



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

The impact of emotional intelligence of consumers when purchasing products with nutritional claims

Belinda López-Galán¹, Tiziana de-Magistris^{*1} and Vincenzina Caputo²

¹ Unidad de Economía Agroalimentaria. Centro de Investigación y Tecnología Agroalimentaria de Aragón. Instituto Agroalimentario de Aragón (IA2) (CITA-Universidad de Zaragoza), Spain.

² Agricultural, Food, and Resource Economics. Michigan State University. United States.

*Address correspondence to this author at the Unidad de Economía Agraria y de los Recursos Naturales, CITA, P.O. Box: 50059, Zaragoza, Spain; Tel/Fax: +34 976 716 352, +34 976 716 335 E-mail: tmagistris@aragon.es, belindasusanlopez@gmail.com

Contribution presented at the XV EAAE Congress, “Towards Sustainable Agri-food Systems: Balancing Between Markets and Society”

August 29th – September 1st, 2017

Parma, Italy



**UNIVERSITÀ
DI PARMA**



Copyright 2017 by Belinda López-Galán, Tiziana de-Magistris and Vincenzina Caputo. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

The impact of emotional intelligence of consumers when purchasing products with nutritional claims

Belinda López-Galán^a, Tiziana de-Magistris^{*a} and Vincenzina Caputo^b

^a Unidad de Economía Agroalimentaria. Centro de Investigación y Tecnología Agroalimentaria de Aragón. Instituto Agroalimentario de Aragón (IA2) (CITA-Universidad de Zaragoza), Spain.

^b Agricultural, Food, and Resource Economics. Michigan State University. United States.

*Address correspondence to this author at the Unidad de Economía Agraria y de los Recursos Naturales, CITA, P.O. Box: 50059, Zaragoza, Spain; Tel/Fax: +34 976 716 352, +34 976 716 335 E-mail: tmagistris@aragon.es, belindasusanlopez@gmail.com

ABSTRACT

Our study assesses the influence of Emotional Intelligence of purchase decision of food with nutritional claims. We used the CEIS scale to evaluate emotional abilities and we included a latent class model to assess its influenced on the purchase decision of potato chips. We found that in part of the sample purchase decision of food was influenced by their emotional intelligence ability. Our study expands the relationship of EI and food choices of consumers and shows how this relationship is heterogeneous across consumers.

Keywords: emotional intelligence, purchase behavior, nutritional claims, cluster analysis, real choice experiment

1 Introduction

It has been demonstrated that the increase in non-communicable diseases (NCDs) is related to poor quality of human diet, higher public health spending and lower labor productivity (Popkin, 2006). Non-communicable diseases such as cardiovascular diseases, cancer or diabetes caused early death on 40 million people in the world (WHO, 2017). On the other hand, the growth on world population and their increasing per capita income increased energy requirement on 72% of average. This energy requirement was supplemented by animal protein which would imply the extraction of higher quantity of biomass and as a consequences greater environmental pressure. In fact, European food production represents 2/3 of the total environmental pressure. This context reveals 1) the lack of capacity to satisfied food requirements due to depletion of natural resources including new sources of raw materials and 2) deterioration of general welfare and food security due to the abundance of poor quality food which causes unhealthy diets.

In this context, policymakers have designed some strategies such as nutritional claims to help citizens to make better food choices. However, despite all efforts, the results are not as good as expected because these instruments were designed based on the cognitive abilities of consumers (Prieto-Castillo, Royo-Bordonada, & Moya-Geromini, 2015) and assumes that consumers are aware of pros and cons in their food choices (Grunert, Shepherd, Traill, & Wold, 2012). Conversely, Köster (2009) argued that consumers frequently choose food unconsciously and their heuristic decision-making uses incomplete emotional information that drives them to select more palatable and less healthy foods (Tan & Chow, 2014). In consequence, consumers focus their food choices to gain short term utility as pleasure or reward and omit the negative consequences to health in the long term. However, the real problem emerge when some consumers takes these mental shortcuts recurrently as a coping strategy to evade negative emotions, thus they create habits that are difficult to modify with actions based on cognitive approach.

