

Individuals' Personality and Consumption of Local Food Specialties

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Abstract

In studies of consumption of local food specialties individuals' personality are rarely included. In this article we want to expand and give nuances to the understanding of what characterizes these consumers and ask: *Are there any common personality traits, or personal characteristics of these consumers?*

We make use of the Big Five personality model to unpack the relation between individual's personality and choices of local food specialties. This model consists of the following five personal traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience. These personality traits are hidden but through questions regarding behavior the traits may be retrieved. In order to construct latent variables to represent measures of these traits, we apply Item Response Theory (IRT). Socioeconomic variables are combined with personality traits in logistic regression models to find the connection between personality and choice of Norwegian local food specialties.

The results show that in all models the latent variable Openness to Experience is a significant predictor for choice of local food specialties. This personality trait was one of the most important predictors in all the choices made by the individuals. Openness to Experience is characterized by fantasy, aesthetic sensitivity, attentiveness to inner feelings, preference for variety, and intellectual curiosity.

Keywords: Local food specialties; Consumption; Personality; Big five; Item response theory

Introduction

Towards the end of the 1980s, global and European trade policies were undergoing major changes. General increased liberalization and import tax deregulation threatened Norwegian food products with increased competition from foreign imports. To counter the competition, Norwegian authorities and other key agri-food stakeholders started mobilizing what became to be described as *mental border protection* (Hegnes, 2015). Simply put, the strategy aimed to trigger new ways of thinking about and looking at food and to convince Norwegian consumers to choose Norwegian products. This Norwegian top-down *turn to new qualities* coincides with a growing focus on new qualities in Europe characterized by a bottom-up initiative by consumers, retailers and producers away from standardized products towards alternative qualities (Goodman, 2003). Both the top-down and bottom up initiatives may be understood as nuances of *gastronationalism* (DeSoucey, 2010).

In mobilizing against international competition, "Norwegian Food Specialties" grew to become an important concept introduced by the Norwegian government to denote new quality products. A historical timeline can be drawn, commencing in 1986 with a 'green wave' representing the introduction of the scheme for organic quality in Norway. In the Norwegian Agricultural Authority's strategy work at this time, the goal was to create a 'mental border protection' for Norwegian competitive advantage. In a speech held by the Minister

of agriculture in 1991, Gunhild Øyanger, advantages explicitly mentioned were clean food from Norway and regional or "special Norwegian" products that are industrially processed, for example aquavit (Øyanger, 1991:8). The green wave was followed by a focus on national quality and the introduction of the 'Good Norwegian' scheme in 1994, indicating compliance with a standardized level of quality for Norwegian food. The regional, local, traditional and special qualities were first emphasized through the scheme "Specialty" in 2001. On July 5 2002, the Norwegian regulations for Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Specialty Guaranteed (TSG) entered into force in accordance with EU regulations.

To raise awareness of Norwegian food specialties, attempts were made to develop a new food vocabulary and mentality through the introduction of a new food cultural taxonomy. The focus on food specialties became more explicit, with several Ministers of Food and Agriculture using France and southern Europe as ideal examples for how this model benefits those countries. Since the 1990s, political opinion has been united in the belief that the domestic application of the *terroir* concept will alter Norwegians' understanding of Norwegian food products. This desire to embrace *terroir* on a conceptual level, to communicate both Norway's history and also build an exciting food culture for its future, was emphatically stated by former Minister of Food and Agriculture, Lars Sponheim:

We must develop and communicate the story of the Norwegian food production and to a much greater extent do as the French people. We must link food production to what is known as "terroir" in France, i.e. the indigenous, the identity making and specificity of soil and place. (Sponheim, 2005)

The notion of local food became part of the more general concept of food specialties and the meaning of local food and food specialties was established by being presented as different from bulk products. In 2009 the Minister of agriculture- and food minister Lars Peder Brekk mentioned the relationship between bulk and niche/specialty products:

Production of food specialties offers the opportunity to achieve good prices in the market and to maintain Norwegian food tradition and food culture! It is the local products that make the food strategy "The taste of Norway" possible! Both the grocery chains and the food industry have captured these opportunities with reduced investment in bulk and cheap food, with transition to niche food and specialties.¹

In the later promotion of the Specialty and PDO, PGI and TSG labels, the Ministry of Food and Agriculture and The Norwegian Agricultural Quality System and Food Branding Foundation use "food specialties" as a common designation of the products covered by these schemes.

