SEGMENTATION APPROACHES THAT DIFFERENTIATE CONSUMPTION FREQUENCY FROM SENSORY PREFERENCE[1]

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ABSTRACT

People can eat a food without having a strong preference for it, and people can prefer a food without eating it. Given this seeming disconnect between attitude and behavior, which type of measure or segment can best be used to profile or identify loyal consumer segments of a food, such as soy? This research compares a usage-based method (heavy-light-nonusers) with a new attitude-based method (seeker-neutral-avoider), and finds that the attitude-based method differentiates purchase-related intentions better than the usage-based method. Implications for profiling consumer taste patterns and consumer segments are provided.

INTRODUCTION

So which type of measure or segmentation method can best be used to profile or identify loyal consumer segments of a food, such as soy? Many attempts are made to profile the ideal consumers of a particular product for

either sensory purposes (Moskowitz 2003), product development purposes (Wansink 1994), or targeting purposes (Hallberg 1995). Knowing the most differentiating basis on which to profile consumers will be useful in determining who these people are, what they prefer, and what they might buy (Hackleman and Duker 1980; Wansink and Westgren 2004; Morgan 1978). This research investigates two different methods of differentiating consumers of an ingredient product.

Not all users of a particular product (such as milk, beef, or soy consumers) are created equal. With soy, for instance, some people eat soy for health reasons, some for taste reasons, and others because it is simply being served. Differentiating these different consumers and their different motives has been attempted in numerous ways (Wansink and Cheong 2002). Some have tried to use demographic criteria (income or education) to differentiate consumers, others have used attitudinal criteria (Brockhoff *et al.* 2003), and still others have used behavioral criteria (frequency of consumption).

Unfortunately, demographic segmentation is often unsuccessful in differentiating individuals (Fox-Utsey and Cook 1984), and usage rate segmentation (heavy-light-nonuser) has sometimes been inaccurate because food choices are often constrained or out of our immediate control (Andersen and Nielsen 1981; Ehrenberg 1988). For example, frequent consumers of fish may be confronted with situations where only red meat is available. In such situations, if someone went out of their way to seek out fish (by finding another store or restaurant), they would have evidenced a strong attitude toward fish. If another simply elected to eat red meat in that situation, they would be considered to be a heavy user with a less strong attitude.

Some individuals eat a product because it is simply convenient while others eat it because of a strong attitude toward it. Current methods of measuring these two different segments of product category consumers would mix these two groups together (Jacoby and Chestnut 1978). That is, a measure that differentiates heavy, light, and nonusers of a product would not differentiate between those who ate it because it was convenient versus those who will go out of their way to consume it (e.g., those who will "walk a mile for a Camel.") The key is to determine which segmentation method is more effective in differentiating loyal users so they can be more effectively targeted.

This research compares two methods of segmenting consumers of a product category. One is based on a standard measure of consumption frequency (heavy, light, and nonusers), and the other is based on the extent to which they actively seek or avoid the category (seeker-neutral-avoider). We next report results from a recent survey, indicating that the seeker-neutral-avoider segmentation method can best differentiate category consumers on the basis of their eating patterns, attitudes toward new product concepts, and intentions to substitute target foods for other foods. Last, methodological and managerial implications are discussed.

BACKGROUND

Copeland (1923) was one of the first researchers to suggest that an extreme attitude toward a particular brand might influence one's loyalty toward a product or one's purchase intentions toward related products. Since then, developing "loyalty" toward a product has become a focus of many marketing-related efforts. A common measure of loyalty is the proportion-of-purchase index (Cunningham 1956), which is represented by the largest single product (beef versus chicken) consumed in that category (meat). Typically, if a family allocates 50% or more of its meat purchases to purchasing beef, it is said to be loyal to beef.

Product Category Preference: The Seeker-Neutral-Avoider Continuum

How often a person eats a particular food, however, is not necessarily a function of how much they prefer it and whether they will purchase new versions of it (Moskowitz and Bernstein 2000). A product's convenience, price, and availability can have a tremendous impact on how much is eaten yet they can still be unrelated to future purchase intentions. For instance, the war years of 1941-1945 saw a dramatic increase in the amount of variety meats or organ meats (liver, kidneys, tongue, brains, and so on) eaten in the United States, but this did not sustain itself after rationing and price controls were eliminated (Wansink 2002).

