Do Respondents use Extra Information Provided in Online Best-Worst Choice Experiments?

Simone Mueller, Larry Lockshin, University of South Australia, Adelaide
Jordan Louviere, David Hackman, University of Technology, Sydney

Abstract

An issue of interest to researchers is the amount of explanatory information one needs to give respondents making decisions in choice tasks. One way to resolve this issue is to let people select only relevant information from interactive information sources. This resolution poses unanswered questions: e.g., will respondents use the extra information, and potential systematic differences in information users and non-users. To shed some light on this issue, we let respondents access optional descriptive information about attributes in the form of partial (verbal) and full (verbal plus visual) glossaries associated with a Best-Worst (BW) web survey. Only a small minority with higher subjective product knowledge accessed the glossary information. We found no significant difference between verbal and visual information in attractiveness of use or impact on choice.

Keywords: choice, Best-Worst, information usage, verbal vs. visual information

Introduction

Web surveys provide researchers with a way to offer respondents optional information according to their needs and thereby giving them a higher degree of information control (Ariely 2000). Hoffman and Novak (1996) showed that decision makers' information needs are better satisfied when respondents have control over what information they want to choose according to their personal preferences. Providing respondents optional information also has the advantage that more knowledgeable respondents will not be overburdened with mandatory information with which they are already familiar (Malhotra 1982), and they can integrate it into their decisions (Payne 1982).

Bettman and Zins (1979) suggest that respondents are influenced by choice task format to which they adopt by adjusting the timing and accuracy of their responses. In turn, this suggests that optimal respondent accuracy is achieved by using optimal choice task formats, which is another way of saying that respondents become more variable (inconsistent) in their responses as one moves away from optimal format (Louviere and Eagle 2006). By providing optional descriptions of all product attributes, respondents theoretically can make fully informed decisions if they access the information provided. Yet, little is known about whether respondents actually will use optional information if it is offered in Best-Worst tasks. Best-Worst Scaling (BWS) has been found to be a useful way to measure consumer preferences without scale bias (Finn and Louviere, 1992; Cohen, 2003; Cohen and Neira, 2002), and it can produce ratio level scales for attribute importance or other latent dimensions (Marley and Louviere, 2005). BWS tasks require respondents to choose the most and least important attributes from several designed sets of three or more attributes. BWS is a relatively new measurement theory and methodology, hence a number of unresolved issue remain, such as whether and how much explanatory information should be provided to respondents, whether

such information should be mandatory or optional, and the impacts of such information of decisions on BWS choice outcomes.
Thus, a major unresolved research question is whether BWS respondents will use additional information and which type(s) of respondents will access it. Researchers can choose to provide respondents with verbal or graphical information, the latter being easier to process cognitively (Lurie and Mason, 2007). Thus, our research seeks to determine whether verbal and graphical information have different effects on respondent's choices in BWS tasks. Using data from a BWS web survey of 740 Australian wine consumers, we examine the effects of optional verbal and graphical information on information usage on choices in BWS tasks.

Propositions

Jarvenpaa (1989) showed there were lower cognitive costs and higher benefits for graphical relative to verbal information. Lohse (1997) showed that visual representations can enhance problem-solving capabilities without overloading decision makers; and Kosslyn (1994) discussed how humans have developed visual and spatial skills and better retrieve information with visual cues. Lurie and Mason (2007) compared the context of visual versus verbal information, which showed vividness, evaluability and framing increased with visual information; that is, "a picture is worth a thousands words".

Proposition 1: Respondents should favour graphical over verbal information as they can quickly process and comprehend graphical compared with verbal information. Louviere et al. (1987) showed that differences in information format preferences were largely due to what we now would call scaling or error variance differences (Swait and Louviere 1993). So, we would expect to see more use of graphical compared with verbal information sources, all else equal.