During the same period *New Nordic Food* became an established concept and phenomenon since the manifesto for the New Nordic Kitchen was launched in 2004. The common Nordic effort on food culture has also had an impact on the work of making Norway a so-called Food Country (Matland) (Dänmark, 2008) or Food Nation (Matnasjon) (Brekke, 2009; Vedum, 2012; Stortingsmelding nr. 9 (2011-2012: 125); Dale, 2018). In 2017, *Food Nation Norway* (Matnasjonen Norge) was established as a new political framework for business development and value creation.² The new qualities such as food specialties and local food are considered important in the building of the food nation Norway.

Former research shows variations in the use and understanding of the concept of local food specialties (LFS), both between and within the *emic* (the group of consumers and stakeholders) and *ethic* (researchers) groups. Based on studies of the Norwegian context and consumers conceptions of local food, Amilien et al, (2008) suggest a threefold typology: *Local food*: Products from specific geographical area nearby where you live. *Localized food*: Products that in one way or another (recipe, reputation, tradition) have a cultural anchoring in a special geographical area and are known outside the original area of production. *Terroir food*: The food production in itself and the environment (for example the soil) the production takes place in. However, few, if any of the contributions focusing on consumption of Norwegian food specialties have studied the personal traits of its consumers. In this article we expand and give nuances to the understanding of the

¹ Brekk, L. P. (2009) 'Tale for Norsk sau og geit – Fagorganisasjonen for sau- og geiteholdere', *regjeringen.no*, http://www.regjeringen.no/nb/dep/lmd/aktuelt/taler_artikler/ministeren/landbruks--og-matminister-lars-peder-bre/2009/innlegg-mote-hos-norsk-sau-og-geit-.html?id=573325 (lesedato 26.11.2018).

² <https://www.regjeringen.no/no/tema/mat-fiske-og-landbruk/mat/innsikt/matnasjonen-norge/id2593412/>

phenomena of consumption of local food specialties, and more specifically of what characterizes the consumers, and ask: *Are there any personality traits, or characteristics of the individuals, that are common to these consumers?*

In the next section we give a review of contributions on consumer's personality and consumption of local food specialties. In section 3, we discuss the concept of the Big Five personality model. In section 4 we describe more in detail our data sources, methods and analytical perspective. In section 5, we describe the item response theory and the graded response model. In section 6 we discuss the results from the logistic regression models in which the personality variables were included. In the final section we discuss the results and propose some conclusions

Research on personality, food consumption and local food specialties

Consumption of LFS has been approached by scholars from a variety of disciplines with a range of perspectives and research questions. Studies on Norwegian LFS have focused on issues such as production and quality development (Kvam, et al, 2014; Stræte, 2008), marketing (Amilien and Hegnes, 2004), logistics and distribution (Dreyer et al, 2016; Åsebø et al, 2007), government intervention and governance structures (Halkier et al, 2017), food culture (Hegnes, 2013). In this article, we focus specifically on how personality is related to consumption of LFS. This narrowed phenomenon has also been studied with different approaches, both in regard to products and the understanding of personality. Sidali and Hemmerling (2014) concluded that *Both subjective and object-based perceived authenticity significantly influence the purchase intention of food specialties* (2014:1692). Miroso and Lawson (2012) found that *A range of personality and other personal characteristics differ between local and non-local food buyers, with the former segment being more liberal, interested in quality, and frugal* (2012:816).

Most contributions linking personality and the big five model to food consumption are concerned with the psychological/physiological health effects such as personality and dietary styles (e.g. Forestell and Nezelek, 2018; Keller and Siegrist, 2015). One exception is Bazzani et al (2017) who found that personality traits can be sources of heterogeneity in consumers' preferences for locally produced applesauce.

The most common way to construct personality traits variables from the Big Five is using the mean of the items for each individual. This is a basic and un-nuanced method which gives equal weights to each of the items in each personality trait. This method was used by the papers cited above. Our contribution is to construct latent personality variables with item response theory using the Big Five taxonomy. The latent variables are then included in choice models for LFS. In this way we are better equipped to analyse the connection between LFS and personality.

