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The influence of psychographic variables on consumer preferences. The case of ethnic food in Spain

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Abstract. In the last years, ethnic food has been successfully introduced in the Spanish market. In this research a choice experiment is conducted in order to investigate consumer's preferences toward ethnic food and the influence of psychographic variables in consumer's decisions. A nested logit model is employed for this purpose, with a two level nesting structure: the first decision is whether or not to consume ethnic food at all; and the second decision combines ethnic cuisine and the consumption situation. The experiment contemplates three cuisines, Mexican, Asian and Arab; and three consumption situations: restaurant, take away and preparation at home. Three psychographic variables are used to investigate the opt-out decision, which relate to the degree of food neophobia, ethnocentrism and personal values. These personal traits are investigated by means of scales well documented in the literature that allow the classification of consumers into segments. The results show that the probability that a consumer decides not to choose ethnic food in any of the consumption situations provided, increases in the segments defined as relatively more neo-food phobic, ethnocentric and focused more towards personal development rather than socialization.

Keywords: Ethnic food, choice experiment, nested logit, consumers, psychographic variables.

1. Introduction

The concept of ethnic food is associated with the national food and the culinary ingredients that belong to a specific culture. In this paper ethnic food is defined as specific to the gastronomic culture of a nation, whose consumption goes beyond the original cultural or geographical boundaries. Ethnic food refers not only to individual ingredients mostly used by each culture, but also to a particular way of seasoning, preparing, cooking or consuming, that makes the out coming dish distinctive of a particular ethnic group. In this sense, food becomes ethnic when contemplated from the perspective of a market and/or consumer alien to the cultural group of reference. For the latter, however, ethnic is viewed as typical.

The markets for ethnic food are far more developed in the US than in Europe, and within Europe, countries like the UK are amongst the most developed. In Southern European countries, such as Spain, the spread of the ethnic food market has been boosted by the arrival of immigrants along the last decade. In 2008, the immigrant population accounted for 9.9% of the registered population in Spain^[2]. Ethnic food first satisfy the immigrant market segment, but later on, the contact between the native and immigrant population, and the exposure of natives to other cuisines through the distribution channels, such as restaurants and the mainstream retailers, and travels, favour the expansion of the market and the targeting to native consumers.

Unlike immigrants, native consumers may consume ethnic food mainly motivated by factors linked with the search for exotic and new tastes and gastronomic knowledge, or the evocation of past vacations or places which they wish to visit. On the other hand, personal values and attitudes may incentivize or brake the consumption and adoption of ethnic food. In this paper, we investigate the role of personal values, the degree of phobia to new food and the level of ethnocentrism as possible moderators in consumers' choice of ethnic food.

A choice experiment addressed to a sample of Spanish consumers, is conducted with this purpose, and a nested logit is estimated in order to investigate the influence of the psychographic traits into the opt-out decision.

The paper is structured as follows: Section 2 presents the design of the experiment; Section 3 summarizes the analytical framework; Section 4 the psychographic characteristics are presented; Section 5 the empirical application and results are discussed; and finally, some conclusions are drawn.

2. Design of the Choice experiment

The choice experiment is based on the trade-off between alternative multi-attribute products and utility maximization. The respondent faces a choice between alternative products, having the option of choosing none of them, reproducing in this way more closely the actual market situations. The choice between alternative options is formally explained assuming a utility maximization behaviour which leads to the so-called Random Utility Models (RUM)^[3, 4, 5]. Choice experiments are widely used in different research areas, being marketing one of them^[6, 7, 8, 9, 10].




In this study, the target population is Spanish consumers over 18 years old. The survey was conducted in a medium-size Northern Spanish city (Zaragoza), between December 2006 and February 2007, and the final useable sample size is 270.

The attributes and levels to include in the choice experiment were selected after an inspection of the gastronomic supply in this city. International restaurants and fast-food channels, some of them with the take away option, and retail distribution chains, were visited, in order to gather information about the type of cuisines, distribution options and price ranges.