In this context of decision-making theories, recently psychologists like John Mayer and Peter Salovey provided a new construct named emotional intelligence (EI). This contribution supports the idea that several decisions, in particular food choices, has been made by heuristic thinking because consumers has less developed emotional abilities. Emotional intelligence is an individual's capability to recognize, understand, use and manage their own emotions and emotions of others with the aim to adequately solve problems (Mayer & Salovey, 1997). Thus, quality of choices depends on individual's emotional intelligence to make better decisions. In this regard, several studies in different context demonstrated that emotional intelligence determines the success of decision making. For example, Di Fabio and Kenny (2012) found that technical high school students with low level of EI tend to avoid made decisions relate to their future career or relying on others persons this decision. Into physical activity context, Saklofske et al., (2007) reports an association between those people who indicate that do regular physical activity and high EI scores. In the same line, Galdona et al., (2011) indicate that young people with higher EI reports higher level of mental and physical well-being obtained to practice regularly excise. On another hand, some studies demonstrated a negative relationship between EI and unhealthier behaviors. Brackett et al., (2004) suggest that undergraduate students with lower EI are more likelihood to conduct maladjusted behaviors as consume illegal drugs or abuse of

alcohol. Meanwhile, Filaire et al., (2012) showed that male athletes lower in EI tend to use food as a coping strategy because their poor performance.

Studies of EI at the consumer behavior domain are scarce and refer to consumption stage of food (Kidwell, Hardesty, & Childers, 2008a). Kidwell and colleagues expanded the Mayer and Salovey's emotional ability model to consumer behavior and proposed that those consumers that skillfully use emotional information to reason and solve a dilemma tend to make better decisions relate to food (Kidwell et al., 2008a). In their study, Authors reports that consumers with high level of emotional intelligence were more resistant to tempting food and choose healthier one (Kidwell et al., 2008a).

Since, on the one hand, decisions related to food involve more than consumption and in the context of higher rates of NCDs it is essential focus on healthier food products and on the other hand, individuals consume more calories than they need (in particular animal protein). It is important to assess whether EI drives better decisions related to the purchase of healthier food products, and specifically taking into account that nutritional claims have been demonstrated to help consumers to purchase healthier food (Hoefkens, Valli, Mazzocchi, Traill, & Verbeke, 2013; Miklavec, Pravst, Grunert, Klopčič, & Pohar, 2015). Therefore, the aim of this study is to contribute to explore new approach to fight against increasing rate of NCDs relate to dietary. In particular, we assess the influence of IE on purchase decisions of food with nutritional claim. In other words, our results present important insights for policymakers given that emotional intelligence seems to have a greater role in food choices compared to other elements such as nutritional knowledge (Kidwell, Hardesty, & Childers, 2008b).

2 Materials and Methods

2.1 Product and choice experiment design

As shown in table 1, the first attribute was price (PRICE) with four levels (0.50 euros, 0.95 euros, 1.40 euros, and 1.85 euros for a package of 150 grams of potato chips) that reflect the current market price of snack such as potato chips in a Spanish supermarket. The second attribute was a reduced-fat claim (FAT) and the third attribute was a low-salt (SALT) content claim. Moreover, the interaction between the reduced-fat and low-salt claims was represented by FSALT (FAT*SALT). These claims are coded as dummy variables because they indicate whether the corresponding claims are present or absent in the model. We select both claims because there is scientific evidence that excessive consumption of nutrients like fat and salt have harmful effects on human health (World Health Organization, 2003). To design the choice task we used a sequential Bayesian approach to minimize the D-error (de- Magistris and Lopez-Galan, 2016). As a result we obtained 12 choice tasks where each choice set included two designed alternatives consisting of different products and a no-buy option. The choice design was obtained using Ngene software version 1.1.2.

2.2 Recruitment and RCE procedures

In this study we used real choice experiment (RCE), which incorporates both an incentive-compatible mechanism and real products (De-Magistris, Gracia, & Nayga, 2013). The experiment was conducted during March–May 2015 with a total of 309 individuals from a capital city of a Spanish region. A professional market research

agency recruited participants randomly from different locations across the city using a stratified sampling procedure by gender, age, level of education and BMI. Table 2 shows the socio-demographic characteristics of the participant. Most of them were females (60%), and around of 43% of the participants had secondary education. About 38% of the participants had a net monthly income between 1,501€ and 2,500€, which is closed to the Spanish average income. All participants were potato chip consumers and primary food buyers in households.

