Differential Role of Self-Congruity in the Consideration and Choice of a Store

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ABSTRACT

The variable measuring the matching/mismatching between a shopper's self-image and the image he/she has of the personality of a store—self-congruity—has deserved attention in the literature, but limited to single-phased decision models. This research extends the investigation to a two-phased decision model, and finds support for the idea that self-congruity has an explanatory role on store consideration probability. Also, no statistical evidence was found that it helps explaining choice probability among stores in the consideration set. The results were obtained by binary and multinomial logit models, permitting the assessment of the relative explanatory importance of the variable, in relation to other variables whose importance in explaining behavior have long been established. A discussion on the differential effects of the shopping situation on the role played by the explanatory variables on considering and choice probabilities was also done and empirical support was found for shopping situation-dependency.

1. Introduction

The process underlying the choice of a brand or a store by a consumer has received considerable attention in the literature. More recently, a stream of research has proposed and modeled a two-phased decision making model which postulates the following: *(a)* the consumer selects a consideration set of alternatives; and, *(b)* he/she makes a final choice from the consideration set. This model is examined in marketing (see Alba, Hutchinson, & Lynch, 1991), and in other fields, such as economics (Manski, 1977) and transportation (Swait & Ben-Akiva, 1987a). An area of investigation in dealing with two-phased decision models refers to the differential role played by attributes or variables in each phase of the process, and some attempt to classify the attributes according to such roles has been done (Hutchinson, Swait, & Jap, 1994).

The purpose of this research is to examine the role of a construct—self-congruity—in the two-phased decision making process and contribute to the understanding of the process.

On conceptual grounds, the study offers a better understanding of how self-congruity impacts the choice process and provides additional information on the effect of other variables in each phase of the choice process.

The substantive contribution of this study is in the areas of store design and development (possibly expandable to product development), and in store location. In designing or developing a store concept, if the self-congruity affects the consideration phase, it should be an element taken into account in defining the target market; if it affects the choice phase, it should be viewed more as a competitive tool for the store (or product) within the segment it is competing in or intends to compete for. Also, if the former is correct, another area that could benefit from this research is communication, as personality themes could be used in advertising to enhance the attraction of the targeted shopper.

2. Conceptual Background

One can regard the existence of a consideration set from which the choice is made as the imposition of constraints on the choice. The nature of these constraints can vary to include physical restrictions, as location, availability of parking space, or product availability (selection), as well as informational, psychological, cultural and social restrictions (Swait & Ben-Akiva, 1987a), and even memory restrictions (Alba, Hutchinson, & Lynch, 1991). The problem of consideration set generation under this constrained-based view and its numerical

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tractability was addressed by Swait and Ben-Akiva (1987a), originally for the area of transportation mode consideration and choice decision. In this research, we regard the self-congruity construct as a potential constraint of probabilistic nature affecting the inclusion of a store in the consideration set of the individual. The construct self-congruity intends to represent the matching or mismatching of the consumer's self-image with the image he or she has of the store (or product) according to a few symbolic or "stereotypic personality-images which shoppers have of a specific store" (Sirgy & Samli, 1985, p. 268). Said another way, self-congruity intends to encompass "the notion of the cognitive matching between value-expressive attributes of a given product (brand or store) and the consumer self-concept" (Sirgy et al., 1991, p. 363). The literature reports a number of studies presenting models using self-congruity to predict behavior variables, including store attitude, intention, behavior, and loyalty (Sirgy et al., 1991; see Claiborne & Sirgy, 1990, for a review). Among the studies so far dedicated to self-congruity, the single-phased decision making model framework has been used.

Although there are reports supporting that consumers shop at stores whose images match their own self-image (Stern et al., 1977), as well as that the store-image accounts for a major portion of the variance of store loyalty, self-congruity failed to significantly predict more than a negligible portion of the variance of the behavior variable (c.f. Samli & Sirgy, 1981). Follow-up studies were conducted to model self-congruity influencing first the "functional store image", which in turn would affect the shopper behavior (Sirgy & Samli, 1985, and Sirgy et al., 1991). The mediating variable, "functional store image", was defined as a multiattribute attitude measure, given by the sum of the shopper's evaluations of a group of functional attributes (i.e., utilitarian or tangible characteristics of the store—as pricing, product selection, etc—in opposition to the symbolic images that contribute to the self-congruity construct). The results of the studies indicated the significance of some, though weak, influence of self-congruity on functional store image, which strongly influences behavior. Nevertheless, no *direct* effect of self-congruity on the choice decision could be assessed in these studies, in spite of the intuitive appeal for some direct effect.

Some insights on the issue can be drawn from Sirgy et al. (1991). According to these authors, there is a difference in the timing of the decision process at which self-congruity and functional-congruity intervene: Self-congruity would be "more likely to occur prior to a functional congruity type of processing" (p. 365). Also, another model on store image formation reported in the literature (Mazursky & Jacoby, 1986) is based on the assumption that "the consumer perceives certain features from the reality and forms beliefs and/or affects which are congruent with his or her idiosyncratic cognitive configuration" (p. 148) and, only after going through it, evaluates the store according to its attributes.

Bringing these insights into a two-phased decision perspective, these ideas seem to suggest that self-congruity could affect the formation of a constrained set from which the choice would be made, thus impacting more emphatically the inclusion of a store in the consideration set than the store choice within such constrained set. Store functional attributes could play a role in the consideration of a store and would certainly affect the phase of the choice of the store. In the typology used by Hutchinson et al. (1994), the self-congruity would be a screening attribute of a store (i.e., would only affect the screening evaluation phase, or the inclusion of the store in the consideration set), while the functional store attributes would be either evaluative (only affect the evaluation phase, or choice from the set) or core attributes (affect both phases).

