
Title: **Individual differences in motivation to participate in online panels: the effect on reponse rate and reponse quality perceptions**
Author(s): **Elisabeth Brügggen, Martin Wetzels, Ko de Ruyter and Niels Schillewaert**
Source: **International Journal of Market Research**
Issue: **Vol. 53, No. 3, 2011**

Individual differences in motivation to participate in online panels: the effect on reponse rate and reponse quality perceptions

[Elisabeth Brügggen, Martin Wetzels and Ko de Ruyter](#)

Maastricht University

[Niels Schillewaert](#)

InSites Consulting

Introduction

Online surveys represent one of the fastest-growing segments in market research (ESOMAR 2004).

According to Inside Research, 43% of survey research in 2008 was conducted online. An Acorn study for IIR revealed that 75% of research decision makers in the US have now tried online research and expect to use it again in future. The vast majority of online consumer research is conducted making use of online access panels (Göritz 2004), which are defined as pools of people who have agreed to participate in online surveys on a regular basis (Göritz *et al.* 2002) and therefore provide benefits such as reduced costs and respondents' immediate availability (Göritz 2004). The key concern for online panels is to acquire and maintain a critical mass of members who are motivated to repeatedly participate in online surveys. While the number of respondents in panels looks impressively large, and might suggest that panel recruitment and maintenance is not a problem, ComScore Networks (2005) reports that 30% of all online surveys are completed by only 0.25% of the internet population. To broaden the respondent base, it is critical for researchers to gain knowledge about what motivates panel members to participate in online surveys.

Very little research has examined response motives closely in the context of discontinuous online panels, in which respondents opt for their own regular participation in surveys. And the existing mail survey literature (e.g. Kanuk & Berenson 1975; Yu & Cooper 1983; Yammarino *et al.* 1991; Dillman 2000) does not offer a full understanding of what motivates consumers to join and participate regularly in an online panel, for two essential reasons. First, most market research surveys conducted via web panels do not provide every participant with remuneration for participation; most panels use lotteries or donations (e.g.

www.surveypot.com/rewards.shtml) Thus, incentives are apparently not the main motivational driver behind online panel participation. Second, Helgeson *et al.* (2002) and Rogelberg *et al.* (2001) conclude that, in terms of determinants of survey response, respondent factors are at least as important as the often-studied survey design factors. However, theoretical frameworks that propose multiple response motives are scarce and largely untested (e.g. Groves *et al.* 1992). Factors such as interest, helping, obligation or giving an opinion were suggested to be important drivers of response in separate studies (Namiranian *et al.* 2006; Cape 2007; Sassinot-Uny & Gadeib 2007; Cape 2008; Walker *et al.* 2009), but no previous research has identified and concurrently investigated a more complete set of different response motives in a large empirical study. Also the impact of different response motives on response rate and response quality has not been tested.

Therefore, the overall goal of our research is twofold. First, this study develops a typology to examine response motives in depth. Second, it links the motives of online panellists to response rates and response quality perceptions. To identify the different response motives in online panels, we first develop a survey participation inventory (SPI) that systematically derives a complete set of response motives in online access panels along two dimensions: extrinsic versus intrinsic motivation and self versus other orientation. Moreover, this article contributes to the survey literature by administering the SPI in an online panel and conducting cluster analysis to identify different respondent segments. Knowledge of response motives is important because motive homogeneity in online panels can lead to biased results. The SPI offers a first step to help overcome these substantive problems. For example, if the SPI were linked to relevant background factors, it could help identify biases associated with different response motives, which researchers then might use to recognise the true nature of their samples by including response motives in their weighting or adjustment techniques. Moreover, the SPI can help researchers create customised appeals to recruit new panel members.

Conceptual development of the survey participation inventory (SPI)

The value of conducting surveys to the researchers employing them is obvious: they gain insights into the research questions they have posed and are able to formulate answers. However, the value derived by survey participants is less clear. Responding to a survey is usually time-consuming and often interrupts the individual's other activities. It is also effortful in the sense that the respondent has to think about the issues being investigated, and then formulate responses to survey questions. Most surveys do not provide remuneration for participation; even when they do, the financial incentive is a token amount (e.g. Church 1993). Nor are there other tangible or obvious benefits to respondents from participating in most cases.

Against the backdrop of such a cost–benefit analysis, it is surprising that many individuals still choose to join a panel and are willing to participate in online surveys on a regular basis. The industry is concerned that those willing to participate might be characterised as 'professional respondents', who are 'assumed to be motivated by incentive maximisation rather than intrinsic interest in survey participation, behaviour which is assumed to be inconsistent with accurate and unbiased responses' (Smith & Brown 2005, p. 1). According to Taylor (2007), the key question is whether online panellists are differently motivated. Hence, it is crucial to understand the motivations that drive individuals to participate. Understanding response motives is also important to be able to determine whether they influence response behaviour (e.g. response rate and response quality). For example, respondents in online panel surveys could be highly intrinsically motivated, or they may participate because of extrinsic reasons like winning a lottery prize.

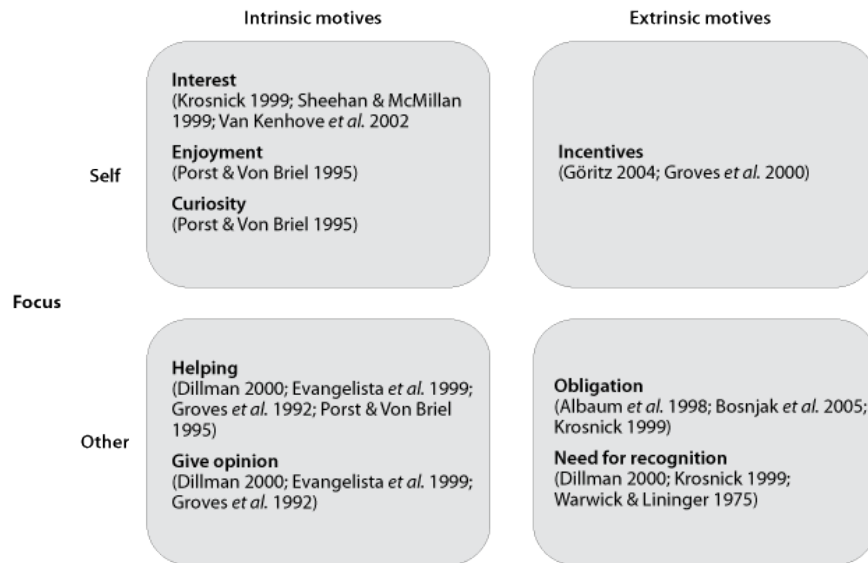


Figure 1 Conceptual framework

Even though both these motives are associated with participation, it is possible that those who are extrinsically motivated may participate less frequently, spend less effort and therefore provide answers of lower quality (e.g. Baumgartner & Steenkamp 2001). Larson and Sachau (2008) have already shown that respondents scoring high on Agreeableness, Conscientiousness, Openness and Extraversion rate products more favourably than those who score low on these dimensions. This trade-off between motivation and response quality is especially relevant in online panels, where responses from the same panel members to different surveys are used to generate information and gain insights into different research questions.

