EAAE 2008 Congress– Sustainable food versus health concerns

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Abstract— **Simultaneous with the growing demand for sustainable food, statistics in all EU member states report consumption patterns that are characterized by too much fat, overdoses of sugar and a lack of fruits and vegetables. The streams of literature that investigate the factors influencing sustainable food consumption and healthy food consumption are largely separated. However, the question whether there is a positive relationship between consumer behaviour towards sustainable food and consumer behaviour towards healthy food remains largely unanswered. The purpose of this paper is to examine the relationship between the consumption of different types of sustainable food on the one hand, and healthy food patterns on the other. The study is based on a sample of 2595 respondents in Belgium. The research shows a significant relationship between a healthy diet and sustainable food choices. Analyses applied to identify gender- or age-specific tendencies demonstrate that the association is particularly pronounced for consumers between 26 and 40 years old. For younger consumers (<26 years) and older consumers (>65 years), the relationship between sustainable food behavior and the choice for healthy food is weak. These findings can be extremely useful in the communication and promotion of different types of sustainable food.**

Keywords— **Sustainability, food, health**

I. INTRODUCTION

As the impact of mass consumption on the environment becomes apparent, the demand for sustainable food products in the European Union grows [1]. Sustainability covers economic, ecologic and social aspects and therefore, sustainable food refers to fair trade food, organic food, local food and seasonal food. Simultaneous with the growing demand for sustainable food, statistics in all EU member states report consumption patterns that are characterized by too much fat, overdoses of sugar and a lack of fruits and vegetables. Unhealthy dietary habits influence the development of metabolic syndrome, type II diabetes, cardiovascular diseases, osteoporosis, and postural deformities like scoliosis, effects related in part to excessive weight gain [2]. The streams of literature that investigate the factors influencing sustainable food consumption [3,4,5,6,7] and healthy food consumption [8] are largely separated. Saba and Messina [9] is the first study to have confirmed a positive relationship between health concern and the consumption of organic foods. However, the question whether there is a positive relationship between consumer behaviour towards sustainable food and consumer behaviour towards healthy food remains largely unanswered. Therefore, the purpose of this paper is to examine the relationship between the consumption of different types of sustainable food on the one hand, and healthy food patterns on the other. The study is based on a sample of 2595 respondents in Belgium.

A. Data and methodology

A controlled sample among consumers is taken in two Belgian provinces: Flemish Brabant and Walloon Brabant. The sample is representative for the provinces' population according to age, gender and education level. Data were collected in March 2006. In total, 2595 questionnaires were taken. Regional statistics on gender, age and education are considered for the selection of the sample.

Information is obtained on the respondent's diet and the choice for different groups of sustainable food. For both aspects, the questionnaire focuses on actual purchasing behaviour. Indicators on diet are fresh vegetables and fruit consumption (DIET.VF), cooking at home (DIET.CO) and not consuming fast food (DIET.FF). Answer categories are daily, several times a week, less often, and never. In addition, a binary variable measures the respondent's perception of his

diet as balanced (DIET.BL). Indicators on sustainable food are measured by four variables. Binary variables are applied to measure whether the respondents visit a fair trade shop (ECO.FT), account for seasonality of foods (ECO.SS) and buy local fruits and vegetables (ECO.RG). In addition, respondents were asked for the share of organic foods in the total food budget (ECO.OR). Answer categories are 100 percent, less than 100 percent and nothing. The socio-demographic indicators in the questionnaire are gender, age (up to 25, 26-40 years, 41 to 65 years and 66 or older), level of education (primary school, secondary school, college or university) and region (Flanders/ Walloon).

To investigate the relationship between sustainable and healthy food consumption, cross tabulations are drawn and chi-square tests are calculated. This analysis is first applied for the total sample and then for sub-samples classifying the respondents based on age and gender.

B. Results

The original answer categories were reduced because of very low response rates on specific categories. DIET.FF is reduced to a binary variable with categories 'daily' and 'several times a week' on the one hand and 'less often' and 'never' on the other. In the case of DIET.VF and DIET.CO, the categories seldom and never are taken together.

In general, healthy food is valued more important than sustainable food. Over 90 percent of the respondents claim a balanced diet and rarely consume fast foods. Over 70 percent of the respondents consume fresh fruits and vegetables on a daily basis and cook at home at a daily basis. Focusing on sustainable food consumption behaviour, seasonality and regional production are taken into account by respectively 76 and 64 percent of the respondents. Almost 70 percent of the respondents buy organic food products, and only 35 percent buy products in a fair trade shop.

Cross tabulations and corresponding statistics show a positive and highly significant correlation between the selected indicators of sustainable food consumption on the one hand and the indicators of healthy food patterns on the other ($p<0.01$). The only exception is the share of organic food versus the consumption of fast food, for which the correlation is less clear ($p<0.05$).

The question then rises whether this relationship is gender specific. Descriptive statistics show few differences between male and female respondents, neither for the variables on health nor for the variables on sustainable foods. One exception applies: women are more likely to buy fair trade than men (39 percent versus 31 percent).

Table 1 shows the results on the relationship between healthy diet and the choice for sustainable food for respectively male and female respondents. For both men (n=1216) and women (n=1335) the relationship between healthy food consumption and sustainable food consumption is positive and highly significant. In general, the relationship is more pronounced for female respondents.