Cunningham (1967) developed a measure of perceived product commitment, an index that measures an individual's verbal report of his or her likely behavior upon being confronted with his or her favorite food being out of stock. That is, if a store were out of fish would a fish-lover buy chicken instead, or would he or she go to another store to buy fish. In the second case, the person who "seeks" out fish, although inconvenient, is considered to exhibit a stronger degree of commitment than those who simply buy chicken instead.

Sometimes researchers make a distinction between loyal behavior and loyal attitudes (Wansink 2003). They define loyal behavior as the overt act of selective repeat purchasing based on evaluative psychological decision processes. In contrast, loyal attitudes are the underlying predispositions to behave in such a selective fashion (Jacoby 1971). Using an attitudinal-change model of assimilation-contrast, Jacoby hypothesizes three general regions along a single continuum of preference for a product. If one were to scale an individual's attitude toward a product, some would accept it, some would be neutral, and some would reject it. Moving this to a food domain, we propose that one measure of strength toward a food is whether one (1) actively seeks it out to consume it, (2) consumes it if convenient, or (3) actively avoids it.

Product Category Usage Frequency: The Heavy-Light-Nonuser Continuum

The performance of most marketing programs is determined by their effectiveness and efficiency. In this regard, identifying and profiling heavy users has been a "Holy Grail" to some brand managers (Twedt 1964). Although heavy users can be a critical segment for marketers to target, Wansink and Park (2000) show that many studies incorrectly conclude that heavy users are not especially different than light users. Indeed, many attempts to profile heavy users have proven to be unsuccessful due to methodological and measurement problems (Haley 1968; Wells 1975).

While some researchers believe demographic profiles of heavy users provide safe surrogates for psychographic profiles (Assael and Poltrack 1994), several researchers have expressed their skepticism about the use of demographic and psychographic data as a basis for market segmentation (Frank 1967). Indeed, demographic variables have been shown to be poor predictors of brand choice behavior, partly because of narrowing differences in income, education, and occupational status in an affluent mass consumption society and partly because they are inaccurately measured at the household level than at the individual level (Wansink and van Ittersum 2004). Even when demographics discriminate heavy users of products, they still have their limits in helping generate insights about customer segments.

The study reported here focuses on comparing a method that utilizes only behavioral measures (heavy-light-nonusers) with a method that uses more attitudinal measures (seeker-neutral-avoider) with regard to product category loyalty and purchase intentions toward new related products. The following survey examines which segmentation method best explains attitudinal and behavioral aspects of the product category loyalty concept. This can be critical in understanding the link between evaluations and actual in-market behavior (Wansink 2003).

A STUDY ON CATEGORY-BASED SEGMENTATION METHODS

To better examine when it is most appropriate to use one segmentation method over another, we conducted a survey on soy product consumption behavior. We constructed three segments of individuals based on their usage rate (heavy-light-nonusers) and three segments based on their seeking-avoiding tendency (seeker-neutral-avoider). We then compare these two segmentation methods to see which best differentiates (or profiles) consumers.

Method

A mail survey sent to 1600 North Americans generated a response of 770 questionnaires within six weeks. In return for their cooperation, these individuals were given a $5 honor check, and a chance to receive a number of gifts through a lottery. Some of basic sample characteristics include: 57% female, 42 years of age, 63% were primary meal planner, 59% were primary shopper, and 39% had some college to college education with annual income of $30,000 to $49,999, average 1.43 children.

For usage rate-based segmentation, respondents were categorized into heavy, light, and nonusers of soy-based food products based on times a year they purchased a packaged good because it contained soy: nonusers (0 times a year), light user (1-11 times a year), and heavy user (12 or more times a year). For segmenting people based on their seeking-avoiding tendency, respondents were categorized into seeker, neutral, and avoider segments of soy-based food products based on the difference between the number of times a year they had purchased a product *because* it had soy in it less the number of times they expressly *did not* purchase a product because it had soy.

Questions were asked about demographics, and questions were asked about cooking habits, personality, eating patterns, and they were measured on 9-point scales (1 = strongly disagree; 9 = strongly agree). In addition, purchase intentions toward 11 new product concepts containing soy were taken on 9-point scales (1 = unlikely to purchase; 9 = likely to purchase).

