizing electricity) and myco-protein (protein isolated from mushrooms). The participants were not very familiar with these items and especially solein, which represented the most novel technology of them all, was constantly categorized as the most unnatural item. However, even though all of the participants perceived solein as very unnatural, most of them stated that they would be willing to try it. It is interesting that according to my study, generally less neophobic people still perceive unfamiliar items as unnatural, but unnaturalness does not seem to affect their readiness to try the item.

“H8: Amazing...well maybe it doesn’t sound very natural but I don’t know, I don’t want to disrespect solein if it’s the solution for like everything”

It has previously been suggested that adding familiarity to unfamiliar food could decrease neophobia (Pliner & Hobden, 1992). In my study, novel food items were perceived as more natural, when they resembled a familiar food product and/or it was clear how to use the item. For example, myco-protein was commonly perceived as more natural than solein, because it resembled meat and other meat replacing plant-based proteins, while the use of solein powder was unclear for most of the participants.

“H1: It’s a little contradictory feeling but somehow it [solein] feels unnatural, because of the way it has been produced, like it almost sounds like magic and also it doesn’t even look like food”

“H4: Maybe you need to taste it and test it, like there it [myco-protein] is on a plate so it looks a lot more like food than for example that solein powder”

“H9: That myco-protein feels like you just fry it on a pan and put some tomato sauce with it or...like it has a sort of meaty consistency, you could make some

kind of casserole with it...or it also looks a bit like smooth pork sausage like why not a soup but with myco-protein"

Especially the participants with the most knowledge of food expressed strong interest in novel food technologies and items. This is in line with the findings of Cavaliere and Ventura (2018), who discovered that higher levels of food knowledge increase the acceptance of novel food technologies. They also found out that higher interest in sustainability tends to lead to higher food technology neophobia. This in turn was not evident in my study, since all my participants voiced concerns about sustainability and noted that novel food products are needed to battle sustainability issues. Most of them stated that maybe many novel food products do not feel as natural, but if they are more sustainable they usually see them positively nevertheless.

"H4: Well...I maybe personally think it is more important not to eat meat and control climate change so those reasons are stronger, like I'd rather use even a little more processed plant-based [products], in general I think it's positive that they are developed and you have more options"

"H6: Especially this kind of very traditional meat production is nowadays something that at least I hope it would decrease, so if new protein sources are invented even out of some insane things it sounds great in my opinion"

As the previous quotes demonstrate, many of the participants expressed concerns especially about the sustainability of meat production. They recognized the role of new food innovations, particularly novel protein sources and plant-based products, in resolving sustainability issues. Many participants voiced that they would be ready to overlook that the product might be more processed or unfamiliar and thus perceived as less natural, if it would be more sustainable.

6.2.3. Natural food as local

One predominant theme that emerged from my data was that natural food was frequently associated with local food. It has been shown previously that Finnish food is often linked with purity, which is a term closely related to naturalness (Mäkelä & Niva,

2020). My study exposed that Finnish food is also often seen as natural, especially in comparison to food produced elsewhere. Many participants also related naturalness of Finnish food with its purity, showing that those two terms are often associated with each other.

“H6: Somehow I think that in Finland if I buy Finnish food I feel that it’s maybe like pure enough in my standards”

Most of the participants stated that they prefer Finnish foods whenever possible and they also trust them more. They thought that in Finland the food production system is likely quite well regulated and food has not been processed more than needed. Many felt that if food has been produced abroad, it is harder to tell what has been done to it. This relates to the findings of Tiusanen (2018), who noted that local, authentic food could be seen as a form of sincerity, while multinational mass-production is often seen as suspicious and thus not trusted. Lupton (1996) also argues that the opposition of natural and artificial food can be interpreted as a reaction to the insecurity or uncertainty caused by global food production.

“H4: You don’t necessarily know what has happened to the food there abroad and what has been done when it has been produced, like somehow you trust domestic [products] like how it has been cultivated or grown, it does influence and the further away from Finland or the further away from Europe you go, the more wary I become”

“H7: If it’s a Finnish product I trust it has gone through a more natural path and like only the necessary processing methods have been done”

“H10: Well it depends on the country, because if you think about for example American foods, they are often very manipulated so I feel like they are not so natural compared to Finnish [foods] for example...surely it also depends on the product how it has been produced but...domestic does sound more natural”

I discussed previously, how natural food is seen as something that comes directly from nature. This relates also to the theme of locality, since according to my study, often the closer the product has been produced the more natural it is perceived. It seems that the shorter the route from producer to consumer is, the more natural the food is perceived. For example, one of the participants told that buying directly from a farm feels more natural than buying from a supermarket:

"H8: Then we have sometimes bought eggs from an egg ring where we get them directly from a farm, like a big box, so it has felt somehow more natural"