Table 1: Correlation between healthy diet and choice for sustainable foods, chi-square values based on gender (male respondents: n=1216; female respondents: n=1335)

	DIET.VF	DIET.CO	DIET.FF	DIET.BL
Men				
ECO.FT	39.0***	3.6	12.9***	6.2*
ECO.SS	27.3***	20.0***	16.7***	40.0***
ECO.RG	17.6***	22.1***	19.1***	16.9***
ECO.OR	22.8***	12.7**	2.3	20.4***
Women				
ECO.FT	30.0***	11.2***	1.4	8.9***
ECO.SS	33.3***	20.0***	9.9***	4.2**
ECO.RG	23.3***	11.4***	27.4***	6.1**
ECO.OR	19.4***	15.0***	6.1**	8.2**

*p<0.1, **p<0.05, ***p<0.01

Dividing the data by age (≤25; 26-40; 40-65; >65), the results indicate a clear distinction for variables on health and sustainability. More specifically, the second (age 26-40) and the third category (age 41-65) show similar food consumption patterns. The food

consumption patterns of younger and older respondents, on the contrary, differ in several ways.

Figure 1 illustrates the choice for healthy foods by age category, showing the general tendency whereby older respondents are more likely to choose for healthy foods as compared to younger respondents. For example, over 80 percent of the respondents older than 65 daily consume fresh fruits and vegetables. For the youngest category, this is only 62 percent.

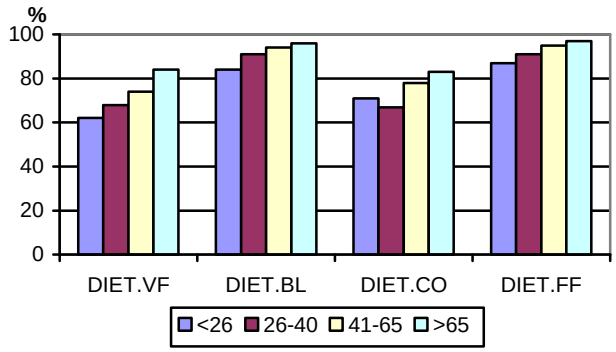

Figure 1: Healthy food choices by age category: <26 (n=450), 26-40 (n=772); 41-65 (n=958); >65 (n=373)

Figure 2 visualises the choice for sustainable food by age category. For all categories, visiting a fair trade shop has a score below 40 percent. Similar to the results on 'health', older respondents pay more importance to seasonality and regional production when buying food. It should be noted that 87 percent of the older respondent category prefers to eat food produced in the region. Within the youngest age category, this percentage is only 53. Further, the figure suggests that organic foods are most popular among respondents between 26 and 65 years old.

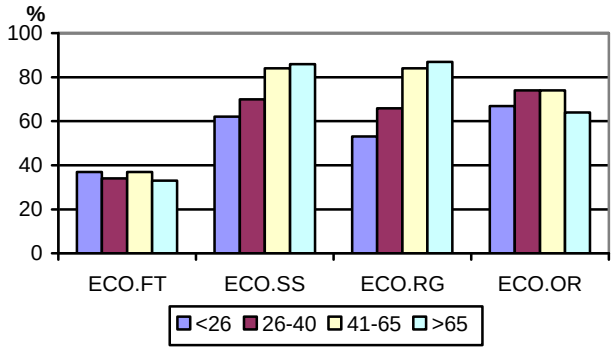

Figure 2: Sustainable food choices by age category: <26 (n=450), 26-40 (n=772); 41-65 (n=958); >65 (n=373)

Table 2 reports on the relationship between healthy food consumption and sustainable food choices for the four age categories. As can be expected from Figure 1 and Figure 2, the results are not straightforward. For the second category (26-40 years), the relationship between healthy food patterns and sustainable food choices is overall highly significant and positive. This tendency holds, though to a lesser extent, for consumers between 41 and 65 years.

In the case of youngsters, a highly significant and positive relationship is found between visiting a fair trade shop on the one hand, and the consumption of fresh fruits and vegetables and a balanced diet on the other. Also the relationship between visiting a fair trade shop and buying seasonal foods is significant and positive for this group of younger respondents.

For consumers aged over 65 years, healthy food patterns and the choice for sustainability do not accord. One exception applies: only for seasonal foods and consumption of fresh fruits and vegetables, the relationship is positive and highly significant.

Table 2: Correlation between health and sustainable food choices, chi square values based on the respondents' age <26 (n=450), 26-40 (n=772); 41-65 (n=958); >65 (n=373)

	DIET.VF	DIET.CO	DIET.FF	DIET.BL
Age <26				
ECO.FT	14.2***	0.3	0.2	8.9***
ECO.SS	4.2	7.0**	0.4	10.6***
ECO.RG	0.9	0.2	1.7	2.1
ECO.OR	11.8**	11.0**	0.0	3.2
Age 26-40				
ECO.FT	36.2***	11.4***	14.3***	7.8***
ECO.SS	22.4***	20.4***	19.8***	9.7***
ECO.RG	20.9***	12.2***	21.2***	24.6***
ECO.OR	21.5***	14.8***	14.8***	13.7***
Age 41-65				
ECO.FT	35.9***	3.2	6.9***	3.7*
ECO.SS	14.9***	8.7**	7.4***	11.2***
ECO.RG	8.0**	1.3	4.4**	4.4
ECO.OR	19.5***	6.3	2.2	19.0***
Age >65				
ECO.FT	0.0	0.4	0.4	0.5
ECO.SS	11.8***	1.0	0.1	0.0
ECO.RG	0.4	0.1	5.3**	11.5
ECO.OR	2.0	9.0*	0.9	0.6

*p<0.1, **p<0.05, ***p<0.01

II. CONCLUSIONS

Based on a large database on consumers' food patterns, this research shows a significant relationship between a healthy diet and sustainable food choices. Analyses applied to identify gender or age specific tendencies demonstrate that the association is particularly pronounced for consumers between 26 and 40 years old. Consumers older than 65 show a very healthy diet, though they are less motivated to buy sustainable food. These findings can be extremely useful in the communication and promotion of different types of sustainable food.

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