Response to "Measuring consumer response to food products". Sensory tests that predict consumer acceptance

Brian Wansink*

Food and Laboratory at the University of Illinois at Urbana-Champaign, University of Illinois, 350 Wohlers Hall, Champaign, IL 61820, USA

Abstract

As noted by Garber, Hyatt, and Starr (2002), favorable sensory and taste ratings do not directly translate into the purchase, consumption, or market success of a product. Indeed, there is often a sizable gap between such tests and market success. Segmentation differences, consumer suggestibility, and measurement relevance all limit the value of sensory tests to brand managers and marketers. These limitations unfortunately compromise the value that sensory researchers could have to a firm and to a product's ultimate market success. Yet there is no reason sensory measurement methods and analysis can not be modified to more directly help predict the factors that will influence the purchase, consumption, and market success of a product. © 2002 Published by Elsevier Science Ltd.

1. Segmenting consumers: there *is* accounting for taste

A basic concept in marketing is that people are not all alike—they are heterogeneous. While many researchers examine basic demographic variables such as age and gender, past differences in behavior can cause troubling variations and seeming inconsistencies in evaluation if not measured or prescreened. For instance, one's past consumption frequency of a product can drastically alter his or her response to sensory experiences and taste. There are significant preference differences between heavy users, light users, and non-users of canned soup (Wansink & Park, 2000). If a sensory researchers only focused on users vs. nonusers or on demographic differences (such as age and gender), he or she would incorrectly conclude there were no differences between the groups.

Moreover, assessing past behavior is important when using untrained taste panels. A person's prior experience with a product category can tremendously bias his or her taste. For instance, someone with a "sweet tooth," may rate products differently than someone who is instead a heavy consumer of meat or of vegetables. This predisposition toward related foods can reflect a sensory disposition that can be captured and accounted for based on one's past consumption of these foods (Sudman & Wansink, 2002). Accounting for this preference-driven

consumption frequency of a product, helps reduce variance across consumers, thus reducing noise in the data. This can be done by using past consumption frequency as either a covariate or as a segmentation variable (e.g. light versus heavy users).

2. Accounting for consumer suggestibility to marketing and labelling

The mere mention of a product's name can bias taste. One area of research that is gaining momentum uses blinded taste tests to evaluate how extrinsic cues such as packaging and brand names bias one's evaluation of taste. For instance, the 1974 Pepsi Challenge, reported consumers preferred Pepsi to Coke (Foley, 1994), and it demonstrated that visual cues such as packaging and brand logos can influence consumer perceptions and product preferences. Many believe that consumers in low involvement situations make product choices based as much on extrinsic cues (such as packaging, labels, brand names and so forth) as on intrinsic attributes. This influences how preferences and taste translate to marketing success.

A recent restaurant-based test of product names compared descriptive names (such as Succulent Italian Seafood Filet) of six products with their more basic names (e.g. seafood filet) for the exact same food recipes. Over the course of the 6-week rotation, people purchased products with descriptive labels 27% more often; they

* Tel.: +1-217-244-0208.

E-mail address: wansink@uiuc.edu (B. Wansink).

rated them as being of higher quality, and they said they would be more likely to try the product again within the next 2 weeks (Wansink, Painter, & van Ittersum, 2001).

A consumer's trial of a food is increasingly being shown to be influenced by the suggestibility of packages and labels. Indeed, simply reading a label may influence taste ratings of ingredients that are not there. For instance, it was investigated how including the word "soy" on a label influenced post-trial perceptions of taste, texture, attitude, and purchase intention. Many who thought they were tasting a Powerbar with soy in it rated the Powerbar as less tasty, less chocolately, more grainy, and more "soy tasting" than those consumers who ate the *identical* Powerbar which did not mention the word "soy" on the label (Wansink, Park, & Sonka, in press). Interestingly, there was absolutely no soy protein in the bar.[1] What the first group tasted was clearly imagined.

The key here is to understand that seemingly peripheral cues, such as brand names, ingredients, or descriptions can have a tremendous impact on one's evaluation of a product's taste. These must be accounted for or controlled when doing research that intends to use these results forecast to consumer acceptance and market preference.