Personality

An individual's personality describes the intensity of his/her thoughts, feelings and behavior, relative to other people. The personality of an individual defines how she responds to the world around. The personality develops over time, from birth to adulthood, and it is thought to be relatively stable from around thirty years of age (McCrae and Costa, 2003). It comprises hundreds of different traits or qualities, and these traits vary in degree. For example, two individuals may be described as neurotics, but one of them is more neurotic than the other. It is the sum of all the traits that contribute to define the individual as a person and how she will react in different situations or what kind of choices she will make. Her personality will contribute to decide if she will approach decisions cautiously or impulsively, if she will act emotionally or rationally, or if choices are made deliberately or spontaneously. For some people it is important to keep a certain moral value when making decisions, while some others are more strongly guided by anxiety in their everyday life. Some people are strongly guided by pleasure and instant gratification, for these people decisions are often impulsive and lack rational judgement.

Personality traits can be measured on a scale by using the Big Five, or five factor model. This psychological taxonomy is based on the assumption that individual personality may be described by five general factors: Extraversion, Agreeableness, Conscientiousness, Neuroticism/Emotional stability, and Openness to Experience. Extraversion comprises assertiveness, sociability, talkativeness and the tendency to seek stimulation in the company of others. Individuals who are perceived as extraverts often seek attention and are domineering. Individuals who are perceived as reserved and reflective are classified as introverts, which is low score on Extraversion. Agreeableness is the tendency to be compassionate and trusting towards others. Individuals who have low score on Agreeableness are often suspicious and antagonistic towards others. Conscientiousness is about organization, self-discipline and the ability to work hard to reach the goals.

Neuroticism/Emotional stability is about the degree to which the individual is vulnerable to psychological stress or if the individual is calm and stable. Openness to Experience has to do with curiosity, creativity, preference for variety and novelty. None of the five factors can be observed directly. However, by using a survey questionnaire the latent variables measuring the five factors can be estimated through for example Item Response Theory. Table 1 consists of descriptions of the Big Five from Almlund et al (2011).

Table 1: The Big Five domain and their Facets*

Big Five Personality Factor	American Psychology Association Dictionary Description	Facets (and correlated trait adjective)	Related traits
Extraversion	“an orientation of one’s interests and energies toward the outer world of people and things rather than the inner world of subjective experience; characterized by positive affect and sociability”	Warmth (friendly) Gregariousness (sociable) Assertiveness (selfconfident) Activity (energetic) Excitement seeking (adventurous) Positive emotions (enthusiastic)	_____
Agreeableness	“the tendency to act in a cooperative, unselfish manner”	Trust (forgiving) Straight-forwardness (not demanding) Altruism (warm) Compliance (not stubborn) Modesty (not show-off) Tender-mindedness (sympathetic)	Empathy Perspective taking Cooperation Competitiveness
Conscientiousness	“the tendency to be organized, responsible, and hardworking”	Competence (efficient) Order (organized) Dutifulness (not careless) Achievement striving (ambitious) Self-discipline (not lazy) Deliberation (not impulsive)	Grit Perseverance Delay of gratification Impulse control Achievement striving Ambition Work ethic
Neuroticism/ Emotional Stability	Emotional stability is “predictability and consistency in emotional reactions, with absence of rapid mood changes.” Neuroticism is “a chronic level of emotional instability and proneness to psychological distress.”	Anxiety (worrying) Hostility (irritable) Depression (not contented) Self-consciousness (shy) Impulsiveness (moody) Vulnerability to stress (not self-confident)	Internal vs. External Locus of control Core self-evaluation Self-esteem Self-efficacy Optimism Axis I psychopathologies (mental disorders) including depression and anxiety disorders
Openness to Experience	“the tendency to be open to new aesthetic, cultural, or intellectual	Fantasy (imaginative) Aesthetic (artistic) Feelings (excitable)	

	experiences”	Actions (wide interests) Ideas (curious) Values (unconventional)	_____
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* Adapted from Almlund et al (2011)

