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Validation of the Voluntary Participation in Online Surveys Scale

A comprehensive understanding of participants' motives to complete web-based surveys has the potential to improve data quality. In this study we tested the construct validity of a scale developed to measure motivation to participate in web-based surveys. We expected that 7 different motivations observed in our previous study will form a 3-factor structure, as predicted by Self-Determination Theory. This web-based questionnaire study comprised 257 participants completing the Voluntary Participation in Online Studies Scale. Their responses to 21 items underwent a principal component analysis and confirmatory factor analysis. As we expected, three factors were identified: intrinsic motivation, extrinsic motivation and amotivation. In line with Self-Determination Theory there are three distinct groups of motives among web-surveys participants with amotivation as an understudied motivational state. We discuss the results suggesting which types of motivation might lead to higher quality of data with an emphasis on possible negative effects of amotivation.

Key words: motivation, response rate, web-based surveys, Self-Determination Theory

Motivation to participate in online surveys has mostly been conceptualized quantitatively as motivational strength (Denissen, Neuman, & van Zalk, 2010; Kraut, Olson, Banaji, Bruckman, Cohen, & Couper, 2004) rather than in qualitative terms reflecting different motives of participants. The emergence of the Internet as a prominent research tool increased the potential for greater diversity among research participants. However response rates to internet-based studies tend to be lower compared to those conducted by other modes of delivery such as post or telephone (Kraut et al., 2004). Thus, the large sample sizes frequently reported in web-based surveys may result from the high number of individuals invited to participate rather than a high response rate to the invitation. Consequently, the sample size does not necessarily reflect its representativeness. Further research is needed to better understand the potential motives that might be addressed when inviting internet user to complete a survey.

Studies on methods to increase response and retention rates have been mostly pragmatic and concerned with recruitment techniques and overall effectiveness (Singer, 2002) rather than exploring specific motivations that might explain why specific techniques produce effects.

Consequently, in this body of research only basic distinctions have been made between different aspects of motivation such as intrinsic versus extrinsic motivation (see Göritz, 2010 for a review). For instance, incentives offered by researchers (e.g. loyalty points, prepaid access to electronic information or e-money) increased extrinsic motivation and decreased intrinsic motivation (Singer, 2002).

However participants' decisions to complete web-based surveys might be influenced by a wider variety of motives. For instance, specific incentives might give rise to particular motives: donations to charity on behalf of a respondent – altruism; getting entered into a lottery – entertainment; access to electronic information – curiosity; and individualized feedback – self-exploration. In our previous study (Kaczmarek et al., 2011) we explored and categorized different motives to participate in web-based surveys. Our qualitative analyses revealed 7 categories: altruism, boredom, curiosity, entertainment and relaxation, impulsive behavior, influence of other people, self-exploration, and self-expression. Moreover, a relatively large number of participants who completed the survey failed to indicate any intrinsic or extrinsic goal suggesting that the dichotomy of intrinsic and extrinsic motivation

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may be insufficient to understand motivation to participate in web-based research studies.

In the present study we used Self-Determination Theory (SDT) (Ryan & Deci, 2000) as wider framework to understand the more parsimonious structure of the variety of motives identified among web-based surveys participants. SDT distinguishes three types of motivation: intrinsic motivation, extrinsic motivation, and amotivation. Intrinsic motivation has an internal locus of causality and is associated with interest, enjoyment or satisfaction, whereas extrinsic motivation reflects an instrumental approach towards an activity and can result from external rewards or compliance. Amotivation is regarded as a non-regulation state guided by non-intentional and usually automatic and effortless processes. Amotivated individuals act without a conscious intent. They perform an activity in a mechanical manner, often indicative of lack of interest or involvement. Thus, amotivation might explain why some participants fail to report intrinsic or extrinsic motives for participation in web-based surveys (Kaczmarek et al., 2011).

Aims and hypotheses

The aim of the current study was to test the construct validity of a scale measuring motivations to participate in web-based surveys. Specifically, we expected that the previously identified categories of motivation among subjects in web-based surveys would form a more parsimonious factorial solution. We expected a three-factor model comprising intrinsic motivation, extrinsic motivation and amotivation as predicted by SDT (Ryan & Deci, 2000).