Results

As expected, demographic variables were limited in their ability to differentiate individuals with either of the two segmentation criteria methods. Yet as Table 1 indicates, cooking habits were better explained by the usage rate based (heavy-light-nonuser) segmentation than by the seeker-neutral-avoider segmentation method. For example, differentiating on the basis of usage showed that heavy users were more likely to live in households containing a creative cook who used new recipes, many spices, and cooked with both cookbooks and by instinct. The findings suggest that the fact that these people were heavy consumers of soy may be due to the convenience of what was prepared for them rather than a strong volition to consume soy.

As Table 2 shows, an individual's eating patterns were more explained by the seeker-neutral-avoider segmentation method than by the usage rate based (heavy-light-nonuser) segmentation method. For example, the seeker-neutral-avoider segmentation method showed that soy avoiders ate more beef, pork, hotdogs, ostrich, and they were more likely to grill out, drink soft drinks in the morning, and eat pizza for breakfast than were soy-seekers. In contrast, most of these eating behaviors did not distinguish nonusers of soy from heavy users.

TABLE 1.
DEMOGRAPHICS DO NOT EFFECTIVELY DIFFERENTIATE HEAVY USERS OF SOY AS WELL AS COOKING BEHAVIORS DO

Dependent Variable	All (n=770)	Usage Rate Based Segmentation Method				Seeker-Neutral-Avoider Segmentation Method			
		Non-user (n=522)	Light-user (n=157)	Heavy-user (n=57)	F-value	Soy Avoider (n=60)	Soy Neutral (n=412)	Soy Seeker (n=167)	F-value
Demographics									
Are you the primary meal planner?	Yes	Yes	Yes	Yes	N/A	Yes	Yes	Yes	N/A
Are you the primary grocery shopper?	Yes	Yes	Yes	Yes	N/A	Yes	Yes	Yes	N/A
Size of town	264,855	265,967	210,254	536,512	N/A	228,792	260,925	302,364	N/A
Age	44	44	44	47	N/A	42	44	43	N/A
Gender	Female	Female	Female	Female	N/A	Female	Female	Female	N/A
Numbers of children	1	1	1	1	N/A	2	1	1	N/A
Education level	College	Some Coll.	College	College	N/A	Some Coll.	Some Coll.	College	N/A
Annual income	$30-49.9K	$30-49.9K	$30-49.9K	$50-74.9K	N/A	$30-49.9K	$30-49.9K	$50-74.9K	N/A
Cooking Habits									
She or he is a great cook	7.0	7.0	7.0	7.5	2.534	7.4	7.0	7.1	1.227
She or he is a creative cook	6.3	6.2	6.3	7.4	8.650***	6.5	6.2	6.5	1.101
She or he tries new recipes	6.2	6.0	6.3	7.2	8.413***	6.5	6.0	6.5	3.227*
She or he uses many spices	5.9	5.9	5.8	6.9	6.203**	6.3	5.8	6.1	1.528
She or he has many cookbooks	6.1	5.9	6.2	6.8	3.221*	5.6	5.9	6.3	1.680
She or he cooks a lot by instinct	6.3	6.2	6.4	7.0	3.158*	6.4	6.3	6.6	1.173

*** $P < 0.001$. ** $P < 0.01$. * $P < 0.05$.

TABLE 2.
THE SEEKING-AVOIDING SEGMENTATION METHOD BEST DIFFERENTIATES ALTERNATIVE FOOD CONSUMPTION PATTERNS

Food Consumption Patters	All (n=770)	Usage Rate Based Segmentation Method				Seeker-Neutral-Avoider Segmentation Method			
		Non-user (n=522)	Light-user (n=157)	Heavy-user (n=57)	F-value	Soy Avoider (n=60)	Soy Neutral (n=412)	Soy Seeker (n=167)	F-value
Eat 5+ fruits/vegetables in one day	11.3	10.1	12.7	17.9	6.365**	9.2	10.3	13.8	3.982**
Eat yogurt	4.8	4.3	5.4	7.6	4.394*	5.6	4.2	5.5	1.743
Eat broccoli	42.5	41.0	41.7	57.6	1.937	46.3	40.9	48.0	.923
Eat beef	10.3	11.4	7.7	8.1	4.111*	15.4	10.8	8.1	4.707**
Eat pork	5.2	5.4	4.3	6.1	1.491	8.5	4.9	5.0	5.569**
Eat chicken	12.5	12.9	11.1	13.3	.782	12.8	12.9	11.8	.252
Eat a hotdog	3.8	4.0	3.6	2.8	1.002	6.0	3.7	3.4	3.578*
Eat ostrich	1.1	.6	2.8	1.0	1.018	6.5	.8	.3	3.074*
Grill out	37.4	40.1	32.0	27.4	2.264	53.2	38.6	28.9	4.340*
Drink a soft drink in the morning	36.6	37.7	43.5	6.9	3.298*	72.8	32.4	35.4	4.882**
Eat pizza for breakfast	3.9	3.6	5.2	3.1	1.124	8.9	3.2	4.6	5.425**

