Global exploration of consumer psychographics for the phytonutrient supplement product category

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Introduction

Phytonutrient supplements are consumed to increase dietary consumption of nutrients. Regular consumption of phytonutrient supplements varies by consumer psychographic segments. Prior evidence shows different nutrient intake adequacy and attitudes among users and non-users of vitamin/mineral supplements. (Sebastian, et al., 2007). This research addresses the opportunities and the challenges to better understand consumer choice and consumption using psychographic measures for research within this product category, in addition to the demographic measures.

Research Objectives

The main objectives of this research were:

- Assess psychographic and demographic measures that influence consumer hedonic, sensory and emotional responses to products.
- Apply psychographic measures for consumer segmentation.
- Contrast user vs. non-user psychographic profiles.

Materials and Methods

Samples

Tablets or formulations (9) were ground to a powder (5 gm powder) and dispensed in 3-digit coded 1-oz white opaque bottles.

Consumers

Males and females ranging in age from 18-55 from 4 countries were recruited to participate in a 1-hour Central Location Test study.

Table 1. Samples

In-Market	Experimental
G – Germany	S – Spice
J – Japan	F – Fruit
K – Korea	M – Mint
U – US	H – Herb
	B – new base

Table 2. Consumer Panel

Country	Users	Non-Users	TOTAL
Germany	32	27	59
Japan	103	0	103
Korea	40	40	80
US	0	61	61
TOTAL	175	128	303

Users were brand-of-interest phytonutrient supplement consumers; non-users were users of other brands of vitamins.

Study Design

Blinded samples were presented in balanced, randomized Latin-Square designs across respondents. Surveys were self-administered.

Statistical Analysis

- Analysis of Variance (ANOVA)
  - US and Japan (product and subject as two factors)
  - Korea and Germany (product, user group and subject as 3 factors with subject nested in user groups.
  - For multiple comparisons, 'multicomp', S-Plus
- Cluster analyses within countries; 'mclust', S-Plus (Insightful, 2001)

Demographic Measures

Gender, age and user group segmentation.

Psychographic Measures

All psychographic scales have been previously developed and validated in the literature (see scale references in TABLE 3).

Results and Discussion

Psychographic Measures

Wellness (past month)

Wellness is generally used to mean a healthy balance of the mind, body and spirit that results in an overall feeling of well-being. No differences were observed in Wellness (past month) measures across gender from each market or between users and non-users in Germany and Korea.

Sense of Well-Being

Users rated higher on "Sense of Well-Being" than Non-users in Germany and Korea. Males and females did not differ; with the exception of Germany—where females hold a significantly higher sense of well-being than males.

Product Involvement

Product involvement is a measure of importance or personal relevance. It refers to consumer's enduring perception of the importance of the product category based on the consumer's inherent needs, values, and interests. Product involvement is a motivational state that energizes and directs consumers' cognitive and affective processes and behaviors as they make decisions. Korean users demonstrated more product class involvement (phytonutrient tablets) than non-users (vitamins). Product class involvement does not differ by gender across markets.

Price-Quality Consciousness

Price is one of the most important marketplace cues with dual roles. Higher prices may negatively affect consumer purchase probabilities. However, for some consumers in some product categories, the level of the price cue may be related positively to the level of product quality. Hence higher prices may indirectly positively affect purchase probabilities. Users in Germany agree you have to "pay a bit more for the best" vs. non-users.

General Neophobia

Neophobia, including food neophobia and general neophobia, is a phenomenon of rejection of things or reluctance to try things, which are novel or unknown. It is a trait to dislike anything new and fear of novelty. Neophobia is distinguished from rejection of familiar things (fussiness, or pickiness). Segmentation by food neophobia often produces differences in product liking and product emotions, but showed no overall differences in this study.

Sensation Seeking

Sensation seeking is viewed as the need for varied, novel and complex sensations and experiences, and the willingness to take physical and social risks for the sake of such experience. Sensation seeking is related to whether people are variety seekers or are conservative in their variety choices, and whether they seek or avoid risk. We observed the universal finding that men are willing to seek fun and exciting things—even if dangerous; women less so.

