

Does sugar sweeten the pill of low income? Inequalities in the consumption of various foods between Finnish income groups from 1985 to 2012

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Numerous studies have shown that social inequality can be reflected through poor food choices. Factors such as low-income, low level of education and low socio-economic position are associated with food consumption behaviours that are considered less beneficial. This study explores the disparities found among income and other socio-economic groups in terms of their food consumption shares. To find out how the food consumption patterns have developed in Finland, a nationally representative Household Budget Survey for the years 1985–2012 is used. Food consumption trends of the income quintiles are analyzed with ANOVA. The shares of food consumption expenditure spent on Meat, Vegetables, Fruit and berries, and Sugars are used as dependent variables; while education, age and household type are used as control variables. The disparities between the income groups have diminished, with meat and sugar consumption being most affected by the studied factors. Low income does not necessarily translate to a household's less healthy eating habits. Rather, households in the lowest quintile are now depicted by the convergence of their fruit and vegetable consumption with the other income groups.

Keywords: Food consumption, social inequality, income, Finland, trends, population survey



Introduction

The share of disposable income spent on food has decreased significantly over the past decades in Finland (CFI 2016; Raijas 2014; Statistics Finland 2016a). Several studies demonstrate that food consumption has become more democratic and that choices are more open to everyone regardless of their income level or other social determinants (Johnston & Baumann 2014; Lindblom & Mustonen 2015; Mintz & Du Bois 2002). Nonetheless, various distinctions prevail, especially in the way a household's food shares are patterned (e.g. Lindblom & Sarpila 2014). Numerous studies have shown several disadvantages that are reflected through poor diet and food choices. For instance, studies have established that low-income (e.g. Darmon et al. 2003), low level of education (Kahma et al. 2016; Lindblom & Sarpila 2014), and low socio-economic position (Konttinen et al. 2013; Toivonen 1997;) are all associated with making dietary choices that can be considered unequal.

Additionally, most studies base their claims on only a small selection of specific foodstuffs or nutrients, not comparing various food categories simultaneously (for an exception to this see e.g. Beydoun et al. 2008). As most of the literature on the theme provides a medical, nutritional or health related point of view, there is a lack of studies on food consumption that actually take into account the balance or shares of various foodstuffs in a household's consumption patterns, and how they vary across social determinants. In Finland, studies that assess the potential social prestige of various food categories or specific food types, in addition to how they have changed over time, are scarce (e.g. Lindblom & Mustonen 2015; Purhonen & Gronow 2014). Existing global research tends to emphasize the relevance of elements other than social prestige in assessing various forms of inequality produced through food consumption (for price see e.g. Beydoun et al. 2008; for access see e.g. Webber et al. 2010; for health impacts see e.g. Turrell et al. 2002).

This study explores the consumption patterns of income quintiles focusing on in particular food categories. Various food categories are studied, as food represents a cultural realm that is ostensibly democratic and is accessible to all (at least in affluent, highly-developed countries), while still providing cultural versatility through its numerous forms. The selected foodstuff categories can on the one hand be perceived as either healthy (such as vegetables and fruit) or unhealthy (such as sugar), or socially prestigious, such as meat, on the other hand. The aim of the article is to, first, explore the trends of the food consumption expenditure shares of the Finnish households during the time period from 1985–2012. Secondly, we wish to ascertain how the households' food ex-

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penditure shares regarding the selected food categories are patterned according to socio-economic determinants. Furthermore, we explore whether particular disparities regarding income exist and if there have been temporal changes in this regard. In doing so, we aim to enhance the knowledge on the social mechanisms tied to households' food consumption.

Theoretical background

Studies have found culinary interest to be, at least to some degree, associated with social determinants and cultural competency. Cappeliez and Johnston (2013), for example, demonstrate that those with more economic and cultural resources also more commonly have more versatile eating repertoires. In the same vein, people with a lower level of education, or those in less favourable social positions, often report not liking or even loathing some or many types of food (Warde 2011). The reason for this was argued to be due to a factor of economic constraints: trying new foodstuffs may be risky for those on tight budgets, thus they prefer to narrow their diet to products that they know in advance will satisfy their needs in most economical way (Beagan et al. 2016).

Low-income households have been found to spend an extensive share of their total consumption on food, whereas food does not play a major role in the overall consumption structure of high-income households (Chen 2016). This follows the classical economic assumption of Engel's Law stating that the budget share of food is inversely related to a household's real income (Hamilton 2001). Households with low income have rather been found to settle for consuming what is perceived as necessary whereas health pursuits and dietary concerns were more common features of groups with advantageous social positions (Bourdieu 1984; Kahma et al. 2016). Although several food categories have no particular social undercurrent attached to them, the use of fish, vegetables, fruit and berries have showcased wider differences among population groups (Kahma et al. 2016). Since these foodstuffs are usually given up by the lower-income fractions, they are likely to portray income and other social inequalities. (Beagan et al 2016; Kahma et al. 2016; Webber et al. 2010)

A higher propensity to not buy any fruit and vegetables is found among low-income households (Webber et al. 2010). The cause for this has been found to lie in economic resources, level of education and knowledge of nutrition. One factor, however, increased the motivation to buy fruit and vegetable in low-income households as, in low-income families as well, providing healthy food for children was perceived as a necessity. (Webber et al. 2010.) Thus, family type also has a potential impact on a household's food buying tendency.