Another participant in turn stated that if she sees in the supermarket that the food comes from nearby, it is almost as natural as getting it from your own yard, which she perceives the most natural out of all:

"H9: Well of course locally produced is better, the closer the better like for example in Prisma [supermarket] there are locally produced products like some neighbour gardener's potatoes or strawberries from nearby strawberry field or such, it's better because then you don't have to preserve them for so long in different means of transport, not so much preservatives and gases and such poisons are used and...it's almost like from your own yard to table, like second best if you can't get it from your own yard"

Locality and naturalness seemed to be especially strongly associated when it came to animal-derived food products, such as meat, dairy and eggs. According to my study, it seems that these items were seen as fresh products that should not be transported from far away. Additionally, they are products that can be produced in Finland, unlike for instance exotic fruits that do not naturally grow up north. Since exotic fruits such as bananas and oranges do not naturally grow in Finland, it does not make them very unnatural if they are not locally produced. Animal-derived products in turn are products, in which consumers often have a local option and that is usually seen as more natural than a foreign one. Regarding plant-based protein sources, it was pointed out that for example tofu reportedly is not produced in Finland (even though it actually is) and thus locality and naturalness are not as strongly associated as in animal-derived

protein sources. Furthermore, many of the plant-based proteins are often more processed and it seems that if a product is already quite processed and hence seen as not very natural, the importance of locality decreases.

7. Discussion

Even though naturalness is generally considered as a desirable aspect of food (Rozin et al., 2004), which was also evident in my study, it seems that consumers are at times willing to abandon the ideal of naturalness. As Furst et al. (1996) note, only seldom can all values be satisfied in a food choice situation and values often conflict. It seems that especially plant-based protein sources, that resemble animal-derived protein sources are often considered as quite processed “substitutes” and thus not seen as very natural. However, consumers seem to be prepared to overlook the lack of naturalness, when it comes to these sorts of products and often use other justifications over naturalness, such as ecological and ethical ideals. Perhaps when they have made the decision to purchase this sort of a plant-based product, they already have abandoned the ideal of naturalness and are willing to accept that it might be more processed, if it is for example more ecological or healthier product and thus meets those ideals.

It would be interesting to further research these sorts of plant-based protein sources and the reasons for choosing them and values behind the consumer choices. For instance, when does naturalness become an overlooked ideal and which other ideals might conflict with it the most. According to my study, processing influences the perceived naturalness of animal-derived protein sources more than plant-based sources. It appears that with plant-based protein sources, processing is seen as more acceptable. Julia Twigg (1979) argues that vegetarian food can be seen as natural, since “unlike meat, it comes to us directly in the category of foods – we pluck it from the trees”, which relates also to my finding that the more directly food comes from nature, the more natural it usually is perceived. However, nowadays there are also many vegetarian foods that are highly processed and thus do not come as directly from nature.

As previous research shows naturalness is often linked with healthiness (e.g. Falk, Bisogni & Sobal, 1996; Roman, Sánchez-Siles & Siegrist, 2017; Rozin et al., 2004), which was also apparent in my study. Lately there has been quite a lot of talk about the healthiness of meat in the media, which could make consumers question the naturalness of eating it. As a result consumers might see eating plant-based proteins as healthier and therefore they might be more willing to overlook the fact that they could be more processed.

The differences between animal-derived and plant-based protein sources and their perceived naturalness have not previously been researched, so I think it is an noteworthy initial finding that would need more research in the future. In my study I had both vegetarians and omnivores, but I did not have enough participants to be able to compare, whether the diet influences how natural animal-derived versus plant-based products are perceived. According to previous research, social context affects what is considered as natural food (Koojimans & Flores-Palacios, 2014) and naturalness can be defined in terms of diet (e.g. Knight, 2012; Mäkelä & Niva, 2020). Therefore it could be presumed that the diet would have an impact.

Tuorila and Hartmann (2020) note that lack of naturalness can lead to consumer rejection of novel foods. In my research, I studied consumers who are typically not very neophobic and generally willing to try new food products. They expressed interest in novel food technologies and products, and mostly viewed them positively. Yet, at the same time they defined naturalness of food in terms of familiarity. Unfamiliar food items were commonly seen as unnatural. Although, I think an interesting finding from my research is that the lack of naturalness does not seem to affect the willingness to try novel food products for generally less neophobic people. Naturalness has previously been found to be more important for consumers with higher food neophobia and negative perceptions of novel food technologies (Roman, Sánchez-Siles & Siegrist, 2017) and therefore it could be that naturalness is not so important for less neophobic consumers.