Data

To unpack the relationship between individual's personality and choices of locally produced specialty food, we make use of the Norwegian Monitor Data Base (NM). NM is the most comprehensive consumer survey in Norway. It is a nationally representative cross-sectional survey of adults aged 15 to 95 years. It has been conducted biannually since 1985 and consists of a large amount of consumption related questions, background variables, and morality and health questions. Our study is based on the 2015 version, which was the first year in which answers to questions describing the Big Five personality model were included in the database. The personality traits are hidden but through questions, or assertions, regarding behavior they may be revealed. Since the 1980-ies there has been a lot of research concerning how to measure personality. John et al (1991) constructed a 44 item Big Five Inventory (BFI) to represent the personality. This was done to satisfy the need for a brief inventory that would allow efficient and flexible measurement of the five dimensions. In the years after, a variety of other measures to assess the Big Five were developed (John and Srivastava, 1999). Engvik and Clausen (2011) developed a 20 item Norwegian version of BFI, BFI-20. This version showed satisfying results compared to the 44 item version. This version is included in the NM. In the survey the individuals tick once for every assertion on a seven point scale which suits the person best.. The information given to the person ticking the button, is the following: "Below are a number of assertions that may or may not fit different people. Please tick the button that suits you as you are. Don't use much effort thinking about each assertion, but tick the button you feel suits you best. One tick per line." 1 is "Disagree strongly" and 7 is "Agree strongly". Table 2 contains the questions included in NM together with the mean and standard deviations of these variables. An individual may have different personalities in different situations. In addition the personality may be different in front of different people and the personality may depend on the mood you are in. The personality may be different if you are under influence of a drug. It means that the Big Five personality taxonomy may be measured as the personality you have most of the time. Note that in the survey the questions are mixed, but in table 2 they are grouped under their respective factor for readability.

Table 2. The Norwegian Version of the Big Five*.

	Big Five Personality	Mean	sd
	Extraversion		
1	Is talkative	4.52	1.64
2	Tends to be quiet	3.64	1.77
3	Is outgoing, sociable	4.97	1.56
4	Is sometimes shy, inhibited	2.83	1.65
	Agreeableness		
5	Can be cold and aloof	2.63	1.54
6	Is helpful and unselfish with others	5.33	1.28
7	Is sometimes rude to others	2.92	1.64
8	Is considerate and kind to almost everyone	5.98	1.08
	Conscientiousness		
9	Does a thorough job	5.76	1.16
10	Tends to be disorganized	2.50	1.59
11	Makes plans and follows through with them	4.93	1.38
12	Can be somewhat careless	3.41	1.64
	Emotional stability/Neuroticism		
13	Is depressed, blue	2.36	1.54
14	Is relaxed, handles stress well	4.69	1.62
15	Worries a lot	3.69	1.84
16	Gets nervous easily	3.15	1.70
	Openness to Experience		
17	Is original, comes up with new ideas	4.09	1.58
18	Has an active imagination	4.30	1.73
19	Likes to reflect, play with ideas	4.32	1.65
20	Has few artistic interests	3.65	2.05

*The scale is a seven point Likert scale where 1 is disagreeing strongly and 7 is agree strongly.

Table 3 shows the outcome variables, y_1 to y_5 together with the predictors (except the personality variables from the Big Five). The sample consists of individuals from 20-89 years of age. The number of individuals in the sample is 3501. Table 3 shows that 36 percent of the individuals in the sample purchase Norwegian specialty foods more than once a month. 24 percent is willing to pay more (than today) for local food. 46 percent is very interested or quite interested in buying Norwegian specialty foods from rural areas, like the cheese, fish, and flatbread that is mentioned in the question. 91 percent did purchase Norwegian specialty food in the last year while 45 percent say that it is very important that the supermarket they choose has a large selection of Norwegian, locally produced specialty foods. We can see a slight difference in the way the assertions are formulated: y_1 and y_4 are about Norwegian specialty food. There is nothing in the assertion about local production. y_2 is just about local food. There is nothing in the assertion about specialty food. y_3 and y_5 comprise Norwegian locally produced specialty food. It means that the respondents may interpret the 5 responses differently. Generally speaking, it seems to be a potential for Norwegian, locally produced, specialty foods.

The predictors consist of age and income, which are continuous, and nine different indicator variables for gender, social status, education, and place of living. Before the estimation of the model, age and income are standardized (from each observation the mean is withdrawn and this expression is divided by the standard deviation) to get approximately the same scale. We see from table 3 that the average age is 50 years, the average household income is 502 000 NOK, there is 48 percent males in the sample, 67 percent of the individuals are married or cohabit, and 60 percent has 3 years or more of university education. More than half

of the sample is living in the Oslo area or the other eastern areas and 25 percent lives in one of the four major cities in Norway (Oslo, Bergen, Trondheim, and Stavanger).

Table 3. The outcome variables and the predictors used in the models.