Medication Adherence/Compliance

Medication adherence/compliance is generally defined as the extent to which patients take medications as prescribed by their health care providers. There is a relationship between treatment efficacy and adherence. The most effective treatments tend to have lower adherence due to undesirable sensory characteristics or unpleasant side-effects. Compliance is a construct (all scale items) that clearly distinguishes users from non-users.

Results and Discussion

General Self-Efficacy

The General Self-Efficacy (GSE) Scale is a 10-item psychometric scale to assess optimistic self-beliefs to cope with a variety of difficult demands in life. Self-efficacy distinguishes users from non-users in Germany and Korea.

Resilience

Resilience is about the positive responses of people to adverse or traumatic event. It is best defined as an outcome of successful adaptation to adversity. Resilience distinguishes users from non-users as well as gender, with users and males scoring higher on resilience respectively.

Selected findings are illustrated below for the psychographic measures by country that were significant.

Table 3. User Group

	Germany				Japan	Korea				US
Psychographic Questions	**Population**	**User**	**Non-User**	**p-v**	**Population**	**Population**	**User**	**Non-User**	**p-v**	**Population**
Overall Wellness (past month)	61.07	63.78	57.85	0.329	68.30	5.25	5.50	5.00	0.214	51.23
Sense of Well-being (Bell et al., 2004 and Otto, et al., 2010.)										
I actively look for products and services that help me live a healthy lifestyle	6.29	6.59	5.93	0.009*	6.36	5.84	6.35	5.32	0.00*	6.13
Product Class Involvement (Mittal, B. (1995).)										
A multivitamin tablet is very important to me	6.12	6.28	5.93	0.305	6.54	6.11	6.68	5.55	0.00*	5.84
For me a multivitamin tablet does not matter	1.78	1.94	1.59	0.495	1.32	1.70	1.38	2.02	0.016*	1.69
Purchase Decision Involvement (Mittal, B. (1995).)										
I choose multivitamin tablets very carefully	6.29	6.06	6.56	0.185	5.74	6.10	6.32	5.88	0.102	5.61
Which multivitamin tablets I buy matters to me a lot	6.61	6.59	6.63	0.892	6.33	6.26	6.58	5.95	0.021*	5.89
Choosing multivitamin tablets are an important decision for me	6.29	6.03	6.59	0.137	5.15	6.18	6.55	5.80	0.002*	5.66
Price Quality Consciousness (Lichenstein, Bloch and Black, 1988.)										
The old saying you get what you pay for is generally true	3.46	3.22	3.74	0.301	4.90	5.08	5.25	4.90	0.238	4.89
The price of a product is a good indicator of its quality	3.90	3.84	3.96	0.804	3.48	3.80	3.70	3.90	0.549	4.39
You always have to pay a bit more for the best	5.05	5.41	4.63	0.085*	3.61	4.47	4.58	4.38	0.611	5.10
General Neophobia (Pliner and Hobden, 1992.)										
I feel uncomfortable when I find myself in novel situations	2.24	2.22	2.26	0.905	3.94	4.40	4.25	4.55	0.413	2.59
Whenever I'm away I want to get home to my familiar surroundings	2.17	1.84	2.56	0.095*	2.66	4.12	3.92	4.32	0.342	2.79
I am afraid of the unknown	1.86	1.84	1.89	0.870	3.06	3.46	3.52	3.40	0.749	2.18
I am very uncomfortable in new situations	2.10	2.09	2.11	0.965	3.10	3.45	3.30	3.60	0.409	2.62
Whenever I am on vacation I can't wait to get home	1.76	1.47	2.11	0.036*	1.92	2.42	2.20	2.65	0.189	1.98
I avoid speaking to people I do not know when I go to a party	1.75	1.66	1.85	0.532	2.33	2.88	2.68	3.08	0.278	2.11
I feel uneasy in unfamiliar surroundings	2.07	2.12	2.00	0.724	2.57	3.05	2.92	3.18	0.465	2.28
I don t like sitting next to someone I don't know	1.61	1.69	1.52	0.549	2.22	3.11	2.80	3.42	0.100	2.44
Sensation Seeking (Slater, et al., 2001)										
How often do you do dangerous things for fun?	1.75	1.72	1.78	0.775	2.72	2.48	2.55	2.40	0.583	2.21
How often do you do exciting things even if they are dangerous?	2.10	2.22	1.96	0.226	2.63	2.48	2.52	2.42	0.681	3.00
Compliance (Osterberg and Blaschke, 2005.)										
Get refills on your multivitamin tablets before running out	3.37	3.56	3.15	0.074*	3.28	3.21	3.78	2.65	0.00*	3.03
Make taking your multivitamin tablets part of your routine	3.44	3.72	3.11	0.006*	3.64	3.19	3.78	2.60	0.00*	3.39
Fill your multivitamin tablets whatever they cost	2.85	3.12	2.52	0.013*	2.98	2.59	3.00	2.17	0.00*	2.69
Always remember to take the multivitamin tablets	3.12	3.34	2.85	0.030*	3.25	3.32	3.75	2.90	0.00*	3.23
General Self-Efficacy (Schwarzer and Jerusalem, 1995.)										
Thanks to my resourcefulness I know how to handle unforeseen situations	3.36	3.50	3.19	0.080*	2.80	3.01	3.12	2.90	0.131	3.43
I can solve most problems if I invest the necessary effort	3.63	3.66	3.59	0.680	3.20	3.26	3.40	3.12	0.051*	3.51
I can remain calm when facing difficulties because I can rely on my coping abilities	3.20	3.22	3.19	0.868	3.00	2.92	3.05	2.80	0.096*	3.38
I can usually handle whatever comes my way	3.51	3.59	3.41	0.187	3.19	3.14	3.20	3.08	0.364	3.48
Resilience (Connor and Davidson, 2003.)										
Adapt to change	4.22	4.19	4.26	0.771	4.06	3.89	3.92	3.85	0.622	4.33
Can deal with whatever comes	3.81	4.12	3.44	0.005*	3.68	3.68	3.68	3.68	1.000	4.15
Tend to bounce back after illness or hardship	4.53	4.62	4.41	0.336	4.01	3.94	4.08	3.80	0.110	4.30
When things look hopeless I don't give up	4.19	4.12	4.26	0.588	4.03	3.86	4.00	3.72	0.192	4.23
Not easily discouraged by failure	3.78	3.84	3.70	0.620	3.82	4.04	4.20	3.88	0.043*	3.98
Think of self as strong person	4.10	4.19	4.00	0.451	3.28	3.75	3.98	3.52	0.041*	4.46
Can handle unpleasant feelings	3.90	3.69	4.15	0.071*	3.43	3.40	3.48	3.32	0.483	3.84
You work to attain your goals	4.34	4.22	4.48	0.248	4.17	3.95	4.12	3.78	0.067*	4.41
Thrive in stressful circumstances/environments	3.03	3.25	2.78	0.144	3.60	3.79	3.75	3.82	0.668	3.90