In the following sections, we systematically review and integrate evidence from existing survey literature to develop a comprehensive set of response motives along the two dimensions of (1) intrinsic vs extrinsic response motives, and (2) self or other orientation.

Extrinsic, self

According to social exchange theory, participation in surveys is a function of perceived costs, expected rewards and trust (Dillman 2000; Taylor 2007). In the context of online access panels, incentives stimulate people, who would not do so otherwise, to participate. Several authors confirm that incentives are most effective in the absence of other, intrinsic stimuli. This finding substantiates the belief that a subgroup of respondents participates because of monetary incentives (e.g. Groves *et al.* 2000; Namiranian *et al.* 2006). The level of incentives is also related to the response quality, since research has shown that lower than normal incentives lead to lower product ratings (Larson & Sachau 2008).

Extrinsic, other

In addition to incentives, non-monetary returns, such as recognition, are frequently mentioned as factors that provide rewards to respondents. Dillman (2000), for example, states that being considered positively by others and receiving positive regard provides value to many people. Similarly, Warwick and Lininger (1975) and Krosnick (1999) mention that gratification as a result of the successful performance of their role motivates respondents to participate. Those who agree to join an online access panel also may feel obliged to participate in subsequent survey requests (e.g. Albaum *et al.* 1998). Bosnjak *et al.* (2005) ascertain that moral obligation similarly plays an important role in predicting participation intentions in online surveys.

Krosnick (1999) further mentions social responsibility as a driver of survey participation.

In contrast to incentives, respondents who are motivated by a need for recognition or a sense of obligation focus less on their own financial benefits than on the value they derive from the interaction with the researcher and their adherence to social norms. Therefore, need for recognition and obligation can be classified as extrinsic, other motives.

Intrinsic, self

Several researchers advance intrinsic motives such as enjoyment, curiosity or interest as important drivers of survey response, and provide evidence that when respondents perceive a topic as salient, they are more likely to return the questionnaire (e.g. Sheehan & McMillan 1999; Van Kenhove *et al.* 2002; Cape 2007; Walker *et al.* 2009). Similarly, other researchers suggest curiosity as a main driver of survey participation. Porst and von Briel (1995) report that 14.9% of their respondents indicated interest and curiosity as their main stimulus for panel participation. In addition, they find that 9% report enjoyment as the main driver. Although this number may seem rather low, several other authors state that enjoyment increases for online surveys (e.g. McDonald & Adam 2003). The novelty of the research medium; the inclusion of colour, graphics and sound; and respondents' ability to answer the questionnaire at their convenience make online surveys more enjoyable. Therefore, we consider interest, enjoyment and curiosity all motives that provide an inherent intrinsic satisfaction, and classify them as intrinsic, self.

Intrinsic, other

An obvious participation motivation exists for people who like to voice their opinion on a variety of matters. Respondents driven by this type of motivation feel honoured and believe they can have an impact when they voice their opinion. An invitation to participate in a survey can trigger this type of motivation by including statements such as 'having your opinion count' or 'make your voice heard' (Groves *et al.* 1992; Dillman 2000). Evangelista *et al.* (1999) find that 17.1% of Australian respondents report they are mainly motivated by the idea that their opinion counts. In addition, several authors suggest that respondents feel a sense of altruism or helping when they respond to a survey request (Groves *et al.* 1992); both Dillman (2000) and Porst and von Briel (1995) list 'asking for help' as a reason for participation. On the basis of a content analysis of open-ended responses from 140 participants in a German panel study, Porst and von Briel (1995) ascertain that 31% are driven by altruistic reasons. Similarly, Evangelista *et al.* (1999) find that helping ranks as the second most important self-reported reason for participating in surveys in Australia and Hong Kong. Thus, giving an opinion and helping are important response motives and can be classified as intrinsic, other.

Separate studies identify all these factors in a general way, however no previous research identifies or tests a more complete set of individual differences that could drive response. Therefore, as its first aim, this study develops a survey participation inventory (SPI) through a large empirical study.

The variety of response motives also prompts us to investigate potential differences among groups of respondents. Experience with online panels shows that a particular group of respondents always participates, and these die-hard participants may have a different predisposition or motivational orientation towards survey participation (Huizing *et al.* 2007). Therefore, we use cluster analysis to identify different respondent segments on the basis of the type of motivation they report. This clustering might imply, for example, that even though a sample is representative in terms of demographics, an over-representation of highly motivated respondents still affects the results. In that case, panel managers should obtain relevant information about potential motivational clusters so that they can use this better insight to create weighting or adjustment

techniques (see, e.g., procedure proposed by Huizing *et al.* 2007).

Research design and methodology

No existing scales from survey literature measure the response motives that we identify in the typology. Therefore, we develop the SPI specifically to identify individual differences in why people participate in online panels. In a first step, we conduct 14 in-depth interviews with members of an online panel. Next, we content-analyse the results of these interviews and find they confirm the list of eight motives developed from the typology. We present short verbatim excerpts of respondents' comments in Table 1.

Table 1 Excerpts from qualitative interviews with online panel members

Motives	Excerpts
Interest	'... Seems interesting ...' '... I am interested in marketing ...' '... I find the topics interesting ...' '... I find online surveys nice and interesting ...' '... The topics are interesting ...' '... I am just interested ...' '... I am interested in what happens around me ...' '... I am interested in the topics ...'
Enjoyment	'... I find it enjoyable ...' '... I just find it pleasurable ...' '... I just find it fun to participate ...'
Curiosity	'... I am curious; I want to know what's at hand ...' '... I have to admit, I am also a bit curious about the latest trends in marketing ...'
Give opinion	'... I appreciate that I can give my opinion ...' '... I like that I can give my opinion on a variety of matters ...' '... It is important to me that my opinion counts ...' '... I like to give my opinion ...' '... I like to give my ideas and opinions ...'
Helping	'... From University, I know how difficult it is to conduct marketing research. Therefore, I decided to help by participating ...' '... I am supporting a good cause ...'
Incentives	'... Besides the fact that I can give my opinion and I find it interesting, I also get points for participation. These points are not the most important reason for my participation, but they are a nice supplementary bonus ...' '... Sometimes, you can win something ...' '... I participate because I can get something for the points that I collect for participation ...' '... I thought it would be nice; that had also to do with the point system ...'
Need for recognition	'... I feel flattered that they are interested in my opinion ...'
Obligation	'... I feel obliged to participate. If I don't do it, no one does ...' '... I was asked to participate, so I just did ...'