Variable	Explication	Mean	sd
<i>Outcome variables</i>			
y_1	=1 if I purchase Norwegian specialty foods more often than once a month	0.36	0.48
y_2	=1 if on a regular basis I am willing to pay more for local food, that is, food produced in the same area that it is sold	0.24	0.43
y_3	=1 if I am very, or quite, interested in buying Norwegian specialty foods from different rural areas in Norway, as for example "Blue cheese from Tingvoll", "Rakefisk from Valdres" or "Flatbread from Rørros", in the supermarket close to where I live	0.46	0.50
y_4	=1 if I have purchased Norwegian specialty foods in the last in the last 12 months	0.91	0.29
y_5	=1 if When I choose supermarket to shop groceries, it is very important or quite important that the supermarket has a large selection of Norwegian, locally produced, specialty foods	0.45	0.50
<i>Predictors</i>			
Age	Age of the individual, in years	50.02	17.44
Inc	= household income in 2015 (in 1000 NOK)	502	268
Male	= 1 if male, 0 otherwise	0.48	0.50
Married	=1 if married or cohabit, 0 otherwise	0.67	0.47
Univ	=1 if 3 years or more of university education, 0 otherwise	0.60	0.49
R_1	= 1 if place of living is Oslo area	0.24	0.43
R_2	=1 if place of living is other eastern areas	0.29	0.45
R_3	=1 if place of living is western Norway	0.24	0.43
R_4	=1 if place of living is middle of Norway	0.15	0.35
R_5	=1 if place of living is Northern Norway	0.09	0.28
BCity	=1 if place of living is one of the 4 largest cities in Norway: Oslo, Bergen, Trondheim, Stavanger	0.25	0.43

The sample consists of individuals from 20-89 years of age. $n=3501$.

Item response theory and the graded response model

Item response theory (IRT) is a class of stochastic models well suited to construct latent variables, or scales out of discrete variables. Baker and Kim (2017) and Raykov and Marcoulides (2018) are two good introductory sources using R and Stata respectively. Using IRT it is possible to construct measurement scales derived from relative comparisons of the items, across items and across individuals. The basis is the logistic distribution. If an individual responds to a questionnaire where the responses are binary, the probability of a positive response to item i is given by

$$P(y_i = 1 | \theta) = c_i + (1 - c_i) \frac{\exp(\alpha_i(\theta - \beta_i))}{1 + \exp(\alpha_i(\theta - \beta_i))} \quad (1)$$

where

y_i is item i , $i = 1, \dots, m$. θ is the ability of the individual, or the individual's level on a latent scale, c_i is a guessing parameter, α_i is a discrimination parameter, and β_i is a difficulty parameter. If $\alpha_i = 1$ and $c_i = 0$ the model is similar to the famous Rasch model (see Baker and Kim, 2017). The names of the parameters and the latent variable reflect that IRT has its origin in analysis of multiple choice testing, where the items (questions) have different degrees of difficulty. In the model there are three parameters and one latent variable to be estimated. And there are n individuals who respond to m items. The model is similar to a non-linear factor analysis with one factor (the ability), see for example Raykov and Marcoulides (2018). This can be estimated by maximum likelihood. In our case we have a multiple Likert scale where the responses are graded, 1 is lower

than 2 is lower than 3,.....,is lower than 7. So a good choice is to use a graded response model (grm). This model was suggested by Samejima (1969). Grm is included in the ltm package (Rizopoulos, 2006) in the statistical package R. Grm is defined as

$$P(y_i = k | \theta) = P(y_i \geq k | \theta) - P(y_i \geq k+1 | \theta) = \frac{\exp(\alpha_i(\theta - \beta_{ik}))}{1 + \exp(\alpha_i(\theta - \beta_{ik}))} - \frac{\exp(\alpha_i(\theta - \beta_{i,k+1}))}{1 + \exp(\alpha_i(\theta - \beta_{i,k+1}))}, \quad k = 1, 2, \dots, m \quad (2)$$