*** $P < 0.001$. ** $P < 0.01$. * $P < 0.05$.

This ability to differentiate between the consumption of related products is important because it can provide useful ideas and opportunities for cross-promoting complimentary commodities.

Both methods were similarly effective in developing profiles on the basis of personality variables (Table 3). Personality profiles have been useful in understanding the link between consumers and their behavior in other contexts (Wansink and Westgren 2004; Wansink and Cheong 2002), and it appears that either method of measurement can be used to differentiate consumers on the basis of personality differences.

Initially, Table 4 showed that both the usage rate based (heavy-light-nonuser) segmentation and the seeker-neutral-avoider segmentation generated distinctive profiles of individuals regarding attitudes toward new product concepts and intentions to substitute soy-based foods for others. The seeker-avoider segmentation method profiles high levels of product interest most effectively. While the heavy user segmentation method effectively differentiates between nonusers and users, it is not especially effective in differentiating between heavy and light users. In contrast, the seeker-avoider method effectively differentiates between those who are neutral to the product and those who seek it out, but it is less effective in differentiating the neutrals from the avoiders. Figure 1 illustrates this difference clearly in what is noted as Segment B (light users and neutrals). When trying to profile the ideal champions of a new product, it is clear that using seekers will be more effective than using heavy users.

DISCUSSION AND IMPLICATIONS

These findings suggest that the seeker-neutral-avoider segmentation method can distinguish individuals based on their eating patterns, attitudes toward new product concepts, and intentions to substitute soy-based foods for others. This becomes important because knowing the most differentiating basis on which to profile consumers is useful in determining who these people are, what they prefer, and what they might buy. As expected, demographics variables, which are often used in these profiles, are limited in their ability to effectively segment individuals using either of the two criterion methods.

The results from this study provide some new insights about conditions under which the use of the two segmentation methods is appropriate. As Table 4 indicates, the seeker-neutral-avoider segmentation method is considered most appropriate (1) when the food is not purchased frequently, (2) when most people have strong attitudes toward the food, (3) when consumption of the food does not vary widely across people, (4) when the food is not always easily available, or (5) when evaluating new food concepts.

TABLE 3.
BOTH SEGMENTATION METHODS EFFECTIVELY DIFFERENTIATE USERS ON THE BASIS OF THE PERSONALITY

Dependent Variable	All (n=770)	Usage Rate Based Segmentation Method			F-value	Seeker-Neutral-Avoider Segmentation Method			F-value
		Non-user (n=522)	Light-user (n=157)	Heavy-user (n=57)		Soy Avoider (n=60)	Soy Neutral (n=412)	Soy Seeker (n=167)	
Personal Characteristics									
Healthy	6.6	6.4	6.8	7.5	12.082***	6.2	6.4	7.0	7.658**
Talented cook	5.8	5.7	5.5	6.9	8.163***	5.4	5.7	5.9	1.191
Optimistic	6.9	6.8	7.0	7.6	3.809*	7.1	6.8	7.1	1.810
Traveler	6.2	6.1	6.4	6.9	3.822*	6.2	6.1	6.5	1.415
Creative	6.5	6.4	6.6	7.1	2.722	6.5	6.5	6.7	.606
Innovator	6.0	5.8	6.1	6.8	5.654**	6.0	5.8	6.2	2.143
Spicy food lover	5.8	5.8	5.9	6.2	.699	5.8	5.8	5.9	.186
Reader	6.7	6.6	6.8	7.6	4.604*	6.5	6.5	7.1	3.347*
Imaginative	6.7	6.7	6.8	7.1	1.446	6.9	6.7	6.8	.323
"Thinks different"	6.4	6.3	6.5	6.9	2.866	6.6	6.3	6.6	1.621
Trend setter	4.9	4.8	5.0	5.6	4.008*	5.5	4.7	5.2	4.495*
Earthy	5.4	5.3	5.5	6.2	3.977*	5.2	5.4	5.5	.506
Nurturing	6.5	6.5	6.2	7.0	3.025*	6.6	6.5	6.4	.308
Street smart	6.0	6.0	6.0	6.3	.522	6.7	5.9	6.0	3.484*
Outgoing	6.6	6.5	6.6	6.9	.902	6.6	6.6	6.5	.213
Cultured	5.9	5.8	6.2	6.9	9.763***	6.2	5.7	6.3	7.145**
Needs stimulation	4.9	4.9	5.0	4.8	.146	5.5	4.8	4.9	2.030
Enthusiastic	6.6	6.6	6.7	6.8	.581	7.1	6.6	6.6	1.979
Light-hearted	6.3	6.3	6.2	6.4	.306	6.8	6.3	6.0	4.048*
Well-informed	6.5	6.4	6.7	7.2	6.228**	6.6	6.3	6.8	3.322*