The diversity of cuisines found can be classified into three broad categories, which also coincide with the three most known by consumers (according to a pilot survey): Mexican, Asian and Arab; three consumption situations are also identified: in the restaurant, take-away or home delivered, and prepared at home. In order to allow for the observed association between price and consumption situation and, accordingly, minimize implausible combinations that a common set of prices would force, a labelled choice experiment is designed, where the labels communicate information on the consumption situation. The levels chosen for price are: 3€, 6€, 9€ (at home); 9€, 12€ and 15€ (take-away); and 15€, 18€ and 21€ (restaurant).

For the design of the choice sets we follow the recommendation^[3] that combines a fractional factorial design and a blocking strategy. Only main effects are considered. The possible number of combinations of attributes (A) and levels (L) across choice options (M) ($L^{MA} = 3^{3 \times 2} = 729$) is reduced to 27 treatment combinations, grouped in 3 blocks with 9 cards each. Given the nature of ethnic food as a new or at least

non-regular food in the daily diet, an option of no-choice was also included to better mimic the real choice situation. An example of the choice sets is shown in Figure 1.

Choice Experiment				
<i>National consumers</i>				
Card A	Restaurant	Take away/Delivery	Home prepared	No choice
Consumption Situation				None of them
Cuisine	Asian	Mexican	Arab	
Price	24 euro	12 euro	3 euro	

(Block 1)

Figure 1. Example of choice set

3. The nested logit

In this application, a Nested Logit (NL) is applied. The NL model is a type of Generalized Extreme Value (GEV) model. In the NL, the alternatives are grouped into subgroups or nests, organized in a tree structure that can vary in the number of levels. The Nested Logit relaxes the requirement of independence and identical distribution (iid) of the unobserved part of the utility, and the property of independence of irrelevant alternatives (IIA) imposed by the multinomial and conditional logit^[5]. In a nested logit, these properties are only observed for the grouped alternatives in the same nest. In this way, the NL may be considered like a “hierarchy of multinomial logit models linked through a tree structure”^[11]. In particular, the requirement of constant variance (and also scale) must meet in the nest, but not necessarily between nests.

In our application, we formulate the tree structure shown in Figure 2.

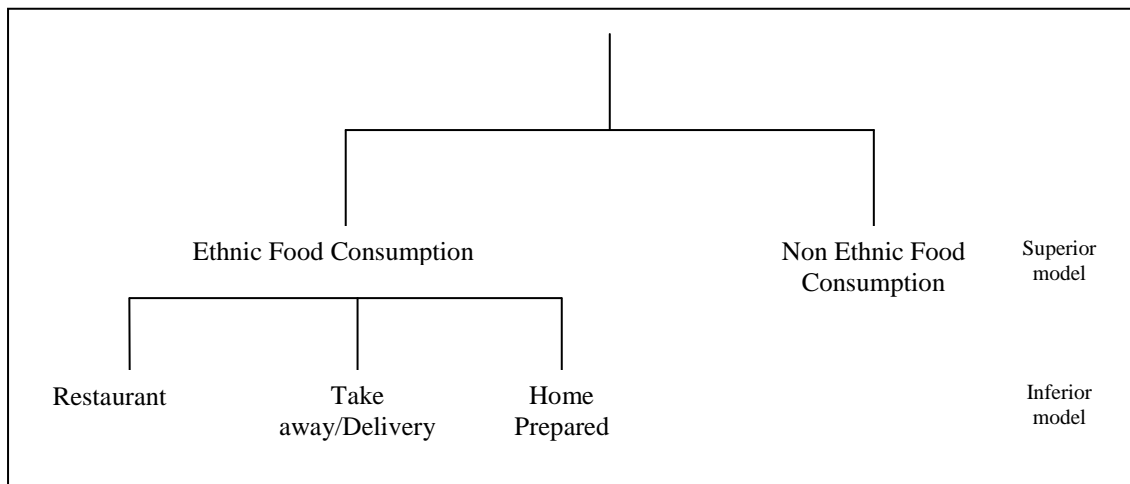


Figure 2. Tree diagram for consumer's decision on ethnic food

Thus, the four elemental alternatives in the choice experiment are partitioned into 2 non-overlapping subsets or nests (N_k): the alternative consumption situations i , restaurant (r), take-away (t) and preparation at home (h) are included in the consumption of ethnic food ($k=Cons$) nest; and the no-choice option, in the non-consumption of ethnic food ($k=Ncons$) nest (this is called as degenerated branch ^[3]). The utility that individual n gets from alternative i in nest k is: $U_{i \in N_k}^n = V_i^n + \varepsilon_i^n$, where V_i^n is the observed or representative utility, and ε_i^n is a random and non-observed part of the utility. The Nested Logit assumes that the random component of utility is a type of GEV distribution that allows that ε_i^n are correlated within nests, although not between nests. In other words, the non-observed portion of utility for alternatives within the same nest may be affected by the same factors, while still, independence is assumed for alternatives in different nests. In our application, we could hypothesize that the underlying factors that explain the non-observed utility provided by the no consumption of ethnic food are different to those affecting the choice of consumption situations of ethnic food.