Only a few studies assess several socio-economic position indicators simultaneously, and their results are mixed (Maguire & Monsivais 2015). It has been established that low income directs households towards consuming cheaper calories (Beagan et al. 2016, Darmon et al. 2003), high education is associated with choosing healthier food options (Kahma et al. 2016; Lindblom and Sarpila 2014) and the

overall dietary patterns are a cumulative effect of both income level and education level (Galobardes et al. 2001; Giskes et al. 2006; Lindblom & Sarpila 2014; Monsivais & Drewnowski 2009; Roos et al. 1998). A combination of education and income has varying effects: for instance educated groups with a lower income tend to emphasize a lighter diet by eating more fruit, vegetables and less fat, whereas high-income groups with lesser education consume more meat and fish (Lindblom & Sarpila 2014).

Lindblom and Sarpila's (2014) study shows that the higher-educated groups consume the same share of sugary foodstuffs, independent of their income level, whereas for the lower-educated groups, income is a significant factor and the consumption share of sugar decreases as income increases. Kontinen and colleagues (2013) have found similar effects: far more energy-dense foods were consumed by people in the low-income or lower-education groups, and high income and high education related to greater vegetable and fruit consumption. They also found evidence that individuals with a low income or education place more importance on price and less importance on health in their food selection compared with their more educated or affluent counterparts (Kontinen et al. 2013).

Various socioeconomic factors affect a household's food choices simultaneously. In addition to the above-mentioned, age and gender also correspond to healthier eating or an emphasis on plant-based diets. Lallukka and colleagues (2007) reported that older females with high education eat "healthier diets". Galobardes and colleagues (2001) have established an association between a higher consumption of meat and women with low level of education. In Finland, fruit and berry consumption has been found to be greater among middle-aged single females, whereas it is reportedly lower among young males living alone (Aalto & Peltoniemi 2014).

It is notable though, that neither income nor any other single socio-economic determinant has been found to provide the strongest individual explanation for the selection of healthy eating patterns (Maguire & Monsivais 2015). This suggests, that the mechanism for food consumption behaviour, is very dependent on the category of food, and there clearly is a need to study these diverse impacts further. To determine the disparities observed in Finnish households' food consumption patterns, this study aims to answer the following questions: *How have the consumption expenditure shares (CES) of relevant foodstuff categories developed during the past 30 years in Finland? What kind of disparities can be found among the income groups in terms of their food consumption shares?*

The Finnish economy and the consumption structure of the households 1985–2012

Consumers adapt their spending according to prevailing economic conditions (Raijas 2014; Uusitalo & Lindholm 1994; Wilska 1999). One's personal economic situation as well as macro-level factors (such as consumers' confidence, unemployment rate, state of the economy portrayal in the

media) shape consumption patterns (e.g. Wilska 1999). Economic downturn is likely to affect the consumption of non-necessity goods the most, making the expenditure shares for necessities (such as housing or food) to grow relatively (Raijas 2014).

In Finland, the two most recent economic slumps have occurred during the period that is under examination in this article. The most crucial points along the timeline between 1985 and 2012 were 1993 and 2009 when the economic downturn reached its lowest point. (Statistics Finland 2016a.) On the other hand, the economy was stable and growing in the late 1980s and during the years preceding the 2008 global banking crisis (idid., for more in-depth analysis, see Suni & Vihriälä 2016 and Gulan et al. 2014.)

The consumption structure of households has changed markedly during the time under examination in this article. In 1985, the expenditure for foods formed the largest share (26%) of Finnish households' total expenditure, whereas ten years later, housing and dwelling costs took up the largest part of consumption (26%). By that time, the consumption share of foods had diminished to 21.5 per cent. Henceforward, the expenditure share of foods continued decreasing, to approximately 17 per cent of the total expenditure during the first twelve years of the century. (CFI 2016.)

Furthermore, consumption expenditure grew by 21 per cent between 1995 and 2001. After 2006, however, the changes in consumption have been minor. The development of consumption has been reflected in the slow economic growth and the global economic austerity. (Statistics Finland 2014.) By and large, the Finnish households' consumption expenditure grew from 1985 to 2012, and in real terms, by 53 per cent (calculated per household consumption unit). Most of the changes took place in the 1980s and 1990s, whereas the changes in the 2000s have been only minor. (Statistics Finland 2014.)