Table 4. Cluster Effects on Consumer Hedonic, Sensory and Emotion Responses

	Germany				Japan			Korea			US		
Psychographics questions	Overall Liking of Aroma	Strength of Aroma	PA[1]	NA[2]	Overall Liking of Aroma	Strength of Aroma	PA	NA	Overall Liking of Aroma	Strength of Aroma	PA	NA	Overall Liking of Aroma	Strength of Aroma	PA	NA
Overall Wellness	0.24	0.68	0.00*	0.01*	0.46	0.00*	0.00*		0.00*	0.00*	0.00*	0.12	0.18	0.03*	0.00*	0.00*
Product Involvement	0.01*	0.66	0.00*	0.00*	0.06*	0.37	0.87	0.00*	0.00*	0.10*	0.38	0.03*	0.20	0.00*	0.00*	0.00*
Price-Quality Consciousness	0.74	0.91	0.02*	0.06*	0.37	0.43	0.00*	0.03*	0.43	0.48	0.00*	0.51	0.10	0.02*	0.00*	0.00*
General Neophobia	0.02*	0.77	0.24	0.01*	0.07*	0.56	0.00*	0.66	0.73	0.00*	0.24	0.77	0.73	0.77	0.24	0.00*
Sensation Seeking	0.21	0.31	0.50	0.83					0.00*	0.46	0.61	0.00*				
Compliance					0.23	0.18	0.02*	0.00*	0.00*	0.06*	0.00*	0.59				
General Self Efficacy					0.76	0.77	0.00*	0.02*	0.02*	0.03*	0.03*	0.81				
Resilience					0.29	0.79	0.65	0.00*								