Proposition 2: Information users should be less knowledgeable about the product category than non-information users. Moore and Lehman (1980) showed that more experienced consumers require less pre-purchase information. Selnes and Howell (1999) observed that experts used less written extrinsic product information but relied more on sensory intrinsic product information for radio choice. Wu and Lin (2006) tracked frequency of information usage for choices in a computer based survey and found that product novices chose more information than product experts. Specifically for wine, Lockshin et al. (2006) showed that high involvement wine consumers chose wines differently than low involvement consumers, using more intrinsic attributes like region of origin instead of extrinsic ones like brand.
We are unaware of work investigating whether those who use more information have different attribute importances than those who do not. Proposition 2 leads us to expect that more involved and/or more knowledgeable respondents should access less information, and also should exhibit different attribute importances than non-users of information.

Proposition 3: Consumers, who access information, will have different importances for product characteristics than those, who do not access extra information.

Method

We used a web survey to collect data to test our propositions with a BWS task to measure the importance of 16 wine attributes. A complete list of attributes can be found in Figure 2. Attributes were chosen based on Lockshin et al. (2006) and Goodman et al. (2006). A

balanced incomplete block design (Raghavarao, 1988) was used to create 24 sets of six wine attributes, and in each set respondents chose their most and least important attributes for choosing wines. A webpanel provider recruited 740 people, randomly assigning them to three conditions: 1) no additional information (245); 2) partial glossary that verbally described each attribute (243); and 3) full glossary with verbal descriptions and a photograph (see Figure 1 for characteristic bottle shape) for nine of the 16 attributes (252).
Seven of 16 attributes (eg, alcohol level, region of origin) could not be visually described, so were had only verbal descriptions in the full glossary condition. At the beginning of the survey respondents were shown how to access glossary information via a hyperlink associated with each attribute. We tracked each person's glossary information use for each attribute.

Figure 1 Survey with opened full information glossary for bottle shape

Results

We first evaluated how often respondents accessed information in the partial and full glossary conditions. The results in Table 1 show that a very large majority (79% in the partial and 77% in the full) did not use any optional information to respond to the BWS task. Of the 21% and 23% who used extra information, only 14.9% and 19.5% accessed more than one attribute description in the partial and full glossary conditions, respectively.

Table 1 Information usage of Partial and Full Glossary

	Partial glossary		Full glossary	
	n=243		n=252	
No information access	187	79%	198	77%
Information access	56	21%	54	23%
Number of info accessed				
1	16	6.6%	9	3.6%
2	22	9.0%	18	7.1%
3	3	1.2%	10	4.0%
4	7	2.9%	7	2.8%
5	3	1.2%	5	2.0%
6	0	0.0%	2	0.8%
7	1	0.4%	1	0.4%
8	1	0.4%	0	0.0%
9	2	0.8%	0	0.0%
10	1	0.4%	2	0.8%

Despite a seemingly higher multiple access percentage for the full glossary, a χ^2 test of the difference between the information usage distributions shows no significant difference (df=10, χ^2=15.15, p=0.13) in the two conditions.

Figure 2 shows information use, but differentiates between attributes shown as photographs or only verbally. Capsule and closure material were the most accessed attributes, accessed by almost 20% of respondents. This may be because the remaining attributes were known to the respondents, so they needed no further explanation. Again, a χ^2-test showed no significant difference between verbal and visual glossary conditions (DF=8, χ^2=7.10, p=0.53).

To test information access, we treated whether or not any glossary information was accessed as a dependent variable in a binary logistic regression with glossary condition (partial or full information), attribute B-W scores, respondent wine behaviour related and sociodemographic measures as independent variables.