Together with two market researchers, and based on our literature review, we developed an initial set of 50 questions, most of which were based on scales from similar domains, adapted to our specific research context. The questions on interest come mainly from Pierce *et al.* (2003). We gathered the enjoyment items from the intrinsic motivation inventory (IMI) and Amabile *et al.* (1994); Amabile *et al.* (1994) also serve as the source for the curiosity items. Helping items stem from existing altruism scales (e.g. Posdakoff & Mackenzie 1994). The items pertaining to giving an opinion are based loosely on the civic virtue/engagement literature (e.g. Kirlin 2002), adapted to this specific situation. We adapt questions about incentives from the compensation dimension in Amabile *et al.* (1994) and measure obligation with questions adapted from Diamond and Kashyap (1997) and de Ruyter and Wetzels (2000). Finally, the outward dimension of Amabile *et al.* (1994) provides the questions regarding recognition.

For all items, we use 7-point Likert scales that range from 'strongly disagree' (1) to 'strongly agree' (7). Three market researchers and two academic experts assessed the content validity of the items by determining whether each item was representative of its respective construct. The results indicate 408 pairwise agreements out of a total of 500 possible (inter-judge agreement of 0.816). Thus, the proportional reduction in loss (PRL) reliability measure (Rust & Cooil 1994) equals 0.98, which leaves us fairly confident about our judges' classification. Next, we attempt to validate the SPI empirically through two pretests, as described in detail in the Appendix.

Main empirical study

To validate the SPI empirically and identify potential respondent clusters, we conduct a study with one of the largest online panels in Belgium. Respondents first completed a regular market survey, and to avoid any effects due to the initial questionnaire content, we used 13 different surveys that differed significantly in subject matter, from evaluations of mobile phones, beer, cars and a variety of fast-moving consumer goods to advertising campaigns, medical foot cream, health, food supplements and public transport. We control for topic salience with a scale from Srinivasan and Ratchford (1991). Panel members participated in one prize draw per study; the prizes varied between €300 and €500, depending on the length and subject matter of the questionnaire, as well as the number of invited respondents. After they completed the initial questionnaire, respondents filled in the 32-item SPI and provided a self-assessed level of effort and response quality in completing the initial market survey (see Table 2). We also collected respondents' individual response rates, defined as the ratio of the number of times they participated to a survey request and the number of times they were invited to participate in a survey by this specific online panel.

Table 2 Survey participation inventory

I participated in this online survey ...	I participated in this online survey ...
<p>Interest</p> <p>(1) ... because I find the subject of this online survey interesting</p> <p>(2) ... because I find the topic of this survey exciting</p> <p>(3) ... because I believe the topic is of significant importance</p> <p>(4) ... because I am interested in the latest developments in marketing</p> <p>Give opinion</p> <p>(1) ... because I find it important to voice my opinion</p> <p>(2) ... because I want to share my point of view in this online survey</p> <p>(3) ... because I appreciate that I am asked to express my opinion</p> <p>(4) ... because it matters to me that I can communicate my point of view</p> <p>Curiosity</p> <p>(1) ... because I want to learn something new</p> <p>(2) ... because I like the idea of learning about the topic at hand</p> <p>(3) ... because I am fond of exploring new ideas</p> <p>(4) ... because I was curious to find out more about this topic</p> <p>Enjoyment</p> <p>(1) ... because it is fun to do</p> <p>(2) ... because I find participating in this online survey appealing</p> <p>(3) ... because I think that participating is quite enjoyable</p> <p>(4) ... because I think it is pleasurable</p> <p>Helping</p> <p>(1) ... because I want to help companies</p> <p>(2) ... because I believe it is important that I assist researchers and companies in collecting data</p> <p>(3) ... because the thought of actively helping out companies on how to improve their products and services stimulates me to participate</p> <p>(4) ... because I find it is my responsibility to support research in general</p> <p>Incentives</p> <p>(1) ... because of the incentive or prize I can win in return for my participation</p>	<p>(2) ... because I calculated that the reward would compensate my effort</p> <p>(3) ... because I support a charity goal in return for my participation</p> <p>(4) ... because the reward is important to me</p> <p>Recognition</p> <p>(1) ... because I have the feeling that I receive acknowledgement for participating</p> <p>(2) ... because I am concerned about what the researcher would think about me if I do not participate</p> <p>(3) ... because I like the thought that others recognize what a dedicated panel member I am</p> <p>(4) ... because I like the notion that others acknowledge my efforts in filling out surveys</p> <p>Obligation</p> <p>(1) ... because I feel that it is my duty to participate</p> <p>(2) ... because I feel obliged to participate since I am a registered panel member</p> <p>(3) ... because researchers and companies should be able to count on my support</p> <p>(4) ... because I feel compelled to participate</p> <p>Scale items for Effort, Response quality and Topic salience</p> <p>Effort</p> <p>(1) I put a lot of effort into filling out this online questionnaire</p> <p>(2) I tried very hard to fill out this survey</p> <p>(3) I concentrated a lot while participating in this online research</p> <p>(4) I was careful about which answer I have chosen for every question</p> <p>Response quality</p> <p>(1) I would judge my performance in filling out this questionnaire as high</p> <p>(2) I have the feeling I could answer all questions well</p> <p>(3) The quality of my answers is very high</p> <p>(4) Researchers can use my answers to draw important conclusions</p> <p>Topic salience (control variable)</p> <p>(1) I have great interest in this topic</p> <p>(2) This topic is fascinating</p> <p>(3) I like this topic</p> <p>(4) The topic interests me</p>

In total, 3815 respondents completed the SPI, resulting in a response rate of 9%. Although a low response rate might be debatable in some cases, it is not problematic in this study, because we aim to validate the SPI and provide initial evidence of respondent clusters in online panels. The respondents include 42.1% male and 57.9% female respondents, most of whom were between 26 and 55 years of age (19–25 8.9%; 26–35 21.2%; 36–45 24.0%; 46–55 35.5%; 56–65 12.8%; <65 1.7%). In terms of employment, 11.1% of the respondents worked for the government or other public authorities, 9.5% worked in healthcare, 7.4% in education, 7.1% were not professionally active, 5.3% were students, and all others were equally divided across different industries. Most respondents were married with children (45.6%), followed by married respondents without children (19.3%), single without children (12.2%), and single with children (8.5%). A further 10.5% lived with grandparents/family.