We used the Spanish version of the Consumer Emotional Intelligence Scale (CEIS) created by Kidwell, Hardesty and Childers (2008) to measure the emotional ability of consumers. The CEIS assesses emotional ability on a questionnaire of 18 items structured in four subsections: perceive, facilitate, understand and manage emotions. The CEIS has been demonstrated to be a better predictor of choice decisions on consumer behavior and reported a split-half reliability of 0.82 (Kidwell et al., 2008). Participants were organized into groups of a maximum of 10–12 individuals. A participation fee was set at 10€. Then, participants were faced with 12 choice tasks (see Figure 1). In each choice task, participants were asked if they wanted to select one of the potato chips or any of them. At the end of the experiment, the bidding choice set was selected randomly and participants had to purchase and pay the selected potato chips at the ‘posted price’ unless they chose the no-buy option. Finally, participants received the package of potato chips after paying for the selected alternative, if any.

2.3 Econometric Specification

To measure the consumer’s preferences for nutritional claims we conducted a real choice experiment (RCE). This methodology represents discrete choice models based on the theory of utility maximization of Lancaster (1966) y Random theory of McFadden (1973). Hence, to measure consumers’ preference we supposed that the utility of a product can be discomposed on a subset of utility measured through attribute of products. However, the utility is known by the consumer but it is unknown by the researcher, hence those unobservable attributes are considered to be stochastic.

Consequently the utility can be defined by a random variable that is expressed in equation 1:

$$U_{njt} = \beta X_{njt} + \varepsilon_{njt} \quad (1)$$

In this equation β is a vector of parameters which is associated to the vector of the explanatory variables X_{nj} . Moreover, ε_{nj} is an extreme, independent and identically distributed (IID) value among individuals, product alternatives and purchase situations. However, the literature of the choice experiments indicates that consumers' preferences are heterogeneous. In this sense, one of the most widely used econometric models to know consumers’ preference is the Latent Class Logit Model (LC). This model assumes that individuals can be grouped in a finite number of groups and that these groups can be characterized through different parameters β_q and other particular characteristics

Hence, if we taking into account attributes and levels of potato chips presented on table 1, the utility of an individual n derived from a product alternative j in a purchase situation t , we can expressed the following expression:

$$U_{njt|s} = \alpha + \beta_{1|s}price_{njt} + \beta_{2|s}fat_{njt} + \beta_{3|s}salt_{njt} + \beta_{4|s}fsalt_{njt} + \varepsilon_{njt|s} \quad (2)$$

where n indicates the number of individuals, j represents each of the three alternatives in the choice set and t is the number of choice sets. $\beta_{1|s}$, $\beta_{2|s}$, $\beta_{3|s}$ and $\beta_{4|s}$, are

the parameter vectors of class s corresponding to the vector of attribute variables (PRICE, FAT, SALT AND FSALT) and ε_{njt} are error terms of type I. The densities of the unobserved terms $f(\varepsilon_{njt})$ assume heterogeneous consumer preferences. As noted in Eq. (1), the variable α is the alternative-specific constant, coded as a dummy variable equal to 1 for the no-buy option and 0 otherwise. Therefore, for the given class membership, the choice probability that individual n , conditional on belonging to class s ($s = 1, \dots, S$), will choose an alternative j is represented as showed in Eq. (3):

$$P_{ni} = \sum_{s=1}^S P_{ns} \prod_{t=1}^T P_{njt|s} \quad (3)$$

where P_{ns} is the probability that individual n belongs to class s and $P_{njt|s}$ is the choice probability that individual n , conditional on belonging to class s ($s = 1, \dots, S$), will choose option j from a particular choice occasion t (de- Magistris and Gracia, 2016).

We estimated the LC models as follow: the consumers' emotional intelligence (EI) score as standardized values was included in the class membership function in equation (1). To select the optimal number of classes, we considered the Akaike Information Criterion (AIC), Akaike Modified Information Criterion (AIC3), Bayesian Information Criterion (BIC) and the Akaike Ratio of Likelihood (ρ^2) (Gracia & de-Magistris, 2013). Then, we identified the model that obtained the lowest values of AIC, AIC3 and BIC, and the highest value of ρ^2 . As a result, we choose the model with three latent classes because this provided more meaningful economic information regarding the variables analyzed.

Results

As shown in table 3, the first segment is composed of 50% of the sample. The segment membership function coefficient indicates that the probability of belonging to this segment was negative and not influenced by EI. However, the corresponding coefficients of the FAT and SALT variables were positive at the 1% significance level, suggesting that consumers gained a higher utility from reduced-fat chips or low low-salt-content chips rather than conventional chips. The coefficient of the FSALT variable was not significant, suggesting that consumers were indifferent to chips bearing both reduced-fat and low-salt claims.