Changes in food consumption in Finland

In addition to economic factors, food consumption is tightly embedded in culture. The ingredients used in cooking have generally been mostly domestic, and the traditional food culture reflected the agricultural and modest society (Purhonen & Gronow 2014). The change has been rapid, though, and over the past decades, Finns' eating habits have become more versatile and internationalized, as more processed and broader food categories and ethnic cuisines have become available. (Aalto & Peltoniemi 2014; Purhonen & Gronow 2014) This is also reflected in the consumption shares of food, as consumption is spread across a wider variety of foodstuff categories.

These trends can be seen mainly in the consumption expenditure categories of potato (which have been replaced by other staples such as rice as well as a variety of other vegetables), berries and preserved meats (the market for convenience food in Finland has expanded rapidly over the course of the last decade). Additionally, in absolute terms, the consumption amounts of fresh vegetables have increased sub-

stantially during the latest years of the survey. In 2012, the per capita amount of vegetables consumed was 60 kilograms, which marks an increase of almost 20 kilograms within only six years. Meat consumption per capita has steadily increased from the 1960's onwards in Finland (Vinnari et al. 2010). In 1985, approximately 57 kilograms of meat per person was consumed, while the consumption reached its peak in 2011 at 78 kilograms per capita (Luke 2016).

There has been a general increase in the consumption of sugary foodstuffs over the past decades. Consumption of sweet pastries and other sweets grew substantially in 1985–2012 (Aalto & Peltoniemi 2014). In absolute terms, per capita sugar consumption in Finland increased from 10 kilograms in 1998 to over 14 kilograms in 2007 (Kotakorpi et al. 2011).

The price of meat was on steady growth until the 1990's depression years. In 1995 the price index for meat dropped and has been rather stable besides a modest peak in 2001–2002. The price of sugar slumped in 1996 after reaching its peak in early 1990's. (Statistics Finland 2014; Statistics Finland 2016c.) In general, the prices for meat and sweets have been growing during the past decade, whereas the price trend for fruits and vegetables has been in decline (Statistics Finland 2014; Statistics Finland 2016c).

Data and methods

Data

The nationally representative Official Statistics Finland's Household Budget Survey for the years 1985–2012 (7 waves) is used for the analyses. The data used in the analyses are comprised of seven cross-sectional surveys and they are not therefore longitudinal or panel data. The survey size for each year is presented in Table 1 below. These data produce information on changes in the consumption expenditure of households and on differences in consumption by population group. The survey is based on a sample for which the information is collected with telephone interviews, from diaries completed by households, from receipt information and from administrative registry data. The sampling frame in the data consists of persons over 15 years-of-age who had a permanent home address according to the Finnish central population register. The households included in the survey are drawn at random from Statistics Finland's population database. (Statistics Finland 2016b.)

Measures

The household's consumption expenditure includes all goods and services bought for personal consumption in Finland and abroad. It also contains a household's own and received harvest products. (Statistics Finland 2016b.) The dependent variables in the analyses are the shares of food consumption expenditure spent on each of the following four categories: 1) Meat, 2) Vegetables, 3) Fruit and berries, 4) Sugars and sweet products. The consumption expenditure shares (CES's) of the categories studied are the sum of all spending (euros) that fall under the gross category. It must be noted

Table 1

Sample sizes (and response rate) for each waves of the Household Budget Survey (OFS), years 1985–2012 (Source: SVT 2012)

	1985	1990	1995	1998	2001	2006	2012
Final sample (n of respondents)	8200	8258	6743	4572	5495	4007	3587
Response rate	70%	70%	65%	57%	63%	52%	43%

that when interpreting the results in the article, “consumption” is understood similarly as “expenditure”.¹ The dependent variables (CES for meat, vegetables, fruits and berries, and sugars) are a percentage of households’ total expenditure on food (excluding beverages). This method has also been previously used in households’ food consumption studies (Healy 2014).

The category of meat includes all fresh and processed meat excluding fish. Vegetables include root and leafy vegetables. Here, all sorts of potatoes (both fresh and processed), as well as canned vegetables and processed vegetable products, are additionally included in the expenditure share. Fruit and berries include canned and frozen fruit as well as diverse berries and nuts. The category of sugars and sweet products includes sugar as raw produce as well as various sweets, sweet snacks, jams, candies and ice cream. In this article, the term “sugars” and “sweets” are used to refer to this category.

Income is used as the main independent variable. Here, income is measured as the OECD-modified equivalized disposable income and households are divided into quintiles accordingly. In the OECD’s adjusted consumption unit scale, the first adult of the household receives the weight 1, other persons over 13-year-olds receive the weight 0.5, and children receive the weight 0.3 (0 to 13-year-olds). When the consumption expenditure of the household is divided with the sum of weights of the persons belonging to the household, the result is the adjusted consumption expenditure with which households of various sizes can be compared. (Statistics Finland 2016b.) In the analyses, for clarity’s sake, the results are presented only for three income quintiles: Q1 (the lowest income quintile), Q3 (the middle quintile) and Q5 (the highest income quintile).