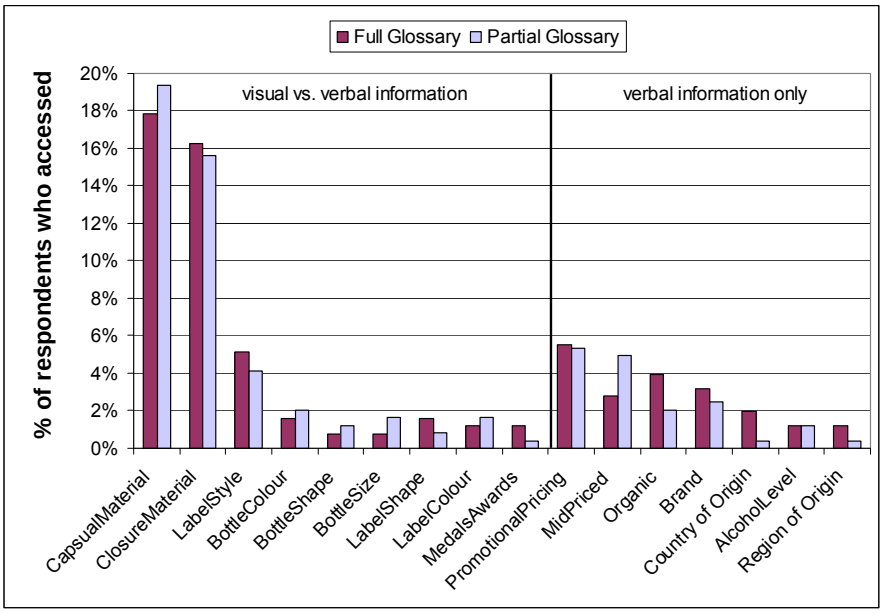

Figure 2 Information Access by Wine Attribute for Partial and Full Glossary

Estimates of the significant variables in the binary logistic regression are shown in Table 2. The glossary condition was not significant, implying that respondents' information choices were not influenced by presentation mode. This result accords with the previous two χ^2-tests, which taken together do not support Proposition 1, namely that respondents should favour graphical over verbal information in the BW task.

Table 2 Statistical Results of the Binary Logistic Regression

	B	S.E.	Wald	Sig.
Subjective wine knowledge	0.23	0.09	7.31	0.01
Wine usage special occasion	0.39	0.21	3.53	0.06
Wine usage fine dining	-0.54	0.20	7.45	0.01
Read back label technical info	0.30	0.14	4.48	0.03
Capsule	-0.29	0.06	23.72	0.00
Alcohol level	-0.09	0.04	4.18	0.04
Brand	0.10	0.05	3.82	0.05
Constant	-4.52	0.89	25.76	0.00

(χ^2=64.20, -2LL=394.88, Nagelke R Square 0.21)

We now test whether respondents who accessed any glossary information differ from those who did not. Only four of the 16 wine choice attributes exhibited a significant difference between information users and non-users. Specifically, respondents with more subjective wine knowledge were more likely to access optional glossary information as did those who reported more frequent reading of technical information on back labels. These differences suggest that glossary information users have higher product knowledge and show interest in other specific wine information. This departs from Proposition 2 that suggested that low knowledge consumers would use optional information.

We found two opposing effects for wine consumption situations: a) those who reported higher levels of drinking wine on special occasions were more likely to access glossary information, but b) those who reported higher levels of wine consumption in fine dining restaurants were less likely to use optional information. Contrary to our expectations in Proposition 2, we could not find significant differences in wine involvement in the use of information in our BWS tasks. Sociodemographic variables also were not significantly related to information choices, which is consistent with Lockshin et al. (2006).

Referring to Proposition 3, the results in Table 2 show significant differences for only three of 16 attributes. That is, information users had lower BW scores for capsule and alcohol level and higher scores for brand, contrary to our expectations. The respondents self-selected into information users and non-users, so these preference differences cannot be attributed to information usage. As far as we know, capsule importance has not been studied before, but as respondents accessed it most often (Figure 2), and it likely is less well-known to them as a wine attribute, the measured importance difference probably was at least partly impacted by the glossary information.

Conclusion and Implications

Previous consumer behaviour research suggests that consumers use heuristics to make decisions, and are cognitive misers who tend not to access extra information that might improve their decisions. A key result in our research is that this seems also be true for online wine survey respondents, who could easily access additional information. Most interestingly,

we found that those with higher self-assessed wine knowledge were more likely to access information. One implication of this is that if researchers want information to impact people's decisions, it probably should be mandatory for all respondents; otherwise, the probability that respondents will access is low. We found no difference in the impacts of verbal and graphical information on BWS choices, which implies that researchers may not need to create visual images for well-know choice alternatives, although we believe this conclusion is premature.