Assuming a particular GEV distribution of the random component of utility ^[3], the probability for individual n of choosing alternative i in nest k in a NL model is:

$$P_i^n = \frac{\exp(V_i^n / \lambda_k) \cdot \sum_{j \in B_k} \exp(V_j^n / \lambda_k)^{\lambda_k - 1}}{\sum_{l=1}^K \left(\sum_{j \in B_l} \exp(V_j^n / \lambda_l) \right)^{\lambda_l}} \quad (1)$$

Where λ_k measures the degree of independence in unobserved utility among alternatives in nest k . The higher the value of λ_k the greater the independence. In the extreme, when $\lambda_k=1$, for all k , the NL reduces to the standard logit. Values of λ_k between 0 and 1 are consistent with utility maximization. Note that in this model, the same correlation among alternatives within a nest is assumed for all consumers. A more general model, like the mixed logit, would allow for a more general pattern of correlations. In order to estimate the model, one λ_k needs to be set to one. Estimation is then carried out by standard maximum likelihood. Among the different packages that include the routines to estimate this model, NLOGIT 3.0 is used in this application.

As with the standard conditional logit model, applications of NL are more common in transport or environmental economics. Some references in the agrofood sector are found in the context of consumers' risk perception of bison meat ^[12]; consumers' preferences in relation to the use of bio-preservatives in packages of high quality beef, pork and ground beef ^[13]; or the factors affecting consumers' choice of spaghetti brands ^[14].

4. Psychographic Characteristics

Several studies that analyse consumers' behaviour introduce psychographic variables to explain the heterogeneity of behaviors between consumers that share common socio-demographic features ^[15, 16, 17, 18, 19]. The traditional socio-demographic variables have lost capacity of differentiation and comparative advantage in the development of specialized marketing activities, especially because the out-coming segmentation tend to homogenize business strategies ^[20]. That is why psychographic characteristics are gaining weight as market segmentation variables. In this study, three psychographic variables are investigated as possible sources of rejection of ethnic food: personal values, the phobia to new food, and the ethnocentrism level.

4.1 The measurement scales

First, personal values are evaluated with the List of Values (LOV) scale, proposed in 1983^[21], and widely used since then ^[22, 23, 24]. The LOV is composed of 8 values that can be classified into 2 dimensions: internal and external. The internal dimension refers to the individual's interest on looking inward to face problems of the daily life, taking control over every aspect of his/her life, and trying to reach feelings of internal approval and happiness. The external dimension, on the other hand, refers to a more collective and social interest, trusting more intensely on destiny and luck, and letting other persons take control of his/her life.

Second, the degree of ethnocentrism is evaluated with the CETSCALE scale developed in 1987 ^[25]. This scale aims at measuring consumers' beliefs on the ethical aspects of purchasing foreign products. The CETSCALE is composed of 17 items, and it is one-dimensional. Using the mean or the median score, individuals may be then segmented into relatively more or less ethnocentric in their purchasing behaviour.

Finally, the repulsion that the individuals express to meals or food which they are not familiarized with, is evaluated with the Food Neophobia Scale (FNS) developed in 1992 ^[26]. The FNS scale is also uni-

dimensional, is composed of 10 items and aims at measuring the predisposition of individuals to try or reject new food in their diets. This scale has been widely applied in international studies^[27, 28, 29, 30]. Using either the mean or median score, individuals may then be segmented into relatively more food neophobic, or reluctant to try new foods, or food neophile, or relatively more receptive to new food.