Again, we find significant deviation from multivariate normality (Mardia 1970; Srivastava 1984) (all tests $p < 0.001$) and therefore use the Satorra-Bentler-scaled c^2 statistic (c^2_{SB}). Confirmatory factor analysis of the SPI, effort and response quality provide an adequate model fit ($c^2_{SB}(695) = 14606.256$; RMSEA = 0.072; NFI = 0.950; NNFI = 0.946; CFI = 0.952; IFI = 0.952; RFI = 0.944). By examining the residuals, modification indices and loadings, we identify and exclude eight problematic items, one for each construct. The final confirmatory factor analysis offers good model fit ($c^2_{SB}(360) = 6205.834$; RMSEA = 0.065; NFI = 0.964; NNFI = 0.959; CFI = 0.966; IFI = 0.966; RFI = 0.957), with composite reliabilities ranging from 0.654 to 0.895 (interest 0.868; enjoyment 0.890; curiosity 0.811; give opinion 0.852; helping 0.895; recognition 0.654; incentives 0.802; obligation 0.690; effort 0.808; response quality 0.755).

To assess the discriminant validity of all eight constructs of the SPI, as well as the self-reported effort and response quality, we use the same method as described in pretest 2. Our determination of the discriminant validity of the SPI with effort and response quality shows that the unconstrained coefficients are superior to the constrained coefficients (effort: $\Delta c^2_{SB}(1) = 67.67$, $p < 0.001$; response quality: $\Delta c^2_{SB}(1) = 103.35$, $p < 0.001$). Among all factors in the SPI, the unconstrained coefficients are superior to the constrained coefficients ($p < 0.05$ for all Chi-square difference tests). We further examine the discriminant validity of the SPI as recommended by Bagozzi and Warshaw (1990), who state that discriminant validity between two factors occurs when their correlation is less than 1.0 by an amount greater than twice its standard error. This criterion is met, indicating the discriminant validity of the SPI.

On the basis of the different response motives identified in the typology, we also conduct a cluster analysis. Initially, we use the raw SPI scores as input, but the resulting cluster solution depicted motivation (low, medium or high levels) as dominating over the response motives, which indicates response-style effects are strongly present. In this situation, Schaninger and Buss (1986) recommend removing response-style effects by standardising the data to get a clearer, more meaningful cluster solution. Standardisation is appropriate when (1) the interpretability improves, (2) the ability to contrast clusters clearly improves, (3) clear-cut differences in relative ratings can be demonstrated within cluster profiles, (4) a priori segments are confirmed, and (5) statistically stronger relationships of cluster membership with key outcome variables emerge. Because all five criteria are met, we standardise our data using within-individual standardisation, which corrects for between-individual differences in variance and range, as well as central tendency, and is preferable to row centring or normalisation.

Clustering requires a two-step approach (Punj & Stewart 1983). First, we use the CLUSTER procedure in SAS Release 9 to conduct a hierarchical cluster analysis with Ward's minimum variance method and squared Euclidian distances. No completely satisfactory stopping rules help determine the optimal number of clusters, but Milligan and Cooper (1985) verify that the pseudo F -statistic by Calinski and Harabasz (1974) and the pseudo t^2 -statistic related to the $J_e(2)/J_e(1)$ statistic by Duda and Hart (1973) perform well. Therefore, we plot these statistics and the fusion coefficients (between sum of squares from Ward's minimum variance method) against the number of clusters, which suggests a three-cluster solution.

Second, we use the input from the hierarchical cluster analysis as input for the non-hierarchical cluster analysis. In accordance with the procedure recommended by Punj and Stewart (1983), we randomly split the 3815 cases into an analysis sample and a validation sample. The analysis sample generated possible alternative cluster solutions, with the centroids of the hierarchical cluster analysis serving as starting seeds for the K-means clustering algorithm. The FASTCLUS procedure in SAS Release 9, which employs nearest centroid sorting, assists us in this effort.

To cross-validate the different cluster solutions, we assign each observation from the validation sample to the nearest seed and update the cluster seeds. Then, we assign each observation without updating seeds and compare the two cluster

solutions. Milligan and Cooper (1986) recommend the adjusted Rand index as the index of choice and, as we show in Figure 2, the adjusted Rand index for the three- and four-cluster solutions are very high. Because the pseudo F -statistic, the pseudo t^2 -statistic and the fusion coefficients all indicate a three-cluster solution and the results proved richer in contrast and content, we choose the three-cluster solution.

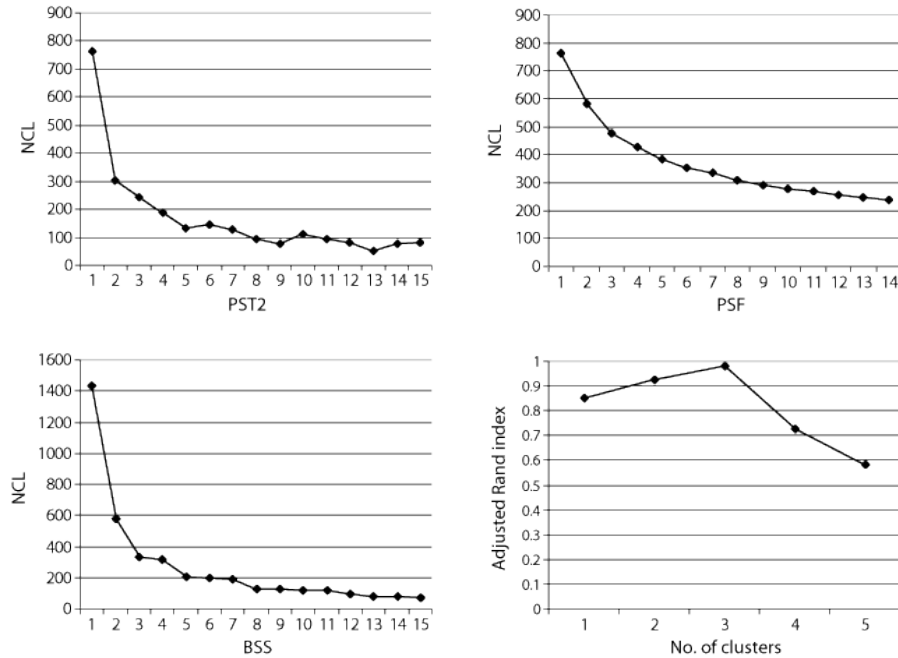


Figure 2 Pseudo t^2 -statistic, F -statistic, fusion coefficient and Rand index

To verify this solution and examine whether the SPI reliably separates different clusters, we perform discriminant analysis. The normality of the data reveals no serious violations of univariate normality. We consider whether the discriminant analyses replicate and validate the assignment of respondents to the various clusters based on their SPI scores. A comparison of the discriminant and cluster solutions reveals 90% agreement. In addition, we examine the predictive validity of the discriminant analysis in grouping respondents on the basis of their SPI scores. This cross-validation, in which we use an analysis and a validation sample, results in an agreement score of 99%. Hence, the three clusters significantly differ along the SPI dimensions, and SPI scores reliably assign respondents to the proper clusters.