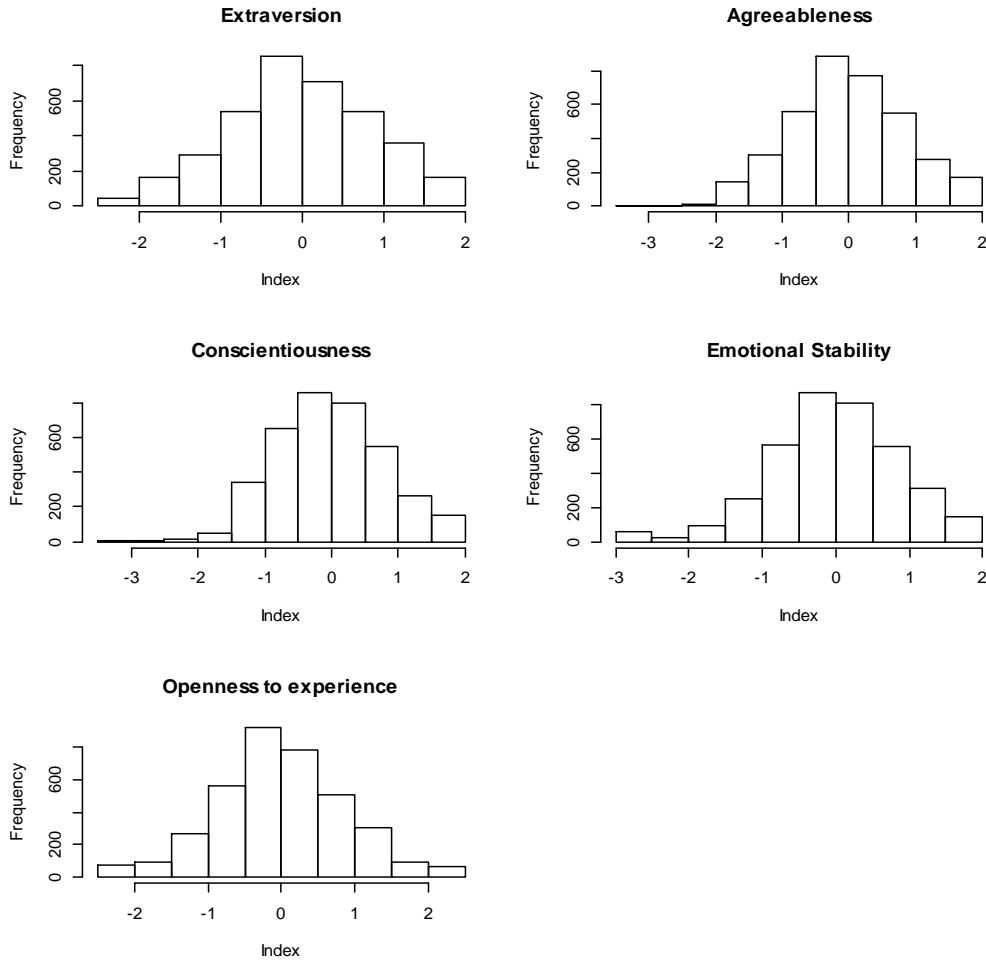
which is the probability to choose the item k from $k=1,2,\dots,m$ items.

Our aim is to find θ for each individual, this is the latent variable that describes the position of the individual on the scale from lowest to highest. This can be done with the use of maximum likelihood to find the parameters and the latent variable.

For each of the personality factors we estimated two different versions of grm, one constrained version in which $\alpha_i = \alpha$ for all items, and one version where the parameters were freely estimated. We used *AIC* and *BIC* to choose between the two. In each of the models, the freely estimated grm had the best fit. Hence we estimated this model and extracted the latent variables, or ability variables, for each individual. These five personality traits were then included in the logistic regression models where the choices of y_1 - y_5 were estimated on the predictors in table 3.

Estimation results

To use grm, the variables in the questions 2,4,5,7,10,12,13,15,16 and 20 were recoded to have the highest Extraversion, the highest Agreeableness, the highest Conscientiousness, the highest Emotional Stability and the highest Openness to Experience as 7 and the lowest as 1. This was done for the grm to be able to estimate the parameters and the latent variables correctly. Figure1 shows the histograms of the estimated personality variables. They all have means close to 0 and more than 80 percent of the probability mass is between -1.2 and 1.2 for each of them.



Figur 1. Histograms of the estimated Big Five personality variables.

The probabilities of purchase/being interested in/willingness to pay for Norwegian specialty foods are estimated by binary logit models (Cameron and Trivedi 2005). We specified the models as:

$$\Pr(y_i = 1 | x) = \Lambda(\beta_1 + \beta_2 EE + \beta_3 AA + \beta_4 CC + \beta_5 ES + \beta_6 OE + \beta_7 Age + \beta_8 Inc + \beta_9 Male + \beta_{10} Married + \beta_{11} Univ + \beta_{12} R_2 + \beta_{13} R_3 + \beta_{14} R_4 + \beta_{15} R_5 + \beta_{16} BCity), \tag{3}$$

where $\Lambda(\cdot)$ is the logistic distribution function and $y_i, i=1, \dots, 5$ are the outcome variables in table 3.