Education and the age of the head of household (HEH) are used as control variables. The person who has the highest earnings within the household is assigned as the HEH. The education variable has 5 categories: 1) primary education or less, 2) secondary level education, 3) lowest level tertiary education, 4) upper tertiary education and 5) education unknown. In addition, household (HH) type is used as a control. Household type has the following categories: 1) single person HH, 2) a couple with no children (aged less than 65yo), 3) single parent HH, 4) HH with child(ren) and two parents, 5) elderly HH (aged over 65yo) and 6) other type of HH.

Analytic technique

The analysis of the data starts by examining how the consumption expenditure shares (CES) of foods have changed between 1985 and 2012 in terms of income quintiles. (Figure 1.) Furthermore, the same temporal trends are assessed in the foodstuff subcategories (fruit & berries, vegetables, meat and sweets, Figures 2–5) presenting the relative consumption of the income quintiles controlled for age, education and household type. The consumption expenditure shares are analyzed with general ANOVA to determine the sources for disparities between social groups. For these adjusted models, we present the marginal means for CES (in Figures 2–5), F-values, Eta² and p-values for each studied independent variable across the studied years (in Tables 2–5). Eta² measures the effects of each independent variable, and R² estimates the effect size of the full model. Although the Eta² and R² coefficients remain very low, they still serve a purpose by identifying the source of the strongest effects.

Results

Figure 1 presents the shares of household food budgets between 1985 and 2012 in three income quintiles. In less than 30 years, the share of food consumption for a households’ total expenditure has decreased substantially. In Engel’s terms this would suggest, that Finnish households have become more affluent, as a smaller share is allotted for food consumption. Furthermore, the households’ consumption structures within the income quintiles has clearly converged. While in 1985, the lowest income quintile (Q1) spent almost one-fourth of its household expenditure on food, their food expenditure share more resembled the other quintiles, being closer to 16 per cent. Nonetheless, there are disparities between the income quintiles, yet they are not as prominent as they were 25 years before. The highest income quintile (Q5) has maintained its gap with other groups. Next, we turn our attention to the individual foodstuff categories.

Firstly, of all the studied food categories here, the largest share of food expenditure goes to meat (Figure 2). The prominence of meat in one’s diet was especially emphasized before the recession years in early 1990’s. Until 1998, the income quintiles’ meat consumption patterns resembled each other, yet after that year there was obvious divergence. Against the Engel’s law, meat is not a category that is most consumed in relative terms by the lowest income fractions, quite the contrary. Only after 2001, have meat consumption patterns converged in the top and middle quintiles (Q3 and

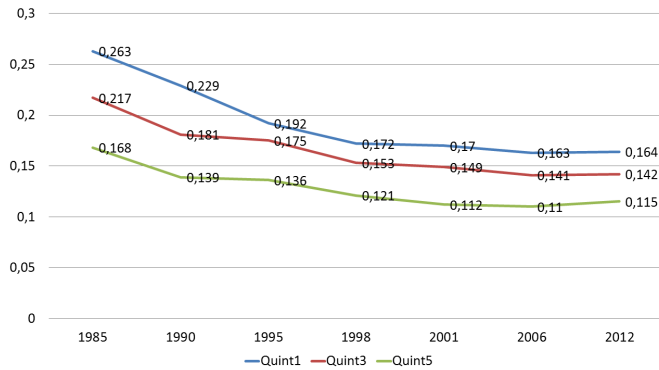


Figure 1. Consumption expenditure shares of foods on households' total expenditure 1985–2012 by income quintiles (Share of total food expenditure [=1.0]).

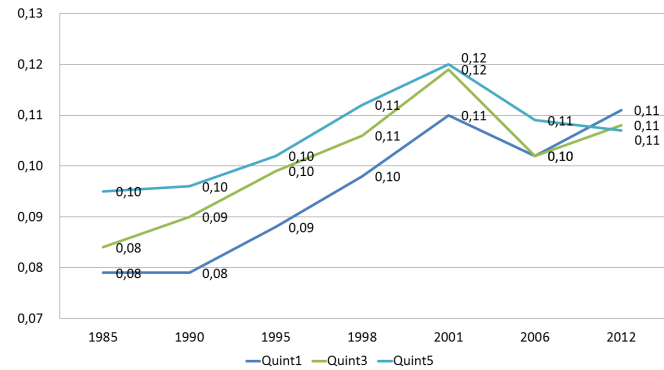


Figure 3. Consumption expenditure shares on vegetables by income quintiles, adjusted marginal means (ANOVA) in 1985–2012, household type, education of HEH and age of HEH controlled.