3. Measurement relevance: thoughts, scales, and behaviors

Research in nutritional science, dietetics, human nutrition, and sensory studies frequently focuses on scaled questions that rate targeted attributes such as sweetness, vanilla taste, and so forth. While this data is deceptively easy to analyze, two additional types of measures can also be used to triangulate with the scaled measures and increase the validity of this data. The first is open-ended (cognitive) responses (Wright, 1980) and the second is consumption intentions. When using a testing panel, one of the advantages of asking open-ended responses is they are less constraining than scales. One concern with using only scales is that they constrain a person's response to only those variables that are listed. Even if a person does not taste an attribute or flavor, they still must rate it if it is listed. As noted earlier, the mere suggestibility of an attribute or a flavor is enough for some people to believe they tasted it (Wansink, Park, & Sonka, in press).

3.1. Cognitive responses can reveal what's really important

Understanding the sensory evaluation of a product is greatly aided by knowing a consumer's thoughts as he or she tastes it. These thoughts help us better estimate how the sensory aspects will influence attitudes and consumption. Moreover, they can provide diagnostic suggestions on how to modify the product to gain stronger or wider acceptance.

Cognitive responses can mirror the actual thoughts that occur to people as they taste a product. Cognitive responses can be elicited with instructions such as, "Write down any thoughts that went through your mind as you tasted the product." These written thoughts are typically coded as to the content of their description and as to whether they represent positive or negative remarks (Wansink, Ray, & Batra, 1994).

Such questions can also be used to focus one's thinking in a particular direction by using either pre-exposure elicitation exercises (such as practice tests and examples) or by using directed post-exposure instructions that encourage consumers to cognitively edit their less relevant thoughts before writing them down. There is a general pre-testing method that can help researchers determine what procedure will be most appropriate for eliciting sensory-related cognitive responses (Wansink et al., 1994). The general four step method follows:

1. Select a number of pre-exposure elicitation exercises or directed post-exposure instructions believed to provide the greatest level of sensitivity toward sensory-related responses. Be certain to include a control condition to deal with potential reactivity.
2. Design the study by having the various instruction conditions under examination represent between-subjects factors. Statistical power can be increased by having subjects respond to multiple stimuli. Care should be taken to insure that subjects are from a comparable pool as those who will be involved in the future studies.
3. Include outcome variables of interest to insure that the different procedures or instruction conditions do not generate reactivity. These might include taste, attitude, purchase intentions, and consumption intentions.
4. Select the elicitation procedure of instruction condition that best achieves the objectives of the study without affecting outcome variables relative to the control condition. For instance, an objective may involve selecting the procedure which maximizes consumption-related thoughts, while minimizing unrelated thoughts.

Consider an example. Suppose a researcher wanted to determine how a descriptive label for a product (say "Succulent Italian Seafood Filet" vs. simply "seafood filet") influenced one's sensory evaluations of the product. A between-subjects pre-study would be set up where some respondents taste the chicken with the descriptive label and others taste the chicken with the basic label. Following this, they could be asked a series

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[1] Importantly, there were also differences across different segments of people. Segments identified as Health Conscious or as Diet Conscious exhibited less extreme differences compared to those consumers being "Taste-driven" consumers.

of scaled (e.g. 1 = low; 9 = high) sensory questions. The problem, of course, is that respondents may have had different sensory experiences than simply those specified by the scaled questions. What is needed, therefore, is a way to let them provide open-ended responses that relate to their actual sensory experiences.

The first step in determining this would be to generate different ways to ask the most diagnostic and fruitful open-ended question. These might include (1) having people compare the product to other similar products, (2) having people comment only on the sensory aspects of the product (not on images and associations), or (3) having people write down any thoughts or feelings that come to mind (a form of control condition).

After locating members of the appropriate population, people would be put in one of the three conditions and told to write down their responses (as per the directions of their specific question-related condition) and to answer the scaled questions that follow. Last, the scaled responses of the two test groups (groups 1 and 2) would be compared to the control group (group 3) to be certain that the questioning procedures do not show bias on the outcome variables relative to the presumably unbiased control group. Further details of this procedure can be found in Wansink et al. (1994).