3. Hypotheses

We suggest that there is a differential dependency on self-congruity in the two functional relations:
Consideration = f_1 (store functional attributes, self-congruity)
Choice = f_2 (store functional attributes, self-congruity)

Specifically, the hypotheses of this study are:
H_1: Self-congruity is a significant predictor of the store being considered as a place to do the shopping, and
H_2: Among the stores considered, self-congruity is not a significant predictor of store choice.

As in shopping situations which are more image-involving, shoppers are expected to be more concerned with their image than in situations that are less image-involving, an additional hypothesis can be formulated, regarding the consideration or constraining phase of the decision process:
H_3: In relation to the functional store attributes, self-congruity affects more the first phase of the shopping decision process in a more involving than in a less involving situation.

4. Method

4.1 Sample

To examine the factors affecting consideration set formation and store choice, a survey was mailed to two thousand residents of Gainesville, Florida. In order to avoid weighing too much on the student population, the questionnaires were randomly sent to residents in the Northwestern section of the city, where a total of around ten thousand residences are placed. The city was chosen not only for convenience, but also for being a medium sized town, having a set of shopping options that are sizable and easily identifiable. Therefore, it can be regarded as a self-contained shopping environment. To encourage participation, three 100-dollar prizes where drawn among respondents. Ten days after the surveys were mailed out, reminders were sent to the same names of the first mailing.

Five hundred and three questionnaires (25%) were returned, forty-five of them were selected out due to mistaken or incomplete answering on the dependent variables or on most of the independent variables. Also, twelve were received too late, resulting in a total sample of 446 respondents.

Two different conditions were assessed by having half of the questionnaires describing each of two shopping situations. One condition refers to a hypothetical shopping trip "*to buy a food processor for home use*" and the other to a trip "*to buy a food processor as a wedding gift for a close friend or relative*". The former of these manipulations is to assess the contributions of the variables of interest in a less image involving shopping situation and the later a more image involving one. The product—food processor—was selected to represent a product with considerable value ($50 to $120), but not strongly brand-dependent, in order to try to avoid having the store's importance shaded by the brand's. Moreover, the stores offering the product category in the trade area where the researched was conducted fulfill the goal of being readily identifiable and in sufficient number to provide diversified options to the shopper.

The questionnaire was formatted to begin with questions on personal characteristics including social-demographic and self-image variables. The specific shopping situation was described, followed by the questions related to the dependent variables. The questions on the measures of the store functional attributes were asked, followed by an overall evaluation of the stores and by the attributes of store image. Thus, the self-image and the store-image questions were separated by about ten minutes, in a normal front-to-end questionnaire answering.

4.2 Measures

Self-Congruity: The variable self-congruity intends to reflect how close the self-image matches the store or product image, according to personality traits applicable both to the individual and to the store (Sirgy, 1982). According to Sirgy and Samli (1985), four different measures of self-congruity can be assessed: the actual self-congruity (match between the actual self-image—*how a person sees him or herself*—and the store image), the ideal self-congruity (match between the ideal self-image—*how a person would like to see him or herself*—and the store image), the social self-congruity (match between the social self-image—*how a person believes others see him or her*—and the store image), and the ideal social self-congruity (match between the actual self-image—*how a person would like others to see him or her*—and the store image).

In order to obtain the self-congruity measures, the personality characteristics used extensively by Sirgy and his colleagues (see Samli & Sirgy, 1981; Sirgy, 1982; Sirgy & Samli, 1985; Sirgy et al., 1991) were *modern vs. traditional*, *friendly vs. formal*, *classy vs. folksy*, and *casual vs. sophisticated*. Reportedly, these traits were obtained in a convenience basis, and when factor analyzed showed to represent in fact two dimensions. Other traits appear more sparsely in the literature (e.g., Stern et al., 1977, using twelve adjective pairs).

Instead of using these traits, in the present study we relied on a different set of personality attributes. To obtain a set of traits intended to cover broadly the personality of the store, we counted on recent studies on brand personality. These studies encompass a "set of human characteristics associated with the brand" (Aacker, 1994a). One of these studies, by Alt and Griggs (1988), used factor analysis on 155 personality characteristics rated for six brands, and obtained four factors accounting for 50% of the variance. Another brand-personality study (Aacker, 1994b), whose purpose was to develop a brand personality inventory, factor analyzed 114 personality traits on a variety of 37 brands of products and stores, and ended up with five factors explaining 92% of the variance. Intending to reflect the factors revealed on these two studies, we defined four dimensions of brand personality: *excitement*, *fashionability*, *aggressiveness*, and *modernity*.

Two self-congruity measures were assessed in the present research: the ideal and the social self-congruity. To obtain them, the four self-image dimensions—*exciting / not exciting, fashionable / not fashionable, aggressive / passive*, and *modern / traditional*—were asked both in regard to "*how the person would like to see him or herself*" and to "*how the person thinks the others see him or her*". Taking the absolute value of the difference of each of them to the corresponding store-image measure, eight "distances" of self to store image resulted, i.e., eight aspects of self-congruity: the ideal self-congruency for excitement, for fashionability, for aggressiveness and for modernity, and the social self-congruency for the same image-dimensions. A factor analysis of these eight aspects of self-congruity indicates that only one factor is indeed present, accounting for 72% of the total variance and showing the only eigenvalue larger than one (2.89). The loadings were similar for all of the attributes.