The second segment consists of 20% of the sample. The membership function coefficients show that the probability of belonging to this segment is negatively influenced by emotional intelligence ability. Conversely to segment 1, the coefficients of FAT and SALT variables were negative and statistically significant at the 1% level, suggesting that consumers gained lower utility from reduced-fat chips or low-salt-content chips rather than conventional ones. As in segment 1, consumers of segment 2 were indifferent to chips bearing reduced-fat and low-salt content claims.

Finally, the third segment includes 30% of the sample and the membership function coefficient indicates that consumer heterogeneity depends on emotional intelligence ability. Moreover, the FAT and SALT variables were positive and statistically significant, suggesting that consumers gained higher utility from reduced-fat or low-salt-content chips rather than conventional chips. Conversely to segment 1 and 2, the coefficient of FSALT variable was positive and significant at the 5% significance level, indicating that consumers gained higher utility from chips bearing both reduced-fat and low-salt claims rather than conventional ones.

3 Conclusion

In this study we analyzed the influence of emotional intelligence on the purchase behavior of food with nutritional claims. We used the CEIS scale to evaluate emotional abilities and we included a latent class model to assess its influence on the purchase decision of potato chips.

The main result indicated that lower emotional ability had a negative influence on preferences of healthier version of chips in part of the sample. In fact, part of our findings suggest that respondents with a low EI score are less likely to choose chips with nutritional claims, as denoted by the negative signs of the coefficients of FALT and SALT variables in segment 2. This finding is consistent with Kidwell et al., (2008) and Peter and Brinberg (2012) in which studies consumers with higher level of emotional intelligence made healthier food decision than consumers with lower of emotional intelligence. However, because only 20% of the sample seems to be influenced by emotional intelligence we can say that emotional ability plays a different role in purchase behaviour field compared to eating behaviour field. This result could be explained by the difference of experimental design, in particular, unlike studies of Kidwell et al., (2008) and Peter and Brinberg (2012), our study assess the choice of food with nutritional claims not calorie intake and included the variable price in the choice design.

In line with Wansik and Chandon (2006) our results demonstrated that preferences of nutritional claims differ across type of food, nutritional claim and consumers. For example, in our study consumers of segment 1 and 2 were indifferent to chips bearing reduced-fat and low-salt claims and both segments preferred conventional chips to those bearing both nutritional claims compared to the consumers of segment 3 but they showed preferences to food with relative nutritional claims (i.e. reduce-fat or low-salt).

In conclusion, our results suggest that emotional intelligence influences preferences for potato chips with nutritional claims, but this influence is heterogeneous. Although our results provide new evidence related to the influence of emotional abilities in food choices. Nevertheless, this study presented some limitations, further research in other European countries and with other nutritional claims needs to be addressed to extrapolate our findings. Moreover, other studies could consider the interaction effect between cognitive ability, emotional ability and food choices. This interaction effect could explain why consumers had poor evaluation of some relative nutritional claims (i.e. low-salt).

Finally, based in our findings we can give some recommendations to promote behavioural changes related to more sustainable and healthier food choices. In general, developing emotional individual abilities not only improves the quality of decision making of individuals with lower levels of emotional intelligence, but also improves the quality of food choices of these consumers. Hence, public policies should include not only strategies that improve cognitive abilities but emotional abilities too. On the other hand, if policymakers consider nudge policies as promote the availability and affordability of healthier versions of products (Story, Kaphingst, Robinson-O'Brien, & Glanz, 2008) could help to consumers especially those who are lower in their emotional ability to choose healthier products.