[1]Positive Affect Negative Affect Schedule (PANAS) where Positive (PA) and Negative (NA); [2] *All tables significant at alpha=0.1 (denoted by *).*

Conclusions/Recommendations

- Significant differences were observed across countries, gender, age, and user-group for most of the psychographic scales.
- Consumer segmentations based on the responses to psychographic questions show cluster effects on consumer hedonic and sensory attributes. Results suggest these are important variables impacting consumer choice and consumption behaviours.
- Compliance is a clear psychographic differentiating user-type that needs further exploration to support the product category and development.
- Psychographic research should be expanded as it adds additional information to strengthen understanding of a range of consumer products beyond usual consumer liking ratings.
- Future efforts should emphasize differences between user types—i.e., current users, lapsed users and non-users.
- Further research is needed on how to apply psychographic information. Propensity Score Analysis (PSA), an advanced statistical methodology (Rubin, 2006), will be applied to address the important challenge to relate information from different data sets to evaluation of product effects.

References

Bell, I.R., Cunningham, V., Caspi, O., Meek, P., & Ferro, L. (2004). Development and validation of a new global well-being outcomes rating scale for integrative medicine research. *BMC Complementary and Alternative Medicine 2004, 4:1*. This article is available from http://www.biomedcentral.com/content/pdf/1472-6882-4-1.pdf (accessed March 1, 2013).

Connor, K.M., and Davidson, J.R.T. (2003). Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety, 18,* 76-82.

Hill, P. L. and B. W. Roberts. 2011. The Role of Adherence in the Relationship Between Conscientiousness and Perceived Health. Health Psychology. Vol. 30, No. 6, 797–804. Insightful, 2001. *S-Plus 6 for Windows: Guider to Statistics, Volume 1*. Insightful18 Corporation: Seattle, Washington.

Kuesten, C., P. Chopra, J. Bi, and H.L Meiselman, 2013. A global study using PANAS (PA and NA) scales to measure consumer emotions associated with aromas of phytonutrient supplements. *Food Quality and Pref. 33:86-97.*

Lichenstein, D.R., Bloch, P.H., & Black, W.C. (1988). Correlates of price acceptability. *Journal of Consumer Research, 15,* 243-252.

Mittal, B. (1995). A comparative analysis of four scales of consumer involvement. *Psychology of Marketing, 12,* 663-682.

Osterberg, L. & Blaschke, T. (2005). Adherence to medication. *New English Journal of Medicine, 353*, 487-497.

Otto, L. M., A. Howerter, I. R. Bell, and N. Jackson. 2010. Exploring Measures of Whole Person Wellness: Integrative Well-being and Psychological Flourishing. Explore. November/December Vol. 6, No. 6, 364-370.

Pliner, P. and Hobden, K. (1992). Development of a scale to measure the trait of food neophobia in humans. *Appetite, 19*, 105-120.

Rubin, D.B. 2006. *Matched Sampling for Causal Effects*. Cambridge University Press: Cambridge.

Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In J. Weinman, S. Wright, & M. Johnston, *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35-37). Windsor, UK: NFER-NELSON.

Sebastian, R., L. E. Cleveland, J. D. Goldman, and A. J. Moshfegh. 2007. Older Adults Who Use Vitamin/Mineral Supplements Differ from Nonusers in Nutrient Intake Adequacy and Dietary Attitudes. Journal of the AMERICAN DIETETIC ASSOCIATION. 107:*1322-1332.*

Slater, M.D., Hoyle, R.H., Palmgreen, P., & Stephenson, M.T. (2001). A reliable two-item sensation-seeking index and prediction of substance use. In Proceedings of the Paper Presented to the Ninth Annual Meeting of the Society for Prevention Research. Wash., DC.