3.2. Improving the accuracy of consumption intentions

The implication of some sensory research is that if consumers rate a flavor as acceptable, they will consume it. Because purchase and consumption is a marketing-related objective in food development, consumption intentions should be measured at the time of testing. Measures of one's consumption intentions (for a particular time period, such as "within the next two weeks") can be obtained either through likelihood measures, or through estimates of one's future consumption frequency. Likelihood measures can be directly obtained by asking an individual how likely ("Highly Unlikely" = 1 to "Highly Likely" = 9) it will be that he or she consumes the product within an upcoming time period. Consumption intentions can also be measured by asking one to estimate how many times he or she might possibly consume the product within a similar time period (Wansink & Ray, 1992).

These two different measures of usage intent have different relative strengths. With infrequent users of a product, frequency estimates will be skewed toward 0 units (especially over a relatively short period of time). This is partially a drawback of numerical estimates that provide no gradation between 0 and 1 unit. In such cases, the frequency estimates provide less variance and less information than an estimate of consumption likelihood. With light users, consumption likelihood estimates will provide greater gradation in response and more sensitivity in detecting any potentially different effects a particular set of sensory qualities would have on consumption.

In contrast, with frequent or heavy users of a product, a frequency estimate is likely to be more accurate than a likelihood estimate. This is because the distribution of these frequency estimates is more likely to be normally distributed. As a result, a frequency estimate of one's consumption intent is likely to provide more variance and more information about the intended consumption of heavy users than is a likelihood measure, which would undoubtedly be at or near 1.0 (100% probable). With heavy users, frequency estimates would be a more accurate estimate of a heavy user's future consumption frequency of a product.

When a panel consists of both heavy and light users, both likelihood and frequency measures should be used with both groups. However, in weighting the relative measures, frequency estimates should be weighted more heavily for heavy users consumers, and purchase likelihood measures should be weighted more heavily for light consumers. Using both measures allows some degree of comparison, but weighting them allows more confidence in making segment-level conclusions.

In general, however, consumption intention measures are most valid when they involve a readily accessible product that involves little or no preparation. The more intermediate steps that are involved (such as purchasing the product or preparing the product), the less accurate this measure becomes. In general, the direction of the bias for consumption intention measures (frequency and likelihood) depends on the availability and convenience of the product (Chandon & Wansink, 2002).

Sensory-related measures and attitude measures will not always be sensitive enough to project the acceptability and consumption intentions of a product. Specifically, it is important to understand that frequency estimates best approximate the actual consumption of heavy users (or of frequently consumed products) and that likelihood estimates are best used with light users (or with infrequently consumed products). More specific diagnostic information, such as usage-related thoughts and feelings, can be obtained by examining the specific thoughts that consumers generate when tasting these products.

It is important to understand how conventional measurement methods and analyses can be modified to more directly take factors into account that might influence the purchase, consumption, and market success of a product. Four basic suggestions can help improve the value that sensory researchers can have to a firm and to ultimate market success.

- First, account for key differences within the target population, key potential segmentation variables (such as indications of non-, light-, and heavy use), or personality or lifestyle variables (such as taste-conscious, health-conscious, calorie-conscious and so on) should be measured so they can be used as covariates or as a basis for segmentation.

- Second, combine sensory tests with one or two key marketing variables that could lead to different sensory outcomes. For instance, descriptions and ingredient names can bias one's taste ratings of products. If, a product will be advertised or promoted with a name present, taste acceptability tests can examine how consumers who are experienced with a product will respond differently than those who are not.

- Third, taste ratings are not the only relevant consumer measure. Furthermore, they can be constraining not only in a sensory context, but also when trying to project to consumption estimations. Using verbal protocols during testing, and in consumption projection tests can valuably supplement existing measures.

- Fourth, collect the most relevant cognitive intention measures. For frequently consumed products, or when dealing with heavy users, use consumption frequency measures. For infrequently consumed products, or when dealing with light users, use consumption likelihood measures.

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