4 References

- de- Magistris, T., & Lopez-Galan, B. (2016). Consumers' willingness to pay for nutritional claims fighting the obesity epidemic: the case of reduced-fat and low salt cheese in Spain. *Public Health*, 135, 83–90. <https://doi.org/10.1016/j.puhe.2016.02.004>
- de- Magistris, Tiziana, & Gracia, A. (2016). Consumers' willingness-to-pay for sustainable food products: the case of organically and locally grown almonds in Spain. *Journal of Cleaner Production*, 118, 97–104. <https://doi.org/10.1016/j.jclepro.2016.01.050>
- De-Magistris, T., Gracia, A., & Nayga, R. M. (2013). On the use of honesty priming tasks to mitigate hypothetical bias in choice experiments. *American Journal of Agricultural Economics*, 95(5), 1136–1154. <https://doi.org/10.1093/ajae/aat052>
- Gracia, A., & de- Magistris, T. (2013). Preferences for lamb meat: A choice experiment for Spanish consumers. *Meat Science*, 95(2), 396–402. <https://doi.org/10.1016/j.meatsci.2013.05.006>
- Kidwell, B., Hardesty, D. M., & Childers, T. L. (2008). Consumer Emotional Intelligence: Conceptualization, Measurement, and the Prediction of Consumer Decision Making. *Journal of Consumer Research*, 35(1), 154–166. <https://doi.org/10.1086/524417>
- Köster, E. P. (2009). Diversity in the determinants of food choice: A psychological perspective. *Food Quality and Preference*, 20(2), 70–82. <https://doi.org/10.1016/j.foodqual.2007.11.002>
- Lancaster, K. J. (1966). A New Approach to Consumer Theory. *Journal of Political Economy*, 74(2), 132–157.
- McFadden, D. (1973). Conditional logit analysis of qualitative choice behavior. In P. Zarebka (Ed.), *Frontiers in Econometrics* (pp. 105–142). Academic Press.
- Peter, P. C., & Brinberg, D. (2012). Learning Emotional Intelligence: An Exploratory Study in the Domain of Health. *Journal of Applied Social Psychology*, 42(6), 1394–1414. <https://doi.org/10.1111/j.1559-1816.2012.00904.x>
- Popkin, B. M. (2006). Global nutrition dynamics: the world is shifting rapidly toward a diet linked with noncommunicable diseases. *The American Journal of Clinical Nutrition*, 84(2), 289–298.
- Story, M., Kaphingst, K. M., Robinson-O'Brien, R., & Glanz, K. (2008). Creating Healthy Food and Eating Environments: Policy and Environmental Approaches. *Annual Review of Public Health*, 29(1), 253–272. <https://doi.org/10.1146/annurev.publhealth.29.020907.090926>
- Tan, C. C., & Chow, C. M. (2014). Stress and emotional eating: The mediating role of eating dysregulation. *Personality and Individual Differences*, 66, 1–4. <https://doi.org/10.1016/j.paid.2014.02.033>
- Wansink, B., & Chandon, P. (2006). Can “low-fat” nutrition labels lead to obesity? *Journal of Marketing Research*, 43(4), 605–617.
- WHO. (2017). Noncommunicable diseases, Fact Sheet 355. Update April 2017 [Organizational]. Retrieved April 20, 2017, from <http://www.who.int/mediacentre/factsheets/fs355/en/>
- World Health Organization, W. (2003). *Diet, Nutrition and the Prevention of Chronic Diseases*. (Consultation, Report of a joint WHO/DAO expert.). Geneva: World Health Organization.

Table 1. Attributes and levels used in the choice experiment design

Attributes	Levels
PRICE	0.50 €
	0.95 €
	1.40 €
	1.85 €
Reduce-fat claim (FAT)	0=No label 1= A reduced fat chip is at least 30% compared to traditional chips.
Low Salt content (SALT)	0= No label 1= The amount of salt in the chips is not more than 0.03 g of salt per 150 grams of product.

Table 2.Sample characteristic (%)

Variable definition	%
Gender	
Male	40.1
Female	59.9
Age	45.2
Between 18-35 years	28.5
Between 35-54 years	40.8
More than 54 years	30.7
Education level	
Elementary School	19.7
High School	42.7
University	37.5
Income	
Below 1500€	31.8
Between 1501€ and 2500€	38.5
Between 2501€ and 3500€	20.1
More than 3501€	9.7

Table 3. Parameter estimates with one and three segments.

Variables	One-segment model		Latent Classes					
			Segment 1		Segment 2		Segment 3	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Fat	0.63***	0.09	1.49***	0.21	-0.55***	0.19	1.73***	0.41
Salt	0.36***	0.08	1.52***	0.18	-1.31***	0.22	1.23***	0.40
Fsalt	-0.07	0.10	-0.19	0.22	0.07	0.22	-0.89***	0.41
Price	-1.43***	0.07	-1.62***	0.21	-0.46***	0.17	-2.69***	0.20
No-buy	-1.81***	0.14	-3.33***	0.43	-1.87***	0.33	-0.65	0.47
IE			-0.13	0.15	-0.31*	0.18	-	-
Class probability			49.7		19.9		30.4	
Log-likelihood one-segment model	-3195.96		Log-likelihood three-segment model	-2512.22				
AIC of one-segment model	6401.9		AIC of three-segment model	5062.4				

(***) (**) (*) denotes statistical significance at the 1%, 5% and 10% significance.

^a statistic for one-segment model

^b statistic for latent class model

Figure 1. Example of choice set

Situación de Compra 1

A



B



NINGUNA