Table 4. The results from the logistic regression models.

	p_1	p_2	p_3	p_4	p_5
intercept	-1.05 (0.13)*	-1.21 (0.14)*	-0.24 (0.12)*	2.25 (0.21)*	-0.24 (0.12)*
Extraversion	0.11 (0.05)*	-0.14 (0.05)*	0.09 (0.04)*	0.27 (0.07)*	-0.03 (0.04)
Agreeableness	-0.01 (0.05)	0.12 (0.06)*	-0.03 (0.05)	-0.04 (0.08)	0.03 (0.05)
Conscientiousness	-0.07 (0.05)	0.10 (0.06)	0.03 (0.05)	0.02 (0.08)	0.10 (0.05)
Emotional Stability	0.09 (0.05)*	0.04 (0.07)	-0.01 (0.05)	-0.07(0.08)	0.05 (0.05)
Openness to Experience	0.21 (0.04)*	0.26 (0.05)*	0.24 (0.04)*	0.25 (0.07)*	0.24 (0.04)*
Age	0.14 (0.04)*	0.21 (0.04)*	0.26 (0.04)*	0.15 (0.06)*	0.28 (0.04)*

Inc	0.29 (0.04)*	0.16 (0.04)*	0.15 (0.04)*	0.38 (0.08)*	0.02 (0.04)
Male	-0.16 (0.08)*	-0.53 (0.09)	-0.26 (0.08)*	-0.39 (0.13)*	-0.24 (0.08)*
Married	0.26 (0.08)*	0.00 (0.09)	0.09 (0.08)	0.56 (0.13)*	0.23 (0.08)*
Univ	0.19 (0.08)*	0.25 (0.09)*	0.33 (0.08)*	0.29 (0.13)*	-0.03 (0.08)
R ₂	0.26 (0.11)*	0.08 (0.13)	0.01 (0.11)	-0.16 (0.20)	-0.04 (0.11)
R ₃	0.36 (0.11)*	0.07 (0.12)	-0.36(0.10)*	-0.09 (0.19)	0.14 (0.10)
R ₄	0.68 (0.12)*	0.37 (0.14)*	0.33 (0.12)*	-0.27 (0.20)	0.08 (0.12)
R ₅	0.49 (0.15)*	0.60 (0.16)*	-0.05 (0.15)	-0.09 (0.26)	0.07 (0.14)
BCity	-0.21 (0.10)*	-0.22 (0.11)	-0.17 (0.09)	0.13 (0.17)	-0.23 (0.09)*

We see from table 4 that Extraversion and Openness to Experience are the two personality factors that are significantly estimated in most of the five models. Openness to Experience is positive and significant in all the models. We also see that the parameters are rather similar. An H_0 hypothesis of equality of effect would not be rejected for none of the parameters. Extraversion, however, is significantly positive for y_1 , y_3 and y_4 , while it is not significant for y_5 . For y_2 it is negative and significant. y_2 is about local food while the other questions are about specialty foods (local or not local).

What do the estimated parameters in table 4 actually mean? All the personality variables are on a scale in which the mean is zero. And the other continuous variables are standardized so they also have mean equal to zero. We can calculate the probabilities $p_i=P(y_i=1|x)$, $i=1,..5$ at the mean of the personalities, and at mean age and income level. And then, if we calculate the probabilities for females (Male=0), not married (Married=0), less than three years of university education (Univ=0), and living in the Oslo area, $R_2=R_3=R_4=R_5=0$, but outside the city of Oslo (BCity=0). Then using table 4 we find that $p_1=P(y_1=1|x)=\exp(-1.05)/(1+\exp(-1.05))=0.26$. $p_2=P(y_2=1|x)=\exp(-1.21)/(1+\exp(-1.21))=0.23$, $p_3=P(y_3=1|x)=\exp(-0.24)/(1+\exp(-0.24))=0.44$, $p_4=P(y_4=1|x)=\exp(2.25)/(1+\exp(2.25))=0.90$, $p_5=P(y_5=1|x)=\exp(-0.24)/(1+\exp(-0.24))=0.44$. These results are, except for p_1 , very similar to the mean values of y_1 - y_5 in table 3.