Future Research and Limitations

There is need for future research on the impact of information in both online and offline surveys. A major limitation of our research is the implication of self-selection, which does not allow us to separate the impact effects of information and the differences of underlying preferences of information users and non-users.

References

Ariely, D., 2000. Controlling the Information Flow: Effects on Consumer's Decision Making and Preferences, Journal of Consumer Research, 27, 233-248.

Bettman, J., Zins, M., 1979. Information Format and Choice Task Effects in Decision Making, Journal of Consumer Research, 6, 141-153.

Cohen, S. H., 2003. Maximum Difference Scaling: Improved Measures of Importance and Preference for Segmentation, Sawtooth Software Conference Proceedings, Sequim, WA.

Cohen, S. H., Neira, L., 2003. Measuring Preference for Product Benefits across Countries: Overcoming Scale Usage Bias with Maximum Difference Scaling, ESOMAR 2003 Latin America Conference Proceedings. Amsterdam: The Netherlands.

Finn, A., Louviere, J.J., 1992. "Determining the Appropriate Response to Evidence of Public Concerns: the Case of Food Safety", Journal of Public Policy and Marketing, 11(1), 12-25.

Goodman, S., Lockshin, L., Cohen, E., 2006. "Using the Best-Worst Method to Examine Market Segments and Identify Different Influences of Consumer Choice", 3rd International Wine Marketing Research Conference, ed. F. d'Hauteville, Montpellier, France. CD-ROM.

Hoffman, D., Novak, T. P., 1996. Marketing in Hypermedia Computer-mediated Environments: Conceptual Foundations, Journal of Marketing, 60, 50-68.

Jarvenpaa, S., 1989. The Effect of Task Demands and Graphical Format on Information Procession Strategies, Management Science, 35(3), 285-303.

Kosslyn, S. M., 1994. Elements of Graph Design, New York, W.H. Freeman.

Lockshin, L., Jarvis, W., D'Hauteville, F., Perrouty, J., 2006. Using Simulations from Discrete Choice Experiments to Measure Consumer Sensitivity to Brand, Region, Price, and Awards in Wine Choice', Food Quality and Preference, 17, 166-178.

Louviere, J.J., Anderson, D.A., Woodworth, G.G., Louviere, C. H., 1987. Do the Parameters of Choice Models Depend on Differences in Stimulus Presentation: Verbal vs. Visual Presentation?, Advances in Consumer Research, 14, 79-82.

Louviere, J.J., Eagle, T., 2006. "Confound It! That Pesky Little Scale Constant Messes Up Our Convenient Assumptions," Proceedings, 2006 Sawtooth Software Conference, 211-228, Sawtooth Software, Sequem, Washington, USA.

Lohse, G. L., 1997. The Role of Working Memory on Graphical Information Processing, Behaviour and Information Technology, 16(6), 297-308.

Lurie, N., Mason, C. H., 2007. Visual Representation: Implication for Decision Making, Journal of Marketing, 71, 160-177.

Malhotra, N. K., 1982. Information Load and Consumer Decision Making, Journal of Consumer Research, 8, 419-430.

Marley, A. A. J., Louviere, J. J., 2005. Some Probabilistic Models of Best, Worst, and Best-Worst Choices, Journal of Mathematical Psychology 49, 464-480.

Moore, W. L., Lehmann, D. R., 1980. Individual Differences in Search Behavior for a Nondurable, Journal of Consumer Research, 7, 296-307.

Payne, J. W., 1982. Contingent Decision Behavior, Psychological Bulletin, 92(2), 382-402.

Raghavarao, D., 1988. Constructions and Combinatorial Problems in Design of Experiments, New York: Dover.

Selnes, F., Howell, R., 1999. The Effect of Product Expertise on Decision Making and Search for Written and Sensory Information, Advances in Consumer Research, 26(1), 80-89.

Swait, J., Louviere, J. J., 1993. The Role of the Scale Parameter in the Estimation and Comparison of Multinominal Logit Models, Journal of Marketing Research, 30, 305-14.

Wu, L.-L., Lin, J.-Y., 2006. The Quality of Consumers' Decision-Making in the Environment of E-commerce, Psychology & Marketing, 23(4), 297-311.