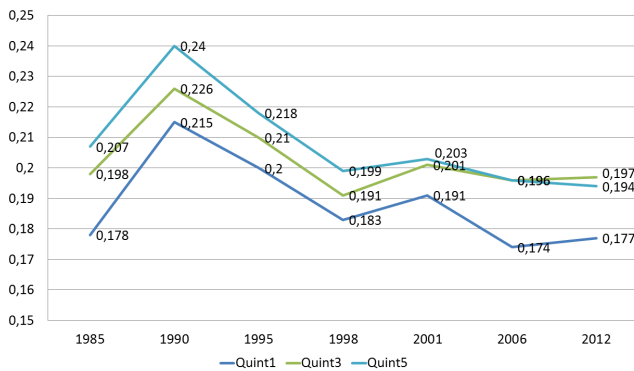


Figure 2. Consumption expenditure shares on meat by income quintiles, adjusted marginal means (ANOVA) in 1985–2012, household type, education of HEH and age of HEH controlled.

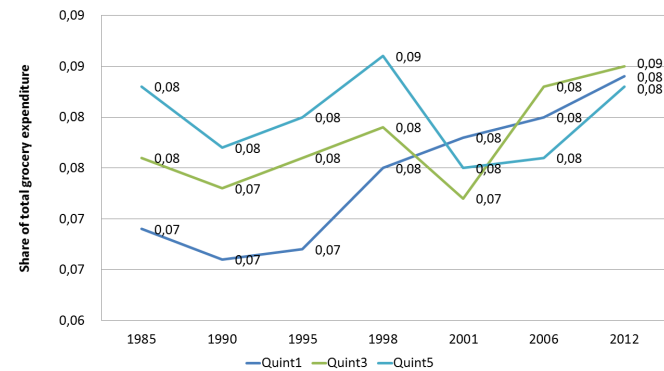


Figure 4. Consumption expenditure shares on fruit & berries by income quintiles, adjusted marginal means (ANOVA) in 1985–2012, household type, education of HEH and age of HEH controlled.

Q5), Q3 spending even a larger share than Q5 by the end of the inspection period. Simultaneously, the lowest income group has clearly diverged from the other quintiles, consuming a record small share (17.4%) of its total food budget on meat in 2001.

Whereas the consumption shares of meat have fluctuated greatly and then decreased to some extent, the relative consumption share of vegetables has steadily grown over the past decades (Figure 3). One similar pattern with meat can be detected, though. Until 2001, the gap between the income groups has remained rather stable. After 2001, the third income quintile (Q3) first increased, then decreased rapidly its consumption share of vegetables. After 27 years, however, the income quintiles now spend approximately the same share of their household budget on vegetables each.

The consumption share of fruit and berries (Figure 4) in the lowest income quintile resembles their consumption gradient of vegetables. There has been a steady growth over time for Q1. In two other quintiles, the trend has fluctuated quite significantly, yet the consumption share of fruit and berries has remained at almost the same level during the whole examination period. It is notable that Q1 and Q3 have

increased their share in terms of fruit expenditure and that they surpassed Q5 in 2012.

The lower the income group the larger share of the food expenditure was spent on sugar independent of the level of education, age of the HEH or household type (Figure 5). Over the period 1985–2012, Q1 has spent rather consistently a two percentage-points larger share of its food budget on sugar than Q5. However, there was a convergence detected after 2006, when there was an increase in Q5's CES on sugar while Q1's CES on sugars decreased.

Next, we look at the models presented in figures 2–5 more closely. We assess which individual factors have an impact on the four foodstuff categories by comparing their F values, η^2 and R^2 coefficients (see Tables 2–5). As the main aim of the study is to inspect disparities regarding income, the emphasis in reporting the results is placed on the expenditure trends of the *income groups*. Thus, not all the effects shown in the tables (concerning control variables) are discussed in great detail.

For meat consumption expenditure, the effect of income has fluctuated over the years (Table 2). From the 1980's onwards until 1998 the effect of income clearly diminished.

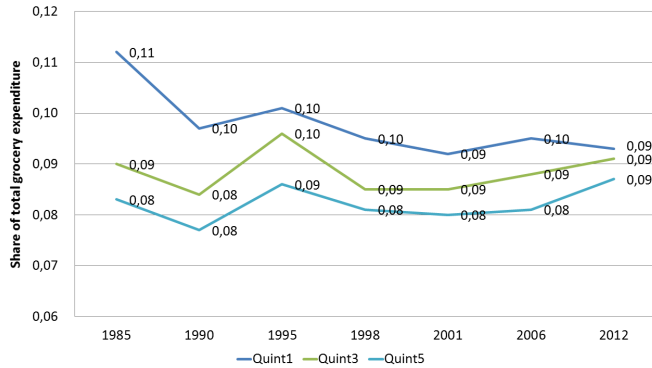


Figure 5. Consumption expenditure shares on sugar by income quintiles, adjusted marginal means (ANOVA) in 1985–2012, household type, education of HEH and age of HEH controlled.