Lack of knowledge seems to be a topic related to several themes of my findings. In my research it was clear that there was confusion and lack of knowledge regarding food

production and moreover its links to nutrition. It seemed to cause doubts about healthiness of food products and also made them perceived as unfamiliar. When consumers did not know how a product had been processed, they were most likely not familiar with it and were also more prone to doubt its healthiness, leading to perception of unnaturalness. In addition, foreign products were often perceived as more unnatural than local ones, since consumers felt they did not know well what might have been done to food abroad. This can be interpreted as food ethnocentrism, preference of domestic foods over foreign.

According to my study, it seems that increasing knowledge of food processing methods could lead to increased perception of naturalness. Still, this is a topic that would require further research. Increased perception of naturalness would be especially useful when trying to gain wider consumer acceptance for novel food technologies, which requires winning over also more neophobic people. Furthermore, increased perception of naturalness has been found out to correlate positively with purchase intentions (Binniger, 2017). However, the food industry should also keep in mind that while increasing the perceived naturalness they also might reinforce consumer views of naturalness as the ideal of food at the same time.

The paradox between the ideal of naturalness and novel food (technology) innovations is an intriguing one. My study suggests that at least generally less neophobic consumers might be willing to abandon the ideal of naturalness regarding novel food products based on other values and ideals, such as environmental-friendliness, ethicalness or healthiness. Thus, developers of novel food products could consider whether it even is sensible to aim for naturalness and strengthen that ideal in the first place. Perhaps it could be beneficial to research, which other ideals are the most important and concentrate on highlighting those. Additionally, it could be valuable to make the processing method as transparent as possible for the consumers to increase knowledge and make them more familiar with the product. Even if the product would be more processed and thus possibly not seen as that natural, making it familiar could still increase the perception of naturalness.

Another interesting subject is the relationship between the perceived naturalness and sustainability. Previous research suggests that higher interest in sustainability often leads to higher food technology neophobia (Cavaliere & Ventura, 2018), even though the purpose of many food technology innovations is to increase sustainability. In my research however food technology innovations were frequently connected with sustainability. In fact, the participants who showed the highest interest in sustainability themes seemed to be also those that were the most open to novel food technologies and recognized their importance in increasing sustainability. It seems that when a person was highly interested in sustainability, they recognized that food processing could be a good thing even though it might decrease the perceived naturalness of food.

In addition, the influence of product packaging on the perceived naturalness should not be neglected. It has been shown in previous studies that product packaging and especially labels act as important cues that communicate naturalness of food (Binninger, 2017; Siegrist & Hartmann, 2020). An interesting topic that emerged from my study and would require further research was that consumers seemed to link naturalness especially with the protective atmospheres and additives used in food packaging. There seems to be an interesting paradox: on one hand packaging protects the food from spoiling, but on the other hand it could be seen as contaminating the food inside making it perceived as unnatural. It seems that packaging is linked to the theme of additives in this sense. In a way, packaging can be seen as representing something added to a food.

8. Conclusions, limitations and future research

This research was set out to explore what sort of meanings people give to natural food and how they categorize foods as natural and unnatural. According to my findings foods, or more precisely protein sources, were categorized as natural based on three various aspects: 1) processing, 2) additives and 3) packaging. Furthermore, three different meanings were found to be associated with naturalness of food: 1) healthiness, 2) familiarity and 3) locality.

My study showed that food categorization is indeed very personal and categories are often organized as value continuums, as Connors et al. (2001) have noted previously. Naturalness of food was positioned as an ideal, which could be used as a standard in judging the options, in this case the different protein sources. With plant-based proteins it was clear, that the more an item was considered as a substitute for a traditionally animal-derived protein source, the less ideal it was seen and thus the further away from natural it was positioned.

The ambiguous nature of the term natural, previously noted for example by Siipi (2013) and Mäkelä and Niva (2020), was also evident in my research. The participants frequently problematized their views of naturalness and contemplated what the term actually means. Even though naturalness is mostly a desirable aspect, as Rozin et al. (2004) have found, my study showed that there are often value conflicts and sometimes the consumers seem to be willing to abandon the ideal of naturalness of food. This was the most evident with processed plant-based products that were often perceived as unnatural, but often the lack of naturalness was overlooked based on other values such as ecological or ethical. According to my study it also seems that processing affects the perceived naturalness of plant-based proteins less than animal-derived sources. This was especially apparent with preservation methods such as canning.

It has been found previously that besides processing, the use of additives greatly impacts the perceived naturalness of food (Rozin, Fischler & Shields-Argelès, 2009; Scott & Rozin, 2017). My study revealed that in addition to actual additives, also the packaging of food can be linked to the idea of contagion and decrease the perceived naturalness. Even though the purpose of packaging is to protect the food inside, consumers might also see it as a representation of something added to a food, reducing its purity.

This study offers contributions to the research concerning the perceived naturalness of food and the definitions of naturalness. It presents insights of the consumer group of urban Finnish women, who are generally open to trying new foods. The views of food naturalness of this sort of a consumer group have not been studied previously. Therefore this research links the previous research on the perceived naturalness of food to a new consumer group and cultural context offering some interesting insights.