The existence of only one factor representing all of the self-congruity aspects justifies the use of the same formula adopted by Sirgy et al. (1991) as a self-congruity measure, called the "generalized absolute difference congruity". In the present study, instead of simply using the sum of the absolute differences across the defining personality attributes, we took the average of the absolute differences, calculated over the personality defining image dimensions. Therefore, the self-congruity measure is, in its mathematical form:

SCij = AVERAGEk { | StIijk - SeIik | }

where: SCij = self-congruity of store "j" for individual "i"
StIijk = store image of store "j" for individual "i" in the personality attribute "k"
SeIik = self-image of individual "i" in the personality attribute "k"
k = excitement, fashionability, aggressiveness, modernity

The same procedure was used to obtain both the ideal and the social self-congruity measures. Such definition for the self-congruity variable, although representing the imposition of a constraint over the individual aspects of congruity, prevents collinearity problems in the data analysis.

The four self-image variables, both to assess the *ideal self-image* and the *social self-image*, were measured by a seven-point semantic differential scale, using the pairs previously discussed. Following Samli and Sirgy (1981), the pairs of image attributes were introduced by the assertions "*I would like to see myself as being*" and "*I think people see me as being*", respectively to obtain the *ideal self-image* and the *social self-image*.

Functional Store Attributes: Numerous studies dedicated to understanding the different aspects or store attributes operating in store image formation, patronage behavior, and loyalty. These are the "functional" attributes by Sirgy and Samli—so called to be distinguished from the "symbolic" ones, linked to the personality-images of the store. The task here is to obtain a list of store attributes which are comprehensive enough to cover most aspects of the store that could affect choice behavior, and at the same time sufficiently brief to be operationalized.

In a popular paper, Lindquist (1974) summarized the results of more than twenty studies related to investigating several kinds of shopping behavior, identifying 35 different aspects, later grouped in nine independent sets. Mazursky and Jacoby (1986) did an updating of that study, considering data from 26 other studies, and identified seven groups, later reduced to three: quality of service, quality of merchandise and pleasantness. Sirgy et al. (1991) relied on seven factors. In the fashion market, Lewis and Hawksley (1990) used seven different aspects. To encompass the store attributes, trying to be as comprehensive as possible, we defined the following set of attributes: *quality of merchandise, product selection, prices, value of merchandise, sales/clearances, service provided by store personnel, store policies (e. g., return policy), store location*, and *shopping atmosphere*.

The functional store attributes were measured through seven-point semantic differential scales. In an attempt to minimize the halo effect, each attribute was asked for the set of twelve stores, one attribute at a time (for a discussion on hale effect, see Wu & Petroshius, 1987). The sets of stores were presented in alphabetical order—an aspect noticed in all of the 10 pretests. The overall evaluation for the same sets of stores was also assessed.

Dependent Variables: The dependent variables assessed were the inclusion of the store in the consideration set ("*which you would seriously consider as a place to buy*") and choice of the one store the shopper would go first to buy the product. They were obtained by presenting a list of twelve stores and their locations to the respondent. These twelve stores carried the product category and are intended to form a comprehensive list of the stores selling food processors in Gainesville. Other existing general merchandise stores, department stores

and specialized stores were checked and found not to carry food processors.

As a measure of precaution, to avoid the existence of other than the twelve listed stores being considered, an open-ended question on other considered stores was also asked. To this question, 129 respondents (28.9%) mentioned another place they would consider buying the food processor. Most of these respondents mentioned Sam's Warehouse Club (72, or 16.1% of the respondents), Belk & Lindsey and Dillards (15 people mentioned one of them, or 3.4%) as the store alternatively considered. None of these stores, however, carried the product. Mail-order companies were mentioned by 25 respondents (5.6%). Other small specialized stores were indicated by 17 (3.8%) of the sample.

Also, another measure of the store choice was assessed by asking "in which store a similar product was last bought". This measure would have the advantage of getting a real behavior, not a hypothetical one. However, this kind of shopping situation is somewhat rare, and only a little more than half of the respondents answered the question—in spite of the less constraining "similar product" usage.

5. Analysis, Results and Discussion

5.1 Descriptive Information

Before evaluating the results using all of the variables acting in a single model to predict the inclusion of the store in the consideration set and its choice, we analyzed the data regarding each variable separately.

We did a preliminary analysis to describe the data by considering each store as an observation, i.e., each respondent having generated twelve observations, one for each store. In doing this, we assumed that each store's rating in one variable is independent from the other store's ratings in this variable for the same respondent. Although this assumption is a strong one, its general consequence is to reduce the sensibility of the tests conducted, given that the data presents a general pattern of positive correlations across stores measured under each variable.

With the 5,352 observations (446 respondents X 12 stores) generated, we compared the means of each of the independent variables both for *(a)* the population of the stores being considered versus not-considered; *(b)* among the considered stores, the chosen versus not-chosen stores. We did these comparisons for each condition, i.e., for the shopping situations for "home-use" and for "gifting". The means and the respective unbalanced-sample t-statistics for comparing their equality are shown on Tables 1 and 2. We included in the tables two measures of effect-size: *(a)* the difference between the means (as suggested by Latour, 1981); and *(b)* the sample measure eta-squared, given by the ratio of the sum of the squares of the effect being measured by the total sum of squares. The comparability of the means differences is guaranteed by the fact that all of the measures resulted from the same scale and have similar variances. The second measure is a good approximation for the omega-squared for large sample sizes and does not depend on having an equal number of observations in each sample.