4.2 Consumer segmentation

The three scales (LOV, FNS and CETSCALE) are measured through a 5-point Likert scale that range from “totally disagree” to “totally agree”. A factor analysis applied to the individual scores in the LOV scale leads to three factors that explain 63.4% of the variability of data. The first factor explains the 37.2% of the total variance and is linked to the values “being well respected”, “self respect”, “sense of accomplishment” and “security”. This factor is called “Egocentrism”. The second factor explains 14.4% of total variance and is named “Hedonism” because it is integrated by the values “excitement” and “fun and enjoyment in life”. Finally, the third factor explains 11.6% of total variance and is called “Social integration”, as it is composed of the items “sense of belonging” and “warm relationships with others”. The results show that the first two factors, “Egocentrism” and “Hedonism”, are related more with the internal dimension found in the literature^[21], while the third one, “Social integration” is mixed, as it includes components from both the internal and external dimensions^[31, 32].

Individuals’ factors scores are then used as segmentation basis in a cluster analysis (k-means), leading to two differentiated consumers’ segments: ‘relatively more oriented to personal development’ (positively correlated with the “Egocentrism” and “Hedonism” factors); and ‘relatively more oriented to socialization and enjoyment’ (positively correlated with the “Social integration” factor). The first segment accounts for 35.6% of the consumers in the sample and the second one, the remaining 64.4%.

The final CETSCALE used includes 13 items (4 were eliminated because of lack of relevance to the context of the study). Thus, the total score by each individual can range from 13 to 65. Then, the median (29 points) is used as cutting point between those consumers with relatively more ethnocentric purchase behaviour (above the median) and those relatively less ethnocentric or less prone to reject foreign products. Higher scores in the scale mean a rejection of imported products based not on quality or objective criteria, but on the belief that purchasing imported goods damages the domestic economy and employment. Thus, 51.1% of the consumers are located in the group of low ethnocentrism (with scores less or equal than 29), and the remaining 48.9% in the relatively high ethnocentrism group (scores more or equal than 30). The median however, is not very high, and therefore, not a strong ethnocentrism attitude exists in the sample.

Applying a similar approach to the FNS scale, a median of 25 points is obtained (in a range between 10 and 50). Consumers with lower scores are classified into the segment relatively more neophile or prone to try new food; and those consumers with higher scores than the median, are classified as relatively more neophobic or reluctant to try new and unknown food. Again, the median is not very high, indicating that there are not extreme negative reactions to new food among consumers, which in turn may encourage the adoption of ethnic food by the Spanish population. 52.2% of the consumers are classified into the segment with relatively less phobia, and the remaining 47.8% in the segment with relatively more phobia.

5. Empirical Model

The tree structure in Figure 2 implies that, in the first level, consumers decide to choose an alternative that implies the consumption of ethnic food (*Cons*), or alternatively, reject any ethnic food alternative (*NCons*). If the consumption option is chosen, the branch is split down into three consumption situations: restaurant, take-away and preparation at home.

From this structure, the utility provided by the choice of the consumption situation depends on the characteristics of the alternatives *i* contained in the nest “consumption”, with *i=r* (restaurant), *t* (take-away) and *h* (preparation at home):

$$U_{i \in Cons}^n = \alpha_i + \beta_{1,i} \cdot PH_i + \beta_{2,i} \cdot PL_i + \beta_{3,i} \cdot As_i + \beta_{4,i} \cdot Mex_i + \varepsilon_i^n \quad i = r, t, h \quad (2)$$

Where:

- α_i = specific constant for alternative $i = r, t, h$
- PH_i = 1 if price is “high” in alternative i ; -1 if price is “medium”; and 0 if price is “low”.
- PL_i = 1 if price is “low” in alternative i ; -1 if price is “medium”; and 0 if price is “high”.
- As_i = 1 if cuisine is Asian in alternative i ; = -1 if cuisine is Arab; 0 otherwise;

$Mex_i = 1$ if cuisine is Mexican in alternative i ; $= -1$ if cuisine is Arab; 0 otherwise.

The levels for the variable price differ across alternatives. Thus, for the “restaurant” option, low, medium and high prices are 12, 18 and 24 €/per person, respectively; for the “take-away” option, the range of prices is 9, 12 and 15 €/per person; and for the “preparation at home”, 3, 6 and 9 €/per person. All the variables enter the model as effect codes, included price, and specific parameters are estimated for each characteristic in each alternative within the *Cons* nest.