However, in the beginning of the 2000's, income appeared as producing clear disparities in meat consumption expenditure (Q1 spending clearly a smaller share on meat than Q3 and Q5). Henceforward, the effect of income has again diminished. In 1985, the disparities in meat CES were mostly associated with type of HH, whereas in 2012 the most telling sources for variation in meat CES were age and education.

The R^2 coefficients for the meat expenditure models in 1985–2012 vary between 5.1 and 3.2.

The effect of income has steadily decreased being close to nothing for vegetable consumption in the 2000's (Table 3). In 2012, no significant association between the income quintile and vegetable CES was found. Only in 1985 income group was the main determinant for vegetable consumption (highest income quintile Q5 spending the largest share on their income on vegetables). On the contrary, the CES of vegetables has largely been an effect of education over all the studied years.

The R^2 coefficients for vegetable expenditure models remained lower than for meat (R^2 1.3 – 3.0).

In terms of fruit and berries expenditure (Table 4), the effect of income resembles that found for the vegetables. From 1985 onwards, the effect of income could be detected, but the effect's significance clearly waned. By then, the higher the income the larger share of expenditure was spent on fruit. Hence, during the 2000's, association between income and fruit and berry CES was no longer found. The disparities in fruit and berry CES are most recently mainly a product of age, and to a lesser extent, also of education.

Nonetheless, the studied effects account for only small coefficients of determination (R^2 1.0–2.8).

Income has affected sugar expenditure during the whole inspection period, however it has not been the most prominent source for the found disparities (Table 5). The impact of income on sugar CES has been on steady decline, however recently, 2006 onwards, a slight increase in impact is detected. Whereas in 1985 the lowest income group (Q1) spent substantially largest share of expenditure on sugar, during the 2000's only a modest difference between the income groups was found (Q1 still spending relatively largest share).

Most of all, sugar consumption has long been an effect of age. This suggests a strong potential for a strong potential for an interaction effect with income, as young age is often very much associated with lower income level.

According to R^2 coefficients, sugar CES is most affected by the studied factors. The coefficients run from 6.1. to 9.1.

In sum, in most cases, strong significant effects were found between the studied factors. Only the following few insignificant associations were detected. First, in 1998, there was no distinction for meat CES between the income groups. Second, regarding vegetables consumption, for most of the years, no distinction between the age groups was found. Third, again for sugars, in 2012 there was no distinction between the age groups. Lastly, for fruit CES, no or only a small statistically significant distinction was found within HH types, and no distinction within income groups in 2001 and 2012, nor within age groups in 1985.

Conclusions and discussion

In this study, our aim was to increase understanding of the social mechanisms tied to households' food consumption. In particular, we were interested in studying the disparities between the income groups' expenditure on meat, vegetables, fruit, berries and sugars from 1985–2012. We approached our research questions by analyzing data on Finnish households' consumption expenditure shares in 1985–2012

In general, our empirical findings indicate that in Finland, there are still some disparities between the income quintiles, yet they are not as prominent as 25 years ago. Low income does not necessarily translate into household's unhealthier eating habits. However, the economic situation at the societal level seems to be associated with certain trends of food expenditure.

For example, one finding in the present is the fact that households allocated a larger share of their food expenditure on sugars than on fruit and berries. This trend was very consistent over time and across the income groups. Notably, there was a clear deviation that is tied with the economic situation. Namely in 1995, when the Finnish economy was still recovering from the depression, significantly larger share of the household budget was spent on sugars than fruit (Figures 4 and 5) than on any other point in time. Consumption of sugar can thus be interpreted as providing a source of comfort during times of austerity. This finding has not been emphasised in the previous literature, so it provides a contribution and insight on the existing research on sociology of food.

Economic stability or growth, on the other hand, was reflected in the consumption of sugar; too, as the socio-economic factors in the models (Table 5.) provided higher explanation coefficients in years that were not affected by economic depression.

Our results also indicated, that the allocation of resources across various food categories varies between the income groups. Different factors impact different food categories and the size of the impact is subject to change according to studied category, too.

Table 2

The linear model determinants for meat consumption shares in 1985-2012, F-values, p-values, eta² and coefficient of determination (R²).