*** $P < 0.001$. ** $P < 0.01$. * $P < 0.05$.

TABLE 4.
THE SEEKER-AVOIDER SEGMENTATION METHOD PROFILES HIGH LEVELS OF PRODUCT INTEREST MOST EFFECTIVELY

Likelihood of Purchasing New Soy-based Product Concepts (1=Unlikely; 9=Likely)	All (n=770)	Usage Rate Based Segmentation Method			F-value	Seeker-Neutral-Avoider Segmentation Method			F-value
		Non-user (n=522)	Light-user (n=157)	Heavy-user (n=57)		Soy Avoider (n=60)	Soy Neutral (n=412)	Soy Seeker (n=167)	
New Product Concepts									
Soy burger	3.3	2.7	4.5	4.9	41.799***	2.9	2.8	4.7	31.616***
Veggie slices	2.8	2.3	3.7	4.5	36.973***	2.3	2.4	3.9	23.987***
Chili	3.3	2.9	4.4	4.0	20.855***	3.0	3.0	4.3	13.567***
Perfect burger	2.8	2.5	3.8	3.6	23.591***	2.5	2.6	3.8	15.966***
Lasagna	3.3	2.6	5.0	4.8	56.067***	3.2	2.8	4.8	31.665***
Veggie deli	2.9	2.5	3.6	3.8	18.071***	2.3	2.6	3.5	9.724***
Tofu	2.5	1.7	3.8	6.3	138.920***	1.7	1.8	4.5	85.818***
Veggie pizza	3.0	2.8	3.7	3.6	9.246***	2.8	2.8	3.7	6.792**
Veggie wieners	2.4	2.0	3.1	3.4	19.550***	1.7	2.2	3.2	16.148***
Willingness to buy pork or beef fortified with soy	5.5	5.2	6.1	6.2	8.509***	5.2	5.3	6.3	8.893***
Dollar Amount to pay for a 25%-soy fortified ground beef	$3.9	3.6	4.5	4.5	13.981***	3.2	3.8	4.6	15.909***
Intentions to Substitute Soy Foods *(Number of dinners within the next three months)*									
Substitute convenient recipes instead of a meat dish	14.8	9.1	25.2	36.2	18.936***	6.2	10.7	30.0	14.425***
Substitute ready-to-eat instead of a meat dish	12.0	8.0	19.8	26.3	11.165***	6.2	8.5	23.8	10.961***
Substitute convenient recipes along with a meat dish	15.0	11.9	22.8	22.4	5.728**	13.6	12.1	22.0	5.312**
Substitute ready-to-eat along with a meat dish	11.4	9.8	15.3	16.1	2.391	9.2	9.5	16.4	4.603**

*** $P < 0.001$. ** $P < 0.01$. * $P < 0.05$.

Purchase Likelihood
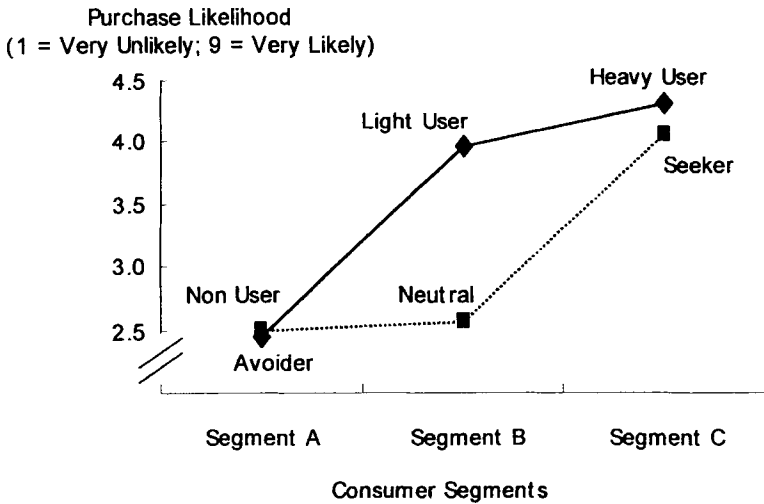(1 = Very Unlikely; 9 = Very Likely)