With respect to the *Ncons* branch, we formulate a model in which the decision of no-choosing any ethnic consumption situation is related to personal characteristics of the individual. In particular, we test if membership to the segment with values more oriented to personal development (PDev), with relatively higher ethnocentrism (HEthno) and neo-food phobia (HPhobic), contributes to explain the rejection of ethnic food. Thus, the utility that individual n gets from the decision of “no consumption” is specified as:

$$U_{i \in Ncons}^n = \beta_5 \cdot PDev^n + \beta_6 \cdot HEthno^n + \beta_7 \cdot HPhobic^n + \varepsilon_i^n \quad (3)$$

where:

$PDev^n = 1$ if consumer n belongs to the segment “relatively more oriented to personal development”; $= 0$ otherwise.

$HEthno^n = 1$ if consumer n belongs to the segment with ‘relatively more ethnocentric purchase behaviour’; $= 0$ otherwise;

$HPhobic^n = 1$ if consumer n belongs to the segment ‘relatively more neophobic or reluctant to try new and unknown food’; $= 0$ otherwise;

Ethnic food is still relatively new in the Spanish market. Accordingly, it is expected that those consumers with a more intense aversion towards new food or more neo-phobic, are less prone to choose alternatives that imply the consumption of ethnic food, and accordingly, a positive sign in the coefficient of the variable ‘Hphobic’ is expected. Similarly, those consumers relatively more ethnocentric in their purchase behaviour, are expected to show a higher rejection of ethnic food, which by definition, belongs to foreign cultures and countries. Accordingly, a positive sign is also expected for the coefficient accompanying the ‘HEthno’ variable. The expected influence of the variable PDev is more ambiguous. Nevertheless, taking into account that consumers more oriented to personal development are characterized by being more introspective and showing attitudes and behaviours less oriented towards socialization, a positive relationship between PDev and the probability of choosing the ‘no consumption’ branch can be hypothesized.

First, a more general model for the *Cons* nest, as the one shown in (2), is estimated. In this model, specific parameters for each characteristic are allowed for each alternative, and price is included as an effect code. Then, Wald tests are run in order to test the hypothesis of a linear effect of price (i.e. moving from medium to high price has the same effect, in absolute terms, on utility than moving from medium to low price: $H_0: \beta_{1,i} + \beta_{2,i} = 0$ for each alternative of consumption $i=r,t,h, i \in Cons$); and to test if the effect of the type of ethnic cuisine (either Mexican or Arab) has the same effect on utility across consumption situations: $H_0: \beta_{3,r} - \beta_{3,t} = 0$ and $\beta_{3,r} - \beta_{3,h} = 0$ for Arab cuisine, and $H_0: \beta_{4,r} - \beta_{4,t} = 0$ and $\beta_{4,r} - \beta_{4,h} = 0$ for Mexican cuisine).

The Wald test rejects the null that coefficients for high and low price in the restaurant option (Wald=35.14, p-val=0.00) are equal but of opposite signs ($\beta_{1,r} + \beta_{2,r} = 0$), and fails to reject this null in the take-away and preparation at home alternatives, with respective Wald tests values of 0.68 (pval=0.41) and 1.72 (pval=0.19) ($\beta_{1,t} + \beta_{2,t} \neq 0, \beta_{1,h} + \beta_{2,h} \neq 0$).

The Wald test for the joint hypothesis on equal coefficients for Mexican food across consumption alternatives does not reject the null (Wald=0.91, p-val=0.63), while it does for Asian food at 5% level of significance (Wald=5.21, p-val=0.07). However, the Wald test fails to reject $\beta_{3,r} - \beta_{3,c} = 0$ (Wald = 0.10, p-val=0.75) and accordingly a common coefficient for Asian food in the restaurant and preparation at home option is accepted. In the final model shown in Table 1, all the accepted hypotheses are imposed in the estimation, leading to a more parsimonious model than the originally proposed in (2).

The likelihood ratio is clearly significant, and all the explanatory variables are jointly significant, improving the fit of the model with respect to one that only includes specific constants. The estimated λ_k parameter corresponding to the decision of choosing any ethnic consumption situation is 0,673, significantly different from 0 (p-val=0.001), and 1 at the 6% level of significance (Wald = -1.56, p-val = 0.06). Therefore, although only at 6%, the nested logit seems a more adequate specification than a conditional logit.