	1995 F (sig.)	Eta ²	1990 F (sig.)	Eta ²	1995 F (sig.)	Eta ²	1998 F (sig.)	Eta ²
Income	13.83***	.007	7.55***	.004	4.23**	.003	1.86(ns)	.002
Education	21.96***	.011	48.37***	.017	34.07***	.015	24.25***	.016
Type of HH	40.22***	.024	24.23***	.014	25.61***	.019	21.60***	.023
Age	23.66***	.003	20.23***	.002	40.46***	.006	34.28***	.007
R ² (x100)	5.1		3.5		4.0		4.4	
	2001 F (sig.)	Eta ²	2006 F (sig.)	Eta ²	2012 F (sig.)	Eta ²		
Income	8.47***	.006	5.78***	.006	3.96**	.004		
Education	21.84**	.012	20.33***	.015	29.41***	.024		
Type of HH	28.85***	.025	10.23***	.013	8.47***	.012		
Age	75.17***	.013	24.64***	.006	46.25***	.013		
R ² (x100)	4.8		3.2		4.2			

Note: ^ = p 0.051–0.10; * = p<0.05; ** = p <0.01; *** = p<0.001; ns = not significant

Table 3

The linear model determinants for vegetables consumption shares in 1985-2012, F-values, p-values, eta squared and coefficient of determination (R squared).

	1995 F (sig.)	Eta ²	1990 F (sig.)	Eta ²	1995 F (sig.)	Eta ²	1998 F (sig.)	Eta ²
Income	14.11***	.002	13.13***	.007	7.90***	.005	4.95**	.004
Education	6.73***	.010	21.18***	.007	16.98***	.008	6.33***	.004
Type of HH	3.30**	.006	10.63***	.006	6.42***	.005	4.43***	.005
Age	4.20	.001	0.40(ns)	.000	.012(ns)	.000	4.95*	.001
R ² (x100)	1.7		3.0		2.1		1.8	
	2001 F (sig.)	Eta ²	2006 F (sig.)	Eta ²	2012 F (sig.)	Eta ²		
Income	2.91*	.002	2.07^^	.002	.39(ns)	.000		
Education	7.75***	.004	12.80***	.009	13.51***	.011		
Type of HH	7.99***	.007	3.83**	.005	3.42**	.005		
Age	0.47(ns)	.000	0.72(ns)	.000	0.02(ns)	.000		
R ² (x100)	1.6		1.6		1.3			

Note: ^ = p 0.051–0.10; * = p<0.05; ** = p <0.01; *** = p<0.001; ns = not significant

Our analyses revealed that higher income is associated with purchasing meat, yet there has been a decrease of the highest income quintile's meat consumption shares recently. The studied income quintiles spent approximately the same share of their food budget on meat in 2012. This finding was among the most pronounced ones. Interestingly, the consumption share of meat witnessed a huge increase in all income categories in the late 1980s. This was perhaps an effect

of actual changes in consumption patterns as well as a change in supply and the price of meat.

In sociological literature, meat has long been considered as a socially prestigious good (e.g., Purhonen & Gronow 2014; Ruby 2012). However, more recent studies have established that plant-based diets have spread among the upper social statuses (e.g. Ruby & Heine 2012), even though vegetarianism has long been associated with low income (Vinnari

Table 4

The linear model determinants for fruit and berries consumption shares in 1985-2012, F-values, p-values, eta² and coefficient of determination (R²).

	1995		1990		1995		1998	
	F (sig.)	Eta ²	F (sig.)	Eta ²	F (sig.)	Eta ²	F (sig.)	Eta ²
Income	5.07***	.003	5.14***	.002	4.67**	.003	2.42*	.002
Education	6.64***	.003	26.30***	.009	18.03***	.008	9.67***	.006
Type of HH	7.05***	.004	2.43*	.001	2.01 [^]	.001	2.09 [^]	.002
Age	.028(ns)	.000	2.81 [^]	.000	25.83***	.004	8.09**	.002
R ² (x100)	1.0		1.7		2.3		1.6	
	2001		2006		2012			
	F (sig.)	Eta ²	F (sig.)	Eta ²	F (sig.)	Eta ²		
Income	1.20(ns)	.001	2.06 [^]	.002	1.02(ns)	.001		
Education	16.41***	.009	11.82***	.009	10.78***	.009		
Type of HH	1.64(ns)	.001	1.20(ns)	.001	1.96 [^]	.003		
Age	58.22***	.010	30.34***	.007	30.86***	.009		
R ² (x100)	2.2		2.7		2.8			

Note: [^] = p 0.051–0.10; * = p<0.05; ** = p <0.01; *** = p<0.001; ns = not significant

Table 5

The linear model determinants for sugar consumption shares in 1985-2012, F-values, p-values, eta² and coefficient of determination (R²).