To quantify the effect of extroversion on the interest in specialty food we can for example look at differences in p_3 , the interest in buying Norwegian specialty foods from rural areas. We can look at the differences between an individual at the 90 percentile of Extraversion and an individual at the 10 percentile of Extraversion. We can assume that they both are similar in all other ways: similar in the other personality traits, similar age, income, gender, marital status, education, and place of living. And we know figure 1 that the 90 percentile of Extraversion is close to 1.2 and the 10 percentile is close to -1.2 for all the personality traits. Hence we use -1.2 and 1.2 in the calculations.

Then we know that the probability of an individual at the 90 percentile of Extraversion is interested in food specialties from rural areas (p_3) is $\exp(-0.24+0.09*1.2)/(1+\exp(-0.24+0.09*1.2))=0.47$. For an individual at the 10th percentile the probability is 0.41. The difference is 6 percentage points. It means that an individual at the 90 percentile of Extraversion has 6 percent higher probability of being interested in local food specialties than an individual at the 10 percentile. An individual at the 90 percentile in Openness to Experience has a probability of 0.51 ($\exp(-0.24+0.24*1.2)/(1+\exp(-0.24+0.24*1.2))=0.51$) while an individual at the lowest 10 percentile of Openness to Experience has a probability of 0.37. This is a 14 percentage point difference in probability.

We see from the other predictors that, on average, older individuals are more interested in specialty food and local food than younger people. Higher income people are more interested than lower income people. On average, men are less interested than females, and educated individuals are more interested than uneducated individuals. For most of the local and specialty foods, the people living around the country are more interested in local food specialties than people living in the Oslo area (when measured at the same age and income level). In the same token, people living in one of the four big cities in Norway are less interested in local and specialty food (when measured at the same age and income level).

We continue to focus on p_3 , the interest in buying Norwegian specialty foods from rural areas. We calculated above that an individual measured at mean on all the continuous variables, and at the base on the indicator variables, has probability 0.44. If we look at an individual, measured at the same point, except that he is 10 years older than average age, i.e. 60.02 years old, instead of 50.02, we can calculate p_3 for that individual: $\exp(-0.24+0.26*(10)/17.44)/(1+\exp(-0.24+0.26*(10)/17.44))=0.48$. The difference between a 50 year old individual and 60 year old individual is 4 percentage points. An individual who has 10 percent higher per capita household income than average has a

$\exp(-0.24+0.15*(0.1*502)/268)/(1+\exp(-0.24+0.15*(0.1*502)/268))=0.45$. The difference between two individuals close to the mean where the difference in household income is 10 percent is about 1 percentage point.

Looking at the difference between female and male: The probability for males being interested in buying Norwegian specialty foods from rural areas is $\exp(-0.24-0.26)/(1+\exp(-0.24-0.26))=0.38$. So females have a 6 percentage point higher probability. Individuals with at least 3 year of university education have a probability of $\exp(-0.24+0.33)/(1+\exp(-0.24+0.33))=0.52$. This is an 8 percentage point higher than individuals without higher education.

Discussion and conclusion

After the introduction of food specialties and local food in Norway, a number of different approaches have been used to understand its development and consumption patterns. In this paper we have attempted to expand this knowledge by analyzing the impact of consumers' personality on the attitude and consumption of such products.

The results show that in all models the latent variable Openness to Experience is a significant predictor for choice of local food specialties. Openness to Experience is characterized by fantasy, aesthetic sensitivity, attentiveness to inner feelings, preference for variety, and intellectual curiosity. This personality trait was one of the most important predictors in all the choices made by the individuals. Openness to Experiences also includes interests in trying new things, new foods, and new tastes. This may explain the higher interest for specialty food by people who score high on Openness to Experience than people that score low. Specialty food may include qualities that appeals to the individuals high in Openness to Experiences.

The consequence of the connection between Openness to Experience and Local food specialties is that stakeholders may take this into account when deciding how to increase sale. Advertising campaigns and information about LFS food can be done in places where individuals with this personality meet. And it may be informed in newspapers/magazines/TV programs that have high appeal to people with high degree of fantasy, creativity, and preference for variety and novelty.

The respondents understanding of the concepts of LFS in the survey may be a methodological challenge. As mentioned, former research shows that there are variations in the use and understanding of these concepts, both between and within the *emic* (the group of consumers and stakeholders) and *ethic* (researchers) group. Future analysis should focus on this challenge. However, our analysis study indicates a need to develop more knowledge and understanding of consumers' personality, preferences and behavior, and to develop adapted Norwegian product qualities and market communication.

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