Participants and measures

Data from 257 individuals was collected as part of a larger web-based study on well-being among internet-users (unpublished). The majority of participants (85%) were recruited through invitations placed on popular internet message boards. Moreover, following survey completion participants were asked to invite peers to take part in the study accounting for the remaining 15% of the sample. The invitation was viewed by 1046 individuals and 718 started the survey without completing.

Participants who completed the study were between 18 and 64 years old ($M = 26.00$, $SD = 8.40$) with 72% women, 26% men and 2% did not report their gender. Higher M.A. education was completed by 26% of participants, B.A. by 16%, secondary education by 47%, and 5% completed middle school. All individuals provided informed consent prior to participation.

The preceding well-being part of the larger study comprised The Curiosity and Exploration Inventory – II (Kashdan, Gallagher, Silvia, Winterstein, Breen, Terhar, & Steger, 2009), Steen Happiness Index (Seligman, Parks, Steen, & Peterson, 2005; Kaczmarek, Stanko-Kaczmarek, & Dombrowski, 2010) and Center for Epidemiological

Studies – Depression (Radloff, 1977; Kaniasty, 2003). The questionnaires were in Polish.

At the end of the survey participants completed the Voluntary Participation in Online Surveys Scale. Based on our previous study (Kaczmarek et al., 2011) identified motives were measured using 3 items derived from the participants' most frequent responses. This resulted in 21 items that were presented in a random order (see Table 1). Items were rated from 1 ('very slightly or not at all') to 5 ('extremely'). Instructions to this measure read: 'Below is a list of different reasons why people may decide to participate in online surveys. Try to indicate, why you decided to participate in this study. Read each of the possible reasons and assess, to what extent it reflects your personal motives for completing this survey'.

Analytic strategy

For the purpose of cross-validation, we divided the sample into two equally numerous groups by means of random sampling. One group was used for exploratory and the other for confirmatory analyses.

Using data from the *rstfisubsample* we performed the principal components analysis with varimax rotation to determine whether the 21 items reflecting 7 motives formed a more parsimonious structure. In determining the number of factors we relied on eigenvalues above 1 and also analyzed the scree-plot. Then, we employed a confirmatory factor analysis on the second subsample to estimate the χ^2 of the structure identified through the principal components analysis. In line with recommendations for measurement models (Landis, Beal, & Tesluk, 2000), we used item parcels instead of single items. In addition, we used Satorra-Bentler scaled Chi square correction for non-normality, which provides better power when dealing with interval data such as the 5-point response scales of the current study (Satorra & Bentler, 1988). To evaluate overall model fit, several fit indices were used: the goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). The GFI greater than .95, and AGFI greater than .90 indicate a good fit, whereas an RMSEA between 0 and .05 indicates a good fit (Hu & Bentler, 1998; Marsh, Hau, & Wen, 2004). A CFI between .97 and 1.00 indicates a good fit and one between .95 and .97 an acceptable fit (Schermelleh-Engel, Moosbrugger, & Muller, 2003). Confirmatory factor analysis was performed with Lisrel 8.80 (Jöreskog & Sörbom, 2006) and principal component analysis with SPSS 18.00 (Arbuckle, 2009).

Results

In line with our predictions, the exploratory factor analysis revealed that the 7 motivational categories that were represented in the pool of items could be reduced to 3 more parsimonious factors (see Table 1): intrinsic

Table 1. Factor loadings of items designed to assess motivation for participation in web-based studies

	<i>Factors</i>		
	1	2	3
<i>Factor 1: Intrinsic motivation</i>			
Seeking to share my experience	.81		
Seeking to express my opinion	.72		
For fun	.73		
Seeking to learn something about myself	.78		
Trying something new	.69		
Interest in the survey	.59		
Finding pleasure in completing surveys	.62		
For relaxation	.49		
Pure curiosity	.31		
<i>Factor 2: Extrinsic motivation</i>			