	1995		1990		1995		1998	
	F (sig.)	Eta ²	F (sig.)	Eta ²	F (sig.)	Eta ²	F (sig.)	Eta ²
Income	19.36***	.009	8.18***	.004	6.16***	.004	3.12**	.003
Education	5.91***	.003	9.17***	.003	8.34***	.004	2.18 [^]	.001
Type of HH	2.33**	.001	5.23***	.003	8.77***	.007	8.23***	.009
Age	154.35***	.019	215.75***	.025	222.03***	.032	182.64***	.039
R ² (x100)	6.1		6.5		8.3		8.2	
	2001		2006		2012			
	F (sig.)	Eta ²	F (sig.)	Eta ²	F (sig.)	Eta ²		
Income	3.70**	.003	4.19**	.004	4.05**	.005		
Education	5.62**	.003	1.41(ns)	.001	1.58(ns)	.001		
Type of HH	16.09***	.014	2.62**	.003	5.04***	.026		
Age	256.39***	.044	126.10***	.030	96.086***	.007		
R ² (x100)	9.1		7.0		7.2			

Note: [^] = p 0.051–0.10; * = p<0.05; ** = p <0.01; *** = p<0.001; ns = not significant

et al. 2010) Nowadays, higher income groups have also decreased their meat eating. However, our findings indicated that meat was still clearly a more prevalent food choice in the upper income groups.

Quite the reverse, for the most part of the inspection period, the lower-income groups consumed a larger share of their food expenditure on sugar independent of their level of education, age of the HEH or household type. However, in

2012, the income quintiles hardly diverged in terms of their sugar consumption suggesting there is not very clear income inequality when sugar consumption is considered. Even so, the effects of income and education on sugar consumption were visible in the analysis.

Another finding indicating less inequality in food consumption regards the fact that income groups have converged in terms of their vegetable and fruit consumption. So, instead

of assuming energy-dense foods would be more preferred by the lower income groups, sugar no longer proved to be a determinant for the lowest income quintile (Q1) at the end of the inspection period. Having spent considerably larger expenditure share on sugars than Q5 in 1985, the households in the lowest quintile are now rather depicted by the convergence of their fruit, vegetable and sugar consumption with the other income groups.

There are some limitations that warrant caution in assessing our findings. First of all, one limitation is related to our measures. As the present study did not control for other socio-demographics aside from education, household type and age of the HEH, some of the results must be considered critically. For example, it has been suggested that the impact of gender on food choices is a significant factor (e.g. Lindblom & Sarpila 2014; Purhonen & Gronow 2014). Additionally, the family's economic dynamics, in other words, who decides what is purchased, who provides the monetary means for purchasing and whose economic and cultural resources shape the overall patterns of household consumption, are discussed widely in the literature. (Lee & Beatty 2002; Raijas 2011; Raijas & Wilksa 2007). These considerations would be beneficial for future research on food consumption and its association with social inequality.

In addition, having household level determinants rather than individual level ones provides a challenge. To further study the impact of personal determinants on a households' consumption patterns, measures of individual level behaviour would be beneficial.

Thirdly, the ability to assess social prestige with the rather ambivalent and coarse categories used in the analyses is still a bit contested. As our analyses account only for shares of total consumption expenditure, it would be relevant for future research to use research instruments that allow for the assessment of prices and consumed amounts. Assumptions on many accounts could be made with knowledge on food prices. First of all, the low amount of money spent on food is associated with poor quality diets and is tied to economic constraints (e.g. Darmon et al. 2003). Secondly, following a healthy diet has been found to cost more (Drenowski & Darmon 2005; Monsivais & Drenowski 2009) and thus is less accessible for people in low-income households. Thirdly, including prices and more specific food item types in the analyses would further enhance understanding of the types of groceries consumed (particularly regarding social prestige) and their relative expense for consumers.

Despite the aforementioned limitations, we argue that by exploring the long-term trends on households' expenditure shares on various food categories, and their associations with socio-economic determinants, this study will contribute the discussions regarding the democratization of food consumption, as well as the literature on social and economic inequality associated with households' expenditure, especially regarding consumption of food and diet choices. The study also contributes to the literature on consumption during the times of economic austerity through its findings regarding the association between economic situation and CES of certain foods (sugars in particular). It seems that household's food

composition reflects macro-economic changes, at least to a certain degree.

Our research raises the question of whether consuming or not consuming certain food categories accounts for social inequality. Nonetheless, if clear disparities in consumption patterns of varying income level households are detected, as in this case they were, some assumptions about inequality can be made. As Healy (2014, 795) states, if some households "spend relatively much less on [certain] food", that is an indication that they live "alternatively from mainstream culture, either through choice (traditional food practices) or through an inability to participate." This can be translated to food poverty or social exclusion. In this light, the present results can be considered to provide indicators of social and economic inequality in terms of food consumption. This is especially the case in meat consumption. Thus, for future research, studying the way that households compose their daily meals would provide an important vantage point when considering the reflections of economic inequality.

Endnotes

¹The author acknowledges that as Becker (1965) suggested, consumption is not a straightforward equivalent with expenditure but rather the household's function that combines expenditure (monetary means) and time as inputs. Here, still, consumption refers to actions that include both the acquisition of the goods as well as using them up.

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