After we determined the proper number of clusters, we pooled the data to use as input into K-means cluster analysis. Moreover, we subject the clusters to a series of ANOVAs using the Games-Howell post hoc test to compare the different groups, as implemented in SPSS release 13. We provide a description of the final clusters and the ANOVA results in Table 3. On the basis of the differences we find in these analyses, we describe respondents in the three clusters as follows.

1. *Voicing assistants*: 27% of the sample are motivated mainly by intrinsic, other response motives. Both giving an opinion and helping are extremely important and provide the only dominant response motives for this cluster. All other response motives are negatively or unrelated to motivation. Their response rates are lower than those of the third cluster (81.86%).
2. *Reward seekers*: these respondents (25%) participate mainly because of the incentives that they receive for their participation. All other motives except giving an opinion (0.366) relate negatively. This cluster reveals the lowest response rate (80.22%) and lowest levels of self-reported effort and performance. Respondents in this cluster are relatively young (38.58 years), and only 56.7% have children.

3. *Intrinsics*: respondents in the largest cluster (48%) are motivated by multiple intrinsic motives. Although enjoyment and giving an opinion are the strongest response motives, interest, curiosity and helping also positively relate to motivation. However, incentives are very negatively related and therefore not important at all. This cluster has the highest response rate. Respondents in this cluster are older and have more children.

Table 3 Cluster descriptors and results

Means	Cluster 1 Voicing assistants 1015		Cluster 2 Reward seekers 945		Cluster 3 Intrinsics 1784	
	Stand.	Unstand.	Stand.	Unstand.	Stand.	Unstand.
	Interest	-0.311	4.000	-0.210	3.800	0.245
Enjoyment	0.043	4.522	-0.437	4.735	0.500	5.554
Curiosity	-0.289	3.982	-0.032	4.050	0.323	5.265
Give opinion	0.635	5.374	0.366	4.644	0.548	5.634
Helping	0.652	5.388	-0.086	3.971	0.335	5.316
Incentives	-0.230	4.077	0.609	4.890	-0.818	3.475
Need for recognition	-0.592	3.574	-0.583	3.280	-0.823	3.479
Obligation	-0.094	4.550	-0.500	3.360	-0.309	4.260
Response rate	81.86% ^A		80.22% ^A		85.26% ^B	
Response quality						
Effort	4.52 ^A		4.38 ^B		4.52 ^A	
Performance	4.86 ^A		4.65 ^B		4.91 ^A	
Age	40.66 ^A		38.58 ^B		41.32 ^C	
Gender						
Female	56.3%		57.8%		58.9%	
Male	43.7%		42.2%		41.1%	
Children						
Yes	61.9%		56.7%		67.9%	
Top three occupations						
#1	Public sector employed (11.0%)		Healthcare and social services (10.2%)		Public sector employed (11.9%)	
#2	Education (9.0%)		Public sector employed (9.8%)		Healthcare and social services (9.8%)	
#3	Healthcare and social services (8.9%)		Education (9.2%)		Other (9.8%)	

^{A,B,C} Different subscripts indicate that the clusters are significantly different from each other at $p < 0.0$.

Discussion

This article contributes to a greater understanding of why people participate in online surveys. As we mentioned previously, many researchers have focused on the design of surveys and neglected individual differences in the motivations that stimulate respondents to participate. The thoroughly developed SPI provides a cohesive tool that reliably measures panel members' motivation to participate in online market research, and thus this study offers more insights by identifying the relevance of response motives for different respondent clusters. We find in particular that the incentives cluster is the smallest, which implies that incentives do not offer an important response motive overall. Respondents motivated mainly by incentives have the lowest response rates and levels of self-reported effort and response quality. It thus seems that people that respond for the love of money or other rewards love earning it the easy way.

In contrast, intrinsics participate more than reward seekers or voicing assistants, and their level of self-reported effort and performance is relatively higher. Interestingly, this is the largest group in our sample. This suggests that online surveys are

mainly filled out by highly intrinsically motivated respondents, whereas, ideally, response motives in a panel should be evenly spread in order to avoid a bias.

A note on response rates: even though high response rates are typically desirable since the resulting sample is more likely to represent the overall target population, this is not necessarily true for research conducted via online access panels. The effective cooperation/recruitment rate using random offline contact is around 1%.^[1] Average response rates of panellists (e.g. 85.26% for intrinsics) are therefore already calculated for people that are highly motivated to join a panel to begin with. Hence, our findings illustrate the problem of obtaining sample diversity and representativeness.

The representativeness of online surveys remains a recurring question for everyone who conducts online surveys. Yet, prior to now, representativeness has mainly been investigated in terms of demographics, which has led to sophisticated weighting schemes used to match samples and populations of interest. However, our findings note that, even though an online sample might be representative in terms of demographics, respondents may be overly motivated or strongly driven by a limited set of homogenous response motives, which can have a severe impact on survey results. By establishing the relationship between different response motives and objective response quality, researchers could begin to identify the biases associated with different response motives. With knowledge of the relationship among response motives and biases, online panels can recover the true nature of their samples by adjusting their data to create a better mix of response motives (e.g. by propensity + motivation weighting or sampling (Huizing *et al.* 2007)).

Our findings also enrich previous work on response theories. For example, Groves *et al.* (2000) develop leverage-saliency theory, which acknowledges that respondents differ in their assessments of the relevance of a particular survey request, but they do not assess the content and strength of that leverage. Our framework sheds more light on these individual properties, and the SPI offers an effective tool marketing researchers can use to measure the type and strength of motivation among respondents. In turn, they can match the appropriate type of motivation with the corresponding design stimuli by using statements such as 'your opinion counts' (Dillman 2000), 'Tell us what you think' (www.opinionworld.com/) or 'curious about how you can influence future product development?' (www.opinionworld.com/) in the subject line of email invitations, the invitation wording or the survey design. In line with the leverage-saliency theory (Groves *et al.* 2000), we posit that a fit between the appeal and the response motive should increase survey response rates.