There are some limitations that should be considered. The study is qualitative in nature, so the results are not generalizable but represent my interpretation of the data as a researcher. Hence, there could be many possible and potentially meaningful interpretations of the data. For the reliability of the study, in qualitative research it is important that the researcher does not have strong pre-assumptions or hypothesis of the research subject or the results (Eskola & Suoranta, 1998). Therefore, the researcher should try to identify and recognize their own pre-assumptions as well as possible, as they usually cannot be entirely avoided. I admit having a few pre-assumptions about the possible results based on the literature I had read about the perceived naturalness of food. I aimed to acknowledge these presumptions, while collecting and analysing the data to ensure my results are based on the research material and thus reliable.

The findings depend on a personal analysis of the researcher and the reader should make the decision whether they are valid considering the evidence given and the credibility of the arguments. To ensure dependability, the research process should be logical, traceable and documented (Eriksson & Kovalainen, 2011). I have described the research plan, method and subjects in this document to display the logic behind my research process as well as possible. According to Eriksson and Kovalainen (2011), transferability means that the research is connected to previous research and results. I have attempted to tie my results to the previous research concerning food categorization, definitions of the term naturalness and consumer perceptions of the naturalness of food.

To ensure credibility, the data used should be good and relevant and the interpretations should be logical (Eriksson & Kovalainen, 2011). Even though the sample size of ten interviewees may seem somewhat small, I was able to collect insightful, high quality data that served the purpose of the study well. However, it should be taken into account that the interviewees were all from quite similar backgrounds, representing mostly highly educated young adults. To assure conformability the links between the data and the findings should be easily understood (Eriksson and Kovalainen, 2011). I have used quotes from the data throughout my findings to demonstrate the connections.

The theme of naturalness of food could offer many interesting directions for future research. My research presents an initial finding that there is a noteworthy difference between plant-based and animal-derived protein sources when it comes to the perceived naturalness. It would be interesting to further research these contrasts and whether perceptions of naturalness would differ between vegetarians or vegans and omnivores. Additionally, studying the value conflicts concerning food naturalness and other ideals could offer insights regarding choosing foods and especially different protein sources. It would be interesting to research, whether consumers would be willing to abandon the ideal of naturalness, when they are choosing novel food products or substitutes for animal-derived products and which ideals are emphasised in those food choice situations. For instance, exploring the relationship between sustainability and naturalness could offer notable insights.

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Appendix 1: Interview guideline

(Translated into English)

Background information: age, residence, education, work, family

Tell me a little about yourself as a food consumer. In your opinion what is good food? What kind of things you value in food? Do you follow any special diet? Are you interested in trying new foods?

The topic is natural food and especially different protein sources. Can you instantly think of foods or protein sources that you see as natural or unnatural?

Next there is a categorization task. Here are a few different protein sources and your task is to categorize them from natural to unnatural. You can either line them up or make separate categories, whatever feels the most logical to you. Please tell your thoughts aloud while categorizing and tell me if there are items you are not familiar with.

Discussion about the categories / order, reasons why some are natural / unnatural

What do you think of plant-based and animal-derived protein sources? What about insects?

What do you think about food processing in general? How about physical processing versus chemical processing?

What do you think of novel food processing methods such as solein or myco-protein?

What do you think about additives? What if something healthy like vitamins has been added? What if something has been removed, e.g. fat from milk?

What about the origin of the food? What kind of thoughts does it raise and does it influence your views about the naturalness of food?

Do you think about what has been fed to the meat or where the plant has grown?

What do you think about packaging? Do you perceive some packaging methods as more natural than others? Do you pay attention to the packaging labels and the naturalness claims?

What do you think about organic food?

Appendix 2: Items of the categorization task



Quinoa



Vegan cheese from fermented quinoa and oat



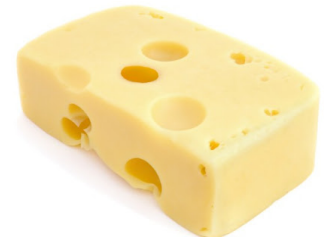
Vegan cheese



Chicken strips in marinade



Chicken



Cheese (from cow's milk)



Game meat



Cold cuts (from meat)



Vegan cold cuts



"Fish from nature" canned



Tuna (canned)
59



Fish



Faba beans



Härkis from faba beans



Soy protein granules



Hummus



Canned chickpeas



Dried chickpeas



Frozen green beans



Fresh green beans



Tofu (marinated)



Vegetarian "mince"



Beef



Mince (from beef)



Protein powder



Insects



Eggs



Myco-protein (from mushrooms)



Mushrooms



Solein