FIG. 1. THE SEEKER-AVOIDER SEGMENTATION METHOD PROFILES HIGH LEVELS
OF PRODUCT INTEREST MOST EFFECTIVELY
(Average Purchase Likelihood of 11 New Product Concepts)

TABLE 5.
WHEN USAGE RATE VERSUS SEEKER-AVOIDER BASED SEGMENTATION
IS APPROPRIATE

Conditions under which segmentation by heavy, light, and non user is appropriate	Conditions under which segmentation by seeker, neutral, and avoider is appropriate
• *Product category is purchased frequently*	• *Product category is not purchased frequently*
• *Not strong attitude toward product category exists*	• *Strong attitude toward product category exists*
• *Wide variance in usage is present*	• *Small variance in usage is present*
• *Product category is easily available*	• *Product category is not always available*
• *Locating mature segments for increasing usage rates*	• *Testing new product concepts*

One of the limitations of this study is that it focuses on one product (soy) and on one attitudinal operationalization of seeking and avoiding. Further work can examine what other ways these questions can be asked and if they are consistent for categories that are largely ingredients (such as soy) as well as for categories that are more closely identified with the final consumption form of food (such as beef). While normal distributions were investigated and parametric

analyses used, it may be that the distribution of this variable may be better addressed using a nonparametric approach (Best and Rayner 2001).

Our findings also provide some important managerial implications for product category marketing (Wansink 2005). Often times, light users have been considered a group of individuals who are neutral about a product. Figure 2, however, illustrates a large number of nonusers are also neutral to the category and they do not necessarily avoid it on purpose. This is important because it suggests they can still be converted to category users.
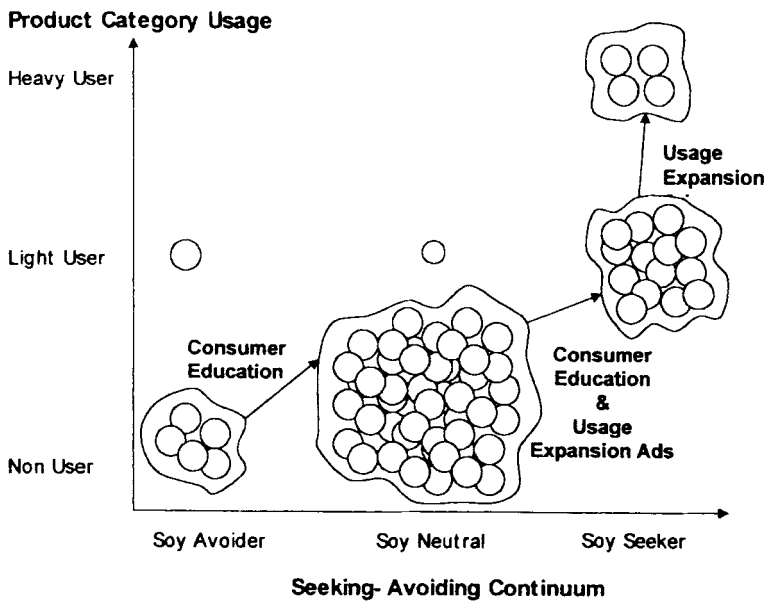

FIG. 2. SUGGESTED MARKETING IMPLICATIONS BY PRODUCT USAGE AND
SEEKING PATTERNS
Note. Each bubble represents approximately 10 individuals.

As the Fig. 2 suggests, different types of campaigns will have different degrees of effectiveness based on which group is being targeted (Wansink 2003). Consumer education campaigns will be most effective at initial stages, but as usage and attitudinal interest improve, these campaigns should instead evolve into ones which focus on new uses for the food. These could include campaigns that suggest new uses or new usage situations for the target product, as well as campaigns which instead encourage substitution with other products (Wansink and Ray 1996).

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