We suggest to measure the type of motivation of respondents once and store this information together with the socio-demographic background information. This approach is in line with previous motivation research (e.g. Amabile *et al.* 1994), which suggests that respondents' type of motivation is rather stable in a given situation. The SPI could also be reduced to one item per construct, which would make it shorter and hence more useable for market researchers. Future research should verify which question for each construct reflects the content best. Even if researchers do not administer the SPI, they can change the nature of their appeals over successive waves (Groves *et al.* 2000) to reach wider audiences that contain individual differences in dominant response motives. Researchers also might use the SPI to recruit new panel members. Currently, invitations to panel members are generally undifferentiated, but unique respondents could be attracted through different statements that appeal to the different response motives. One of the largest internet panels worldwide, for example, recently started to use a banner on its entry page that displays statements such as 'Are you a curious type?', 'Care about charity?', 'Interested in the latest trends?', 'Do you have strong views?' and 'Like to win prizes?' In addition, the panel appeals to the different response motives at several other points on the site (e.g. 'Tell us what you think about a whole range of issues', 'You can win some great prizes', 'Curious how you can influence future product development?', 'Making your voice heard').

Limitations and suggestions for future research

We use a self-reported measure, not an experiment, to assess the importance of the different types of motives, and therefore our findings may be influenced by a social desirability bias. We tried to rule out this possibility by examining the Marlowe-Crowne social desirability scale in the second pretest (Crowne & Marlowe 1960) and found no significant impact on the SPI. Similar studies, such as measures of the work preference inventory by Amabile *et al.* (1994), also rely on surveys and are not considered problematic. In this case, a survey enabled us to examine why and how response stimuli work and which underlying motivations they trigger, which means we move beyond experimental designs in traditional survey literature.

It would be extremely interesting to examine how far the results transfer to other survey modes. Although we believe the SPI could be applied to offline modes, we expect differences in the level and significance of several motivations; respondents in online panels are probably more motivated to participate than are respondents to telephone, mail or mall intercepts, because they actively decided to join an online panel. Finally, it would be interesting to validate shorter versions of the SPI that market research agencies may find easier to use.

Appendix

Pretest 1

To ascertain the reliability and validity of the SPI, we pretested the 50-item questionnaire quantitatively with 149 undergraduate students, of whom 41.6% were male and 58.4% were female. All students entered a lottery draw to win one of 25 vouchers for €10.

To assess the unidimensionality of the constructs, we subjected the data to exploratory factor analysis – specifically, principal axis factoring with Oblimin rotation as implemented in SPSS release 13. When we specify the eight hypothesised factors, Bartlett's test of sphericity is significant (<0.001) and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.864. We can identify the eight factors as hypothesised, though we also observe some cross-loadings. To purify the measure, we check the item-to-total correlation per construct and delete six items whose correlations are less than 0.35. Next, we examine the internal consistency of the constructs using Cronbach's alpha, which ranges from 0.640 to 0.840 (interest 0.809; curiosity 0.847; enjoyment 0.840; give opinion 0.755; helping 0.810; recognition 0.694; incentives 0.795; obligation 0.640). To increase the Cronbach's alphas, we remove twelve items (interest 0.822; curiosity 0.852; enjoyment 0.844; give opinion 0.772; helping 0.851; recognition 0.741; obligation 0.660); thus we retain 32 items.

Pretest 2

To investigate discriminant validity, we administered the reduced 32-item SPI to members of an online university panel; in this test, we included measures that could be considered closely related to intrinsic and extrinsic motivation: the Aspirations Index (which measures extrinsic and intrinsic goals; http://www.psych.rochester.edu/SDT/measures/ai_description.php need for cognition (Areni *et al.* 1999), and a self-reported level of effort to fill out the online survey (based on the IMI). To examine whether the questions truly measure the SPI rather than a tendency to provide socially desirable reports, we also administered a short version of the social desirability scale (Crowne & Marlowe 1960). We received 111 usable responses (response rate 16%) from a sample that is 48.6% male and 51.4% female. The majority of respondents were between 19 and 35 years of age (19–25 65.2%; 26–35 26.8%; 36–45 1.8%; 46–55 2.7%; 56–65 1.8%; >65 0.9%). Most respondents were students (73.2%), and 17.9% were employed. All respondents entered a lottery draw to win one of 15 vouchers for €10.

The Cronbach's alphas ranged from 0.742 to 0.895 (interest 0.779; give opinion 0.860; enjoyment 0.742; curiosity 0.895; helping 0.824; recognition 0.819; incentives 0.883; obligation 0.809). Because we find significant deviation from multivariate normality (Mardia 1970; Srivastava 1984) (all tests $p < 0.001$), we use the Satorra-Bentler-scaled c^2 statistic (c^2_{SB}) with robust standard errors (Satorra & Bentler 1994). Confirmatory factor analysis for the eight-factor solution provides an acceptable model fit (c^2_{SB} (436) = 632.118; root mean square error of approximation [RMSEA] = 0.064; normed fit index [NFI] = 0.902; non-normed fit index [NNFI] = 0.963; confirmatory fit index [CFI] = 0.967; incremental fit index [IFI] = 0.968; relative fit index [RFI] = 0.889).

We separately assess the discriminant validity of the SPI, modelled as a second-order construct, and the Aspirations Index, need for cognition and effort, by constraining the estimated correlation parameter (Φ_{ij}) between each pair to 1 and then performing a Satorra-Bentler c^2_{SB} difference test (Satorra & Bentler 2001) on the values obtained for the constrained and unconstrained models (Anderson & Gerbing 1988). In all cases, the unconstrained model provides superior fit compared with the constrained model (need for cognition: Δc^2_{SB} (1) = 45.28, $p < 0.001$; aspiration index: Δc^2_{SB} (1) = 7.00, $p = 0.008$; effort: Δc^2_{SB} (1) = 14.34, $p < 0.001$). Because all chi-square differences are significant ($p < 0.001$), we conclude that the SPI exhibits discriminant validity.

To demonstrate that the SPI is not affected by a social desirability bias, we split the data into two groups (low/high social desirability) using a median-split procedure. Because of our small sample size, we compare the variance-covariance matrices of the two groups using the GLM procedure as implemented in SPSS release 13. Box's test of equality of the covariance matrices confirms that the observed covariance matrices of the SPI are equal across groups (Box $M = 40.728$; F (36, 39743) = 1.044; $p = 0.397$). In addition, our data reveal that the means of the SPI dimensions do not differ across the high and low groups, according to a Bonferroni-type adjusted significance level. Thus, we conclude that the SPI is not affected by social desirability.