Although the large number of observations for each population being compared tends to lead to significant t-tests, it is revealing that the only variables in which the means are not significantly different in both conditions are the self-congruity measures when comparing chosen versus not-chosen stores. Besides these, the only not-significant difference encountered is for *prices*, in the "gifting" condition, when comparing considered versus not-considered stores.

Table 1 – Comparison of Means (condition: "home-use")

	Consideration					Choice				
VARIABLE	*Considered*	*Not-considered*	*diff.*	*eta-sq.*	*t-statistic*	*chosen*	*not-chosen*	*diff.*	*eta-sq.*	*t-statistic*
quality of merchandise	5.18	4.20	0.98	0.100	16.74	5.50	5.11	0.39	0.017	4.28
product selection	4.79	3.94	0.85	0.079	14.84	5.20	4.69	0.51	0.023	4.90
shopping atmosphere	5.03	4.02	1.01	0.085	15.29	5.32	4.96	0.36	0.011	3.39
value of merchandise	5.19	4.16	1.03	0.123	18.56	5.52	5.10	0.42	0.022	4.81
sales/ clearances	4.75	3.93	0.82	0.077	14.27	5.18	4.64	0.54	0.026	5.30
store location	4.97	4.01	0.96	0.059	12.53	5.48	4.84	0.64	0.021	4.73
service by personnel	4.47	3.70	0.77	0.051	11.54	4.78	4.39	0.39	0.010	3.31
prices	3.77	3.90	-0.13	0.005	-3.63	3.53	3.82	-0.29	0.008	-2.90
service policies	5.80	5.09	0.71	0.054	11.81	6.06	5.74	0.32	0.010	3.25
ideal self-congruity	1.76	2.07	-0.31	0.016	-6.22	1.68	1.78	-0.10	0.001	-1.17
social self-congruity	1.69	1.98	-0.29	0.016	-6.40	1.69	1.70	-0.01	0.000	0.04

observations for "consideration": 2,580 observations for "choice": 1,060

not significant at alpha=0.05

Table 2 – Comparison of Means (condition: "gifting")

	Consideration					Choice				
VARIABLE	*considered*	*not-considered.*	*diff.*	*eta-sq.*	*t-statistic*	*chosen*	*not-chosen*	*diff.*	*eta-sq.*	*t-statistic*
Quality of merchandise	5.18	4.15	1.03	0.110	18.72	5.58	5.07	0.51	0.029	5.69
product selection	4.90	4.14	0.76	0.059	13.02	5.32	4.79	0.53	0.025	5.27
shopping atmosphere	5.10	4.23	0.87	0.060	13.16	5.47	5.00	0.47	0.020	4.38
value of merchandise	5.21	4.27	0.94	0.112	17.38	5.54	5.12	0.42	0.021	4.88
sales/ clearances	4.71	4.02	0.69	0.052	12.00	4.92	4.65	0.27	0.006	2.51
store location	5.10	4.06	1.04	0.062	13.48	5.39	5.03	0.36	0.007	2.69
service by personnel	4.60	3.84	0.76	0.049	11.78	4.93	4.51	0.42	0.012	3.68
prices	3.92	3.84	0.08	0.001	1.37	3.58	4.01	-0.43	0.014	-3.99
service policies	5.70	5.25	0.45	0.023	7.76	5.91	5.65	0.26	0.007	2.67
ideal self-congruity	1.74	2.11	-0.37	0.020	-7.35	1.75	1.74	0.01	0.000	0.12
social self-congruity	1.72	2.04	-0.32	0.015	-6.35	1.73	1.72	0.01	0.000	0.19

observations for "consideration": 2,772 observations for "choice": 1,117

not significant at alpha=0.05

It can be noticed that effect-size estimations are smaller for the self-congruity variables than for the functional store variables in both consideration and choice phases and in both conditions (except when compared with the *prices* variable, in the consideration phase). However, their relative size to the other variables is much larger in the consideration phase than in the choice phase, in both shopping situations.

Summarizing, there are two facts providing an indication that the role played by the self-congruity variables is not the same in the two phases of the decision process: *(a)* the self-congruity measures are significantly different in comparing considered versus not-considered stores, but not in chosen versus not chosen stores; and *(b)* by either effect-size measure, the relative effect of the self-congruity variables compared to the functional store variables is larger in the consideration phase than in the choice phase, for both conditions.

Another aspect to be pointed out is that the behavior of the variable *prices* across shopping situations suggests that the relative importance of some variables in each phase can be situation-dependent.

5.2 Factor Analysis of The Independent Variables

To examine the structure of the store attributes and minimize collinearity problems in the analysis, the store characteristics were subjected to an exploratory factor analysis. As can be seen in Table 3, all of the store attributes besides *prices*, *store location* and *self-congruity* (namely: *quality of merchandise*, *store atmosphere*, *value of merchandise*, *service provided by personnel*, *sales/clearances*, *product selection* and *store policies*) load in a single factor holding the largest eigenvalue, and account for 83% of the variance explained by this factor. The explanation for this factor seems to reside on a global set of store offerings to the shopper. Therefore, a label that seems most adequate to it is "*store offering*".