All the variables are also individually significant. An inverse relationship between price and utility is found in any consumption situation: the signs of the effect codes for high and low prices in the restaurant option, are negative and positive, respectively, while the coefficient on the linear price specification is negative for both, the take-away and preparation at home alternatives. Mexican food provides the highest utility among the alternative ethnic cuisines in any consumption situation, followed by Asian, while Arab cuisine occupies the last position.

Interestingly, the analysed psychographic traits of Spanish consumers affect significantly (at 1%) the rejection of the choice of ethnic food, and the direction of influence is as expected. Thus, the probability that a consumer chooses not to choose any ethnic food consumption situation increases for the segment of consumers relatively more neo-phobic or reticent to try new food; that express more ethnocentric tendencies in the purchasing behaviour; and that is more interested in personal development than in socialization.

Table 1. Estimated parameters in the nested logit model

Probability of "Consumption"			
Variable	Coefficient	Standard Error	Prob.
α_r	3.409	1.162	0.003
α_d	4.282	1.217	0.000
α_c	2.604	1.139	0.022
PH _r	-1.280	0.116	0.000
PL _r	1.933	0.193	0.000
Price _t	-0.166	0.023	0.000
Price _h	-0.027	0.017	0.114
As _t	0.061	0.066	0.361
As _{rh}	-0.176	0.046	0.001
Mex _{rth}	0.357	0.039	0.000
Probability of "No Consumption"			
Variable	Coefficient	Standard Error	Prob.
HPhobic	0.892	0.126	0.000
HEthno	0.294	0.122	0.016
PDev	0.277	0.117	0.018
Number Observations	2430		
LL(0)	-3266.214	LL(θ)	-3083.406
LLR (X^2_{14})	1721.574	(0.000)	
Pseudo-R ²	0.217		
λ_k	"Consumption"	0.673	(0.001)
	"No Consumption"	1 (fixed)	
Wald Statistic Ho: $\lambda_k = 1$	-1.559	(0.059)	
Standard deviation of λ_k	"Consumption"	1.905	(0.001)
	"No Consumption"	1.282 (fixed)	

Notes: LL(0): Log likelihood in the model which includes only the specific constants.

LL(θ): Log likelihood in the model with all explanatory variables.

LLR: Log likelihood ratio, between the estimated model and the one with only specific constants. Probability in parenthesis.

6. Conclusions

The introduction of ethnic food in the Spanish market was first oriented to the segment of immigrant consumers. However, along time, Spanish consumers have become more exposed and interested in ethnic food options. Currently, ethnic food is available through different channels, such as retail distribution chains, specialized retailers, fast-food and ethnic restaurants, and takeaways. A variety of ethnic food is available, being the most widespread those cuisines that can be broadly classified into Asian, Arab and Mexican.

The results of the paper show that Spanish consumers rank first Mexican food, followed by Asian, while Arab food, is placed in third place. Price has a significant impact on the probability of choosing alternative consumption situations, and lower prices are preferred. Accordingly, price becomes an important element to take into account when designing a marketing strategy.

Psychographic variables are found to play an essential role in the consumer's decision of choosing ethnic food. Although in general terms the Spanish sample in the study does not show a strong degree of phobia towards new food, or a high level of ethnocentric purchase behaviour, still a segmentation based on these attitudinal variables show segments different enough to elicit different preferences. Thus, the choice of alternative consumption situations for ethnic food is favoured among those consumers relatively less reluctant to try new foods or with relatively less ethnocentric behaviour. Besides, those consumers with values relatively more oriented towards socialization and enjoyment, are also more likely to consume ethnic food, in any situation. Promotion strategies aiming at the introduction and consolidation of ethnic food should target the most receptive segment. Highlighting product characteristics that inspire trust, confidence in the intrinsic and process quality of the product, such as convenience, would help to better reach this segment.

These results, although illustrative, could be improved in the future by expanding the sample to other cities in the Spanish territory, as well as by investigating other collectives of consumers like immigrants. Further research on additional psychographic traits, or alternative methodological ways to analyse the influence of personal traits on the choice of ethnic food, and possibly on preferences heterogeneity, could also contribute to broaden the knowledge about the ethnic food market.

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