References

- Albaum, G.S., Evangelista, F. & Medina, N. (1998) Role of response behavior theory in survey research: a cross-national study. *Journal of Business Research*, **42**, 2, pp. 115–125.
- Amabile, T.M., Hill, K.G., Hennessey, B.A. & Tighe, E.M. (1994) The Work Preference Inventory: assessing intrinsic and extrinsic motivational orientations. *Journal of Personality and Social Psychology*, **66**, 5, pp. 950–967.
- Anderson, J.C. & Gerbing, D.W. (1988) Structural equation modeling in practice: a review and recommended two-step approach. *Psychological Bulletin*, **103**, 3, pp. 411–423.
- Areni, C., Ferrell, M. & Wilcox, J. (1999) The effects of need for cognition and topic importance on the latency and extremity of responses to attitudinal inquiries. *Advances in Consumer Research*, **26**, 1, pp. 63–68.
- Aspirations Index http://www.psych.rochester.edu/SDT/measures/ai_description.php (accessed on 29 March 2011).
- Bagozzi, R.P. & Warshaw, P.R. (1990) Trying to consume. *Journal of Consumer Research*, **17**, 2, pp. 127–140.
- Baumgartner, H. & Steenkamp J.-B.E.M. (2001) Response styles in marketing research: a cross-national investigation. *Journal of Marketing Research*, **38**, 2, pp. 143–156.

-
- Bosnjak, M., Tuten, T.L. & Wittmann, W.W. (2005) Unit (non)response in web-based access panel surveys: an extended planned behavior approach. *Psychology & Marketing*, **22**, 6, pp. 489–505.
- Calinski, T. & Harabasz, J. (1974) A dendrite method for cluster analysis. *Communications in Statistics*, **3**, 1, pp. 1–27.
- Cape, P. (2007) Understanding respondent motivation. SSI White Paper.
- Cape, P. (2008) Multiple panel members: saints or sinners? *International Journal of Market Research*, **50**, 5, pp. 702–704.
- Church, A.H. (1993) Estimating the effect of incentives on mail survey response rates: a meta-analysis. *Public Opinion Quarterly*, **57**, 1, pp. 62–79.
- ComScore Networks (2005) The professional respondent problem in online survey panels today. MRA Annual Conference (1–3 June 2005).
- Crowne, D.P. & Marlowe, D. (1960) A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology*, **24**, 4, pp. 349–354.
- de Ruyter, K. & Wetzels, M.G.M. (2000) With a little help from my fans – extending models of pro-social behavior to explain supporters' intentions to buy soccer club shares. *Journal of Economic Psychology*, **21**, 4, pp. 387–409.
- Diamond, W.D. & Kashyap, R.K. (1997) Extending models of prosocial behavior to explain university alumni contributions. *Journal of Applied Social Psychology*, **27**, 10, pp. 915–928.
- Dillman, D.A. (2000) *Mail and Internet Surveys, the Tailored Design Method*. New York: Wiley.
- Duda, R.O. & Hart, P.E. (1973) *Pattern Classification and Scene Analysis*. New York: Wiley.
- ESOMAR (2004) Marketing and opinion research industry in the USA is the largest market worldwide. Online at: www.esomar.org/esomar/show/id=107403 (accessed on 14 October 2004).
- Evangelista, F., Albaum, G.S. & Poon, P. (1999) An empirical test of alternative theories of survey response behavior. *Journal of the Market Research Society*, **41**, 2, pp. 227–244.
- Görizt, A.S. (2004) Recruitment for online access panels. *International Journal of Market Research*, **46**, 4, pp. 411–425.
- Görizt, A.S., Reinhold, N. & Batinic, B. (2002) Online panels. In B. Batinic & U.-D. Reips (eds) *Online Social Sciences*. Seattle: WA Hogrefe & Huber, pp. 27–47.
- Groves, R.M., Cialdini, R.B. & Couper, M.P. (1992) Understanding the decision to participate in a survey. *Public Opinion Quarterly*, **56**, 4, pp. 475–495.
- Groves, R.M., Singer, E. & Corning, A. (2000) Leverage-saliency theory of survey participation. *Public Opinion Quarterly*, **64**, 3, pp. 299–308.
- Helgeson, J.G., Voss, K.E. & Terpening, W.D. (2002) Determinants of mail survey response: survey design factors and respondent factors. *Psychology and Marketing*, **19**, 3, pp. 303–328.

Huizing, L., Van Ossenbruggen, R., Muller, M., Van der Wal, C., Lensvelt-Mulders, G.J.L.M. & Hubregtse, M. (2007) Improving panel sampling: embedding propensity scores & response behavior in sampling frames. Panel Research 2007: ESOMAR World Research Conference, Orlando (28–30 October 2007).

Intrinsic Motivation Inventory (IMI) http://www.psych.rochester.edu/SDT/measures/IMI_description.php (accessed on 29 March 2011).

Kanuk, L. & Berenson, C. (1975) Mail survey and response rates: a literature review. *Journal of Marketing Research*, **12**, 4, pp. 440–453.

Kirlin, M.K. (2002) Understanding how organizations affect the civic engagement of adolescent participants. *New Directions for Philanthropic Fundraising*, **2002**, 38, pp. 19–35.

Krosnick, J.A. (1999) Survey research. *Annual Review of Psychology*, **50**, 1, pp. 537–567.

Larson, A.J. & Sachau, D.A. (2008) Effects of incentives and the big five personality dimensions on internet panellists' ratings. *International Journal of Market Research*, **51**, 5, pp. 687–706.

Mardia, K.V. (1970) Measures of multivariate skewness and kurtosis with applications. *Biometrika*, **57**, pp. 519–530.

McDonald, H. & Adam, S. (2003) A comparison of online and postal data collection methods in marketing research. *Marketing Intelligence & Planning*, **21**, 2, pp. 85–95.

Milligan, G.W. & Cooper, M.C. (1985) An examination of procedures for determining the number of clusters in a data set. *Psychometrika*, **50**, 1, pp. 159–179.

Milligan, G.W. & Cooper, M.C. (1986) A study of the comparability of external criteria for hierarchical cluster analysis. *Multivariate Behavioral Research*, **21**, 4, pp. 441–458.

Namiranian, L., Moskowitz, H.R. & Gofman, A. (2006) Motivations to join. Panel Research 2006: ESOMAR World Research Conference, Barcelona (27–29 November 2006).

Pierce, W.D., Cameron, J., Banko, K.M. & So, S. (2003) Positive effects of rewards and performance standards on intrinsic motivation. *The Psychological Record*, **53**, 4, pp. 561–579.