Table 3 – Factor Analysis of the Independent Variables

Varimax-Rotated Factor Pattern

	Factor 1	Factor 2	Factor 3	Factor 4
value of merchandise	0.819	-0.139	-0.032	0.067
shopping atmosphere	0.800	-0.050	0.291	0.100
quality of merchandise	0.787	-0.099	0.268	-0.018
sales/clearances	0.755	-0.119	-0.162	0.105
product selection	0.737	-0.045	-0.105	-0.038
service by personnel	0.703	-0.066	0.237	0.212
store policies	0.632	0.045	0.001	0.269
social self-congruity	-0.058	0.934	0.015	-0.031
ideal self-congruity	-0.137	0.922	-0.084	-0.006
prices	0.063	-0.050	0.953	-0.001
store location	0.180	-0.034	0.002	0.954

	Princ. Comp.1	Princ. Comp.2	Princ. Comp.3	Princ. Comp.4
Eigenvalue	4.341	1.653	1.098	0.904
Variance Explained	0.395	0.150	0.100	0.082
Cumulative Var. Expl.	0.395	0.545	0.645	0.727

	Princ. Comp.5	Princ. Comp.6	Princ. Comp.7	Princ. Comp.8
Eigenvalue	0.656	0.559	0.471	0.451
Variance Explained	0.060	0.051	0.043	0.041
Cumulative Var. Expl.	0.787	0.837	0.880	0.921

	Princ. Comp.9	Princ. Comp.10	Princ. Comp.11
Eigenvalue	0.324	0.304	0.240
Variance Explained	0.030	0.028	0.022
Cumulative Var. Expl.	0.951	0.978	1.000

The second largest eigenvalue is attributable to a factor bearing the *ideal* and the *social self-congruity* measures (both account for 93% of the variance explained by the factor), while *prices* and *store location* load each on a distinct factor. The four factors formed this way account for 73% of the total variance of the eleven variables.

Allowing for an extra factor would indicate what seems to be a "service" factor, into which *service by store personnel* and *store policies* load the heaviest. However, as these two variables load almost as much as heavy into the factor bearing the remaining "*store offering*" variables, and as this fifth factor explains only marginally the total variance (6%, with an eigenvalue of 0.66), we decided not to consider it.

Given this scenario, we adopted as a set of explanatory variables only one of the self-congruity measures, price, location and a variable representing the "*store offering*". As the loadings of the seven variables on the *store offering* factor are very similar (ranging from 0.63 to 0.82), we decided to represent the rating of the new variable by simply taking the average of the ratings attributed to them. This procedure was conducted for the sake of interpretability, as the alternative procedure of using the factor scores would to some extent "contaminate" the other factors of price and location. By the same token, the adoption a single self-congruity measure intended to keep the original construct.

5.3 Factors Affecting Store Consideration

Although the analysis of the independent variables taken in isolation is encouraging to indicate a differential role of self-congruity in the two phases of a store selection decision, a deeper understanding of the roles can only be provided by taking the variables simultaneously into consideration. An appropriate way to do such analysis is by using the logit models to assess the importance of the variables in determining the likelihood of a store to be considered and to be chosen.

First consider the case of considered versus not-considered stores. The most precise approach would be to assess the role of the variables on the formation of the set of considered stores. The problem would then be the one of finding a model to represent the probability of choosing a specific consideration set. This research is dealing with twelve stores, and so the problem would be one of determining the occurrence of $(2^{12} - 1) = 4095$ possible non-empty discrete consideration sets, as we see no defendable reason to reduce a priori this large number of potential sets. As a matter of fact, the data indicates that there is no large concentration on specific consideration sets, as 289 different consideration sets were identified by the 446 respondents, the most frequent one by only 10 of them (211 sets were elected by just one respondent).

The high number of possible consideration sets would result in great computational complexity, since it requires the finding of the likelihood of choosing one of the stores, among the considered stores. This would be associated to the probability of choosing the store given it is in the consideration set *and* the probability of selecting this specific set, summed over all of the possible sets (Swait & Ben-Akiva, 1986). A general model for consideration set generation with probabilistic constraints was proposed by Swait and Ben-Akiva (1987a). Also, the authors derived specific models both for situations in which it can be assumed that the consideration of any store is independent of considering or not considering any other store—called independent availability by Swait and Ben-Akiva (1987a)—and in which there can be made restrictions to limit the number of possible consideration sets.

In the present analysis, however, for the purpose of assessing the *relative importance* of the variable of interest in the consideration phase of the decision process, we made a simplification: Instead of concentrating in the consideration set formation, we addressed the question of the influence of the variables in the probability of a person considering versus not considering a particular store. This simplification implies a somewhat strong assumption, that the shopper makes his/her decision of considering a particular store in an isolated manner, i. e., as an independent event from the consideration decision on any other store. This is unlikely to reflect the actual process of consideration set determination and opposes the very rational for using the consideration set. However, the phenomenon of considering a store resembles the one of the consideration set formation, in the sense that a variable which plays a role in the former will also be relevant for the later. Also, we point out two reasons for adopting this procedure: First, it greatly eases the mathematical tractability—as we indicate bellow—and second, its statistical consequence is to provide a less efficient—but yet consistent—estimator for the parameters of the variables in the model. Though the existing pattern of positive correlations among the variables as measured across the stores can lead to an underestimation of the standard deviation of the parameter estimates, correlations due to the individual are assumed to be as small as not to obscure the variance due to the phenomenon being observed.

Using this simplified approach, the problem becomes a simple task of modeling the selection out of two discrete alternatives: *considering a particular store* or *not considering it*. Assuming that the decision maker selects the alternative which maximizes his/her perceived combined attractiveness of the different attributes of the alternative, or its utility, the model being faced is a *binary choice model* (Ben-Akiva & Lerman, 1985).

One appropriate model that assesses the likelihood of a store being considered is the logit model, which assumes that the differences between the random parts of the utilities of *considering* and of *not-considering* a store are logistically distributed (Ben-Akiva & Lerman, 1985). The probability of considering a specific store can be given simply by a binary logit model on its descriptors, as such store can either be considered or be not-considered. Letting the utility be a linear function on the variables, the probability of a particular store being considered can be expressed by a logistic regression in which the dependent variable can assume two categorical positions (considered or not-considered), the potential independent variables being the store attributes and the self-congruity measures. Formally expressed:

$$P_n^A(i) = \exp(B'x_{in}^A) / [\exp(B'x_{in}^A) + \exp(B'x_{jn}^A)]$$
$$= 1 / [1 + \exp(B'x_{jn}^A - B'x_{in}^A)]$$
$$= 1 / [1 + \exp(-B'x_n^A)]$$

where: $\{i, j\}$ is the set of possible alternatives i (consider) and j (not consider)

$P_n^A(i)$ is the probability that the individual n selects alternative i for store A (i.e., considers store A)

B is the vector of the parameters to be estimated

x_{in}^A is the vector of attributes influencing the attraction or utility of the store A if it is being considered by individual n

x_{jn}^A is the vector of attributes influencing the attractability or utility of the store A if it is not being considered by individual n

$x_n^A = x_{in}^A - x_{jn}^A$

Assuming further that the marginal impact of the explanatory variables does not change across the stores being faced by some shopper, the probability of *any* store being considered can be given by a simpler binary logit model:

$P_n(i) = 1 / [1 + \exp(-B'x_n)]$

where: $P_n(i)$ is the probability that the individual n considers a store
B is the vector of the parameters to be estimated
x_n is the vector of attributes influencing the attractability or utility for the decision on consider versus not-consider a store

Thus, the logit of the probability of a store being considered is given by a linear function of the explanatory variables, allowing the use of a simple logistic regression with intercept a:

$\text{logit}(P_n(i)) = \log(P_n(i) / (1 - P_n(i))) = a + B'x_n$

We assume the variables to have the same marginal effect across stores. Therefore, the specification of the model can be regarded as a simple logistic regression on the following *generic* variables: *store offering*, *store location* and *prices* (for the functional store variables), and *social self-congruity*. Also, as the observations were derived from twelve different stores, one way to preserve such information in the model was to define *alternative-specific store* variables, to reflect the dependence of the utility on each store's specifics for considering versus not considering, "all else being equal". The alternative-specific constants (ASCs) we used were dummy variables, with "ones" representing that a particular observation refers to the specific store, and "zeroes" otherwise. As in the logistic model all that matters are the relative utilities of the stores, the ASCs were defined for all minus one of them.

The estimated parameters for this model of the likelihood of considering a store, in both conditions (home-use and gifting) are expressed in Table 4.

Table 4 – Store Consideration Logit Models

	"home-use"				"gifting"			
VARIABLE	*parameter est.*	*std-error*	*Wald chi-Sq.*	*P>ChiSq*	*parameter est.*	*std-error*	*Wald chi-Sq.*	*P>ChiSq*
intercept	-2.141	0.336	40.50	0.0001	-2.534	0.305	69.20	0.0001
offer	0.695	0.052	175.90	0.0001	0.509	0.049	107.16	0.0001
store location	0.185	0.028	43.89	0.0001	0.223	0.026	76.08	0.0001
prices	-0.225	0.044	26.74	0.0001	-0.065	0.040	2.65	0.1034
social self-congruity	-0.137	0.046	8.97	0.0027	-0.193	0.039	24.38	0.0001
ASC-1	-1.584	0.264	35.94	0.0001	-0.913	0.245	13.94	0.0002
ASC-2	-1.848	0.251	54.17	0.0001	-0.978	0.227	18.58	0.0001
ASC-3	-1.414	0.239	35.16	0.0001	-1.082	0.221	23.95	0.0001
ASC-4	-0.751	0.232	10.48	0.0012	-0.447	0.209	4.56	0.0327
ASC-5	0.416	0.236	3.11	0.0780	0.096	0.216	0.20	0.6581
ASC-6	-2.157	0.272	62.73	0.0001	-2.035	0.280	52.77	0.0001
ASC-7	-1.867	0.259	52.08	0.0001	-1.765	0.255	47.85	0.0001
ASC-8	-1.208	0.240	25.31	0.0001	-0.729	0.219	11.03	0.0009
ASC-9	0.064	0.242	0.07	0.7924	1.038	0.235	19.56	0.0001
ASC-10	-0.881	0.237	13.82	0.0002	-0.271	0.215	1.58	0.2084
ASC-11	-1.522	0.238	40.84	0.0001	-0.804	0.217	13.79	0.0002
	no. of observations for "home-use": 2,411 Model's -2[LL(0)-LL(B)]: 682.3 w/15df (p<.0001)				no. of observations for "gifting": 2,486 model's -2[LL(0)-LL(B)]: 678.2 w/15df (p<.0001)			

not significant at alpha=0.05

The results show that social self-congruity is a significant predictor of the probability of considering a store in both shopping situations ($p=0.0027$ for "home-use" and $p<0.0001$ for "gifting"). Further, the directions of the parameter signs are consistent with the expectations, as for decreasing self-congruity (i. e., higher matching between self-image and store image) the probability of a store being considered is expected to increase.

The variables *store offering* and *store location* are a significant predictors of consideration in both populations ("home-use" and "gifting"; $p<0.0001$ in each condition for each variable), both indicating increased probability of considering a store as larger evaluations of the variables are made.

Higher evaluations of *prices*, as expected, lead to a decrease in the probability of considering a store, but this variable is a significant predictor only in the "home-use" condition ($p<0.0001$) and not in the "gifting" condition ($p=0.10$). This indicates that some variables can have a different role in explaining the consideration of a store depending on the shopping situation. This result is intuitive, as the price would be more important in selecting stores to buy a product less image-involving than in the case of a more image-involving one.

Another aspect of the results is the relative importance of the variables in explaining the consideration of a store. This can be assessed by the magnitude of the parameters' estimates, as that the same scale was used and the variances are similar across the variables. First, in each of the models ("home-use" and "gifting"), the results show that the importance of *social self-congruity*, though being the smallest among the four variables, is of the same order of magnitude as the other variables predicting the consideration probability, and rivals the importance of *store location*.

Any comparison between the effects of the variables in the two models is problematic, as the parameter estimates for the two data sets are confounded with their respective variances (Swait & Louviere, 1993). Therefore, just by looking at the parameter estimates, one cannot say that self-congruity is more important to explain consideration probability in the "gifting" condition than in the ""home-use" condition simply because it has a larger absolute value. The only thing that can be compared is the *relative* importance, or the ratio of the parameters. Directionally speaking, the results meet the expectations about a larger importance of the parameter estimates of self-congruity in relation to the other significant predictors in the "gifting" condition than in the "home-use" condition: The ratios between the parameters estimates for *self-congruity* to *store offering* are 0.38 and 0.20 (respectively in the "gifting" and in the "home-use" conditions), and the ratios between *self-congruity* and *store location* are 0.87 and 0.74. Testing whether these ratios differ or not is not a trivial problem, but a conservative test can be performed using the facts that:
(a) the asymptotic variance of a product of two estimates x and y, using Cramer's approximation, can be given by (Ben-Akiva & Lerman, 1985, p 298):
$\text{var}(x \cdot y) = y^2 \cdot \text{var}(x) + x^2 \cdot \text{var}(y) + 2 \cdot x \cdot y \cdot \text{cov}(x,y)$;
(b) the asymptotic variance of $(1 / y)$ is approximately (Ben-Akiva & Lerman, 1985, p 298):
$\text{var}(1 / y) = \text{var}(y) / 4$;
(c) a maximum value for the covariance of two variables can be assessed by (Rao, 1973):
$[\text{cov}(x,y)]^2 =< \text{var}(x) \cdot \text{var}(y)$

Using these facts and assuming that the ratios of the parameter estimates are asymptotically distributed as normal, a test of the equality of the ratios can be performed establishing an upper bond for the estimate of the variance of the ratio. Though being very conservative in this respect, the ratios between the parameters estimates for *self-congruity* to *store offering* and for *self-congruity* to *store location* tested to significantly different across the models ($Z>=2.687$, $p=<0.0037$ for the first ratio and $Z>=43.658$, $p<0.0001$ for the second).

5.4 Factors Affecting Choice

Here, the objective is to understand the effect of the potential explanatory variables on the choice of one store belonging to the constrained set. The task can be achieved by the multinomial logit model (Agresti, 1990). This multinomial logit model (MNL) was set by McFadden (1974) as a feasible way to address the probability of making a choice among a discrete set of variables for random utility maximizing individuals, under the assumption of the Independence of Irrelevant Alternatives (IIA), or Luce's choice model. It has since found widespread application in marketing choice models (e.g., Guadagni & Little, 1983). The underlying assumption of the MNL is that the probabilistic part of the utility is IID-Gumbel distributed, i.e., "for a specific individual, the ratio of the choice probabilities of any two alternatives is totally unaffected by the systematic utilities of any other alternatives" (Ben-Akiva & Lerman, 1985, p. 108), and being Gumbel distributed. Formally, assuming a linear functional form of the systematic component of the utility, the MNL is stated as:

$P_n(i)$ $= \exp(B'x_{in}) / \text{SUM}_{j \text{ in } C_n} [\exp(B'x_{jn})]$

where: $P_n(i)$ is the probability that the individual n chooses the store i in the consideration set C_n
C_n is the consideration set of the individual n
B is the vector of the parameters to be estimated
x_{in} is the vector of the attributes influencing the attractability or utility of the store i if it is being chosen by individual n

The task here is to model as a MNL the probability of a choice being performed among the stores previously included in the consideration set, explained by the functional store attributes (*store offering*, *store location* and *prices*) and *social self-congruity*. As in the binary logit model used above to model consideration, we adopted a *generic specification* for the explanatory variables, assuming that the marginal effect of the variable is the same across all of the stores. Also, *alternative-specific constants* (ASCs) were assigned to each store, in order to capture store-specific influences on the choice probability, at least on a relative basis (one store relatively to the others).

To be conservative, even though most of them do not carry the product category, we excluded of the analysis all the respondents who indicated to be considered any store besides the listed ones. We did so because the inclusion of extraneous stores with no collected data in the consideration set could affect the probability of choosing a store (the average number of considered stores was 4.87 out of the twelve listed). Given the reduction in the sample size, the fact that each respondent corresponds to one case in the multinomial logit model, and the fact that any piece of missing data discards the case for the program's algorithm, we substituted the missing values by sample averages in each variable, in order to preserve as much information as possible.

The results are presented on Table 5 for both conditions -"home-use" and "gifting".

Table 5 – Store-Choice Multinomial Logit Model

	"home-use"				"gifting"			
VARIABLE	*parameter estimates*	*std-error*	*Asymptotic t*	*P>t*	*parameter estimates*	*std-error*	*Asymptotic t*	*P>t*
offer	2.198	0.319	6.88	0.0000	1.446	0.257	5.64	0.0000
store location	0.339	0.111	3.06	0.0022	0.172	0.087	1.99	0.0471
prices	-0.240	0.156	-1.54	0.1234	-0.461	0.139	-3.32	0.0009
social self-congruity	-0.269	0.223	-1.21	0.2280	-0.213	0.158	-1.35	0.1774
ASC-1	-3.389	0.750	-4.52	0.0000	0.182	0.561	0.32	0.7456
ASC-2	-3.693	0.897	-4.12	0.0000	-1.187	0.593	-2.00	0.0452
ASC-3	-1.113	0.593	-1.88	0.0605	-0.372	0.557	-0.67	0.5037
ASC-4	-1.075	0.429	-2.51	0.0122	-0.035	0.361	-0.10	0.9232
ASC-5	-0.175	0.371	-0.47	0.6370	0.156	0.370	0.42	0.6738
ASC-6	0.000				0.000			
ASC-7	-0.342	0.696	-0.49	0.6231	-0.980	1.067	-0.92	0.3587
ASC-8	-1.526	0.550	-2.81	0.0050	-0.921	0.539	-1.52	0.1274
ASC-9	-0.123	0.386	-0.32	0.7491	1.047	0.326	3.21	0.0013
ASC-10	-1.214	0.453	-2.68	0.0091	-0.439	0.450	-0.98	0.3289
ASC-11	-0.913	0.460	-1.99	0.0472	-0.785	0.488	-1.61	0.1076
	observations for "home-use": 143				observations for "gifting": 160			
	Model's -2[LL(0)-LL(B)]: 163.6 w/15df (p<.0001)				model's -2[LL(0)-LL(B)]: 122.1 w/15df (p<.0001)			

not significant at alpha=0.05

As the result of main interest for the purpose of this research, the self-congruity variable tested to present no statistical evidence of helping to explain the choice probabilities in neither condition (p=0.23 for "home-use" and p=0.18 for "gifting"). These are the expected results, according to the hypotheses of the study. However, it has to be pointed out that the direction (sign) of the parameter estimates of *self-congruity* is as expected for the effect of the variable (the probability of choice increases as the matching increases, i. e., as the self-congruity measure becomes smaller). This direction aspect together with the large magnitude of the *self-congruity's* parameter estimate relatively to the other variables' make it reasonable to suspect that *self-congruity* indeed plays a role in explaining choice probability. Nevertheless, any possible effect is offset by the large standard error associated with the parameter estimate, thus denying a conclusive statement on the role of self-congruity in the choice within the considered set. I. e., there is no statistical evidence to lead to the conclusion that the variable has a role in explaining the choice probability.

In both conditions the variables *store offering* and *store location* are significant predictors of the choice probability (p<.0001 for *store offering* in both conditions; p=0.002 for *store location* in the "home-use" condition and p=0.047 in "gifting"). The directions of the effects of these variables are as expected, as they enhance the choice probability. The *store offering* is a much more important a predictor than *store location*, the former presenting parameter estimates seven to eight times as large as the later in both conditions.

The *prices* variable, which we recall to be a significant predictor of consideration probability only for "home-use", is a significant predictor of choice probability in the "gifting" condition (p=0.0009), but not in "home-use" (p=0.12). This result indicates that this variable's effect on the consideration phase is reversed with its effect on the choice phase, depending on the shopping situation. However, comments similar to those made on the direction and magnitude of *self-congruity* apply also for *prices*, requiring a test on equality of the parameters of the two populations, following Swait and Ben-Akiva (1993). This test does not reject the equality of the parameters at 0.05 confidence level (p=0.08, for a chi-squared of 23.1 with 15 degrees of freedom), but rejects the equality of the intrinsically associated variance given the equality of the parameters (p=0.03, for a chi-squared of 4.5 with 1 df). This leads to the conclusion that the models for "home-use" and "gifting" differ essentially by the variances associated with the parameters, but not by differences in the parameters themselves, making it plausible not to refer to differences in the relative importance of the variable *prices* (or of any other variable in the model), at least as far as the power of the present data is concerned.

6. Conclusion

The results obtained in this research seem to be supportive of the idea that the self-congruity is more a screening than evaluative variable in a two phased decision model. Self-congruity seems to act as a constraint to restrict the consideration of a store: Self-congruity is shown to be a significant predictor of the probability of seriously considering a store for shopping purposes (at least in the shopping situations assessed). Also, it affects considering probability with approximately the same weight as *store location*. Furthermore, no statistical evidence was found to support that the store choice probability is affected by self-congruity in a MNL model. However, the large variance associated with the parameter estimate can indicate that self-congruity plays also an important role in the choice phase, but with a large variability across individuals. This leads to a question to be addressed in the future, which is the investigation of the effects in different segments of shoppers.

Also, the explanatory effect of self-congruity in the formation of the consideration sets remains to be addressed, though evidence of its role in considering a specific store was found.

The comparisons between the shopping situation-specific models indicate no significant distinctions in the choice probability, but a directionally consistent and significantly smaller importance of the self-congruity variable in the "home-use" than in the "gifting" condition" was found. Also, at least one variable, *prices*, seems to be shopping situation-specific in explaining the consideration of a store, giving room to future research addressing specifically this issue.

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