Porst, R. & von Briel, C. (1995) Wären Sie Vielleicht Bereit, Sich Gegebenenfalls Noch Einmal Befragen Zu Lassen? Oder: Gründe Für Die Teilnahme an Panelbefragungen. *ZUMA-Arbeitsbericht Nr. 95/04*, pp. 1–19.

Posdakoff, P.M. & Mackenzie, S.B. (1994) Organizational citizenship behaviors and sales unit effectiveness. *Journal of Marketing Research*, **31**, 3, pp. 351–363.

Punj, G. & Stewart, D.W. (1983) Cluster analysis in marketing research: review and suggestions for application. *Journal of Marketing Research*, **20**, 2, pp. 134–148.

Rogelberg, S.G., Fisher, G.G., Maynard, D.C., Hakel, M.D. & Horvath, M. (2001) Attitudes toward surveys: development of a measure and its relationship to respondent behavior. *Organizational Research Methods*, **4**, 1, pp. 3–25.

-
- Rust, R.T. & Cooil, B. (1994) Reliability measures for qualitative data: theory and implications. *Journal of Marketing Research*, **31**, 1, pp. 1–14.
- Sassinot-Uny, L. & Gadeib, A. (2007) Panel satisfaction index: quality target for online access panel owners? Panel Research 2007: ESOMAR World Research Conference, Orlando (28–30 October 2007).
- Satorra, A. & Bentler, P.M. (1994) Corrections to test statistic and standard errors in covariance structure analysis. In A. von Eye & C.C. Clogg (eds) *Analysis of Latent Variables in Developmental Research*. Newbury Park, CA: Sage Publications, pp. 399–419.
- Satorra, A. & Bentler, P.M. (2001) A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika*, **66**, 4, pp. 507–514.
- Schaninger, C.M. & Buss, W.C. (1986) Removing response-style effects in attribute-determinance ratings to identify market segments. *Journal of Business Research*, **14**, 3, pp. 237–252.
- Sheehan, K.B. & McMillan, S.J. (1999) Response variation in e-mail surveys: an exploration. *Journal of Advertising Research*, **39**, 4, pp. 45–54.
- Smith, R. & Brown, H.H. (2005) Assessing the quality of data from online panels: moving forward with confidence. Online at: www.hisbonline.com/pubs/HI_Quality_of_Data_White_Paper.pdf (accessed on 10 May 2010).
- Srinivasan, N. & Ratchford, B.T. (1991) An empirical test of a model of external search for automobiles. *Journal of Consumer Research*, **18**, 2, pp. 233–242.
- Srivastava, M.S. (1984) Measure of skewness and kurtosis and a graphical method for assessing multivariate normality. *Statistical Probability Letters*, **2**, 5, pp. 263–367.
- Taylor, E. (2007) Are panelists employees or respondents? Panel Research 2007; ESOMAR World Research Conference, Orlando (28–30 October 2007).
- Van Kenhove, P., Wijnen, K. & De Wulf, K. (2002) The influence of topic involvement on mail-survey response behavior. *Psychology & Marketing*, **19**, 3, pp. 293–301.
- Walker, R., Pettit, R. & Rubinson, J. (2009) The foundations of quality initiative: a five-part immersion into the quality of online research. *Journal of Advertising Research*, **49**, 4, pp. 464–485.
- Warwick, D.P. & Lininger, C.A. (1975) *The Sample Survey: Theory and Practice*. New York: McGraw-Hill.
- www.opinionworld.com (accessed on 29 March 2011).
- www.surveypot.com/rewards.shtml (accessed on 29 March 2011).
- Yammarino, F.J., Skinner, S.J. & Childers, T.L. (1991) Understanding mail survey response behavior. *Public Opinion Quarterly*, **55**, 4, pp. 613–639.
- Yu, J. & Cooper, H. (1983) A quantitative review of research design effects on response rates to questionnaires. *Journal of*

Marketing Research, **20**, 1, pp. 36–44.

About the authors

Elisabeth Brügger works as an Assistant Professor at the Department of Marketing & Supply Chain Management at Maastricht University. She holds an MSc in Economics and a PhD in Marketing from Maastricht University. In fall 2004 she was a visiting scholar at Arizona State University. She has published in the *Journal of Marketing*, *Journal of Service Research*, the *Journal of Interactive Marketing* and *Marketing Letters*, among others. Her research focuses on services marketing and Internet-based marketing research.

Martin Wetzels is Professor of Supply Chain and Marketing Research in the Department of Marketing and Supply Chain Management at Maastricht University, the Netherlands. His main research interests are customer satisfaction and dissatisfaction, customer value, services marketing, business-to-business marketing, (online) marketing research, supply chain management, cross-functional cooperation, e-commerce, new product development, technology infusion in services and relationship marketing. His work has been published in *MIS Quarterly*, *Management Science*, *Journal of Marketing*, *Journal of the Academy of Marketing Science*, *Journal of Retailing*, *Journal of Service Research*, *Information & Management*, *Marketing Letters*, *International Journal of Research in Marketing*, *Journal of Business Research*, *Journal of Interactive Marketing*, *Journal of Economic Psychology* and *Journal of Management Studies*. He has contributed more than 80 papers to conference proceedings.

Ko de Ruyter is Professor of Marketing in the Department of Marketing & Supply Chain Management at Maastricht University. He has published six books and numerous scholarly articles in *Journal of Marketing*, *Management Science*, *Journal of Consumer Research*, *Journal of Retailing*, *Journal of the Academy of Marketing Science*, *International Journal of Research in Marketing*, *Decision Sciences*, *Organization Science*, *Marketing Letters*, *Journal of Management Studies*, *Journal of Business Research*, *Journal of Economic Psychology*, *Journal of Service Research*, *International Journal of Service Industry Management*, *Information and Management and Accounting*, *Organisation and Society*, among others. His research interests concern international service management, e-commerce and customer relationship management.

Prof. Dr Niels Schillewaert is Associate Professor of Marketing at the Vlerick Leuven Gent Management School and Managing Partner of InSites Consulting. At InSites Consulting he manages consulting and research projects and is the Director of the research and development department. Niels was awarded for his research at Pennsylvania State University and has published in many leading scientific journals.

Address correspondence to: Dr Elisabeth Brügger, Department of Marketing & SCM, Maastricht University, PO Box 616, 6200 MD Maastricht, The Netherlands.

Email: e.bruggen@maastrichtuniversity.nl

[1] We thank reviewer 2 for raising this interesting point.

www.warc.com

All rights reserved including database rights. This electronic file is for the personal use of authorised users based at the subscribing company's office location. It may not be reproduced, posted on intranets, extranets or the internet, e-mailed, archived or shared electronically either within the purchaser's organisation or externally without express written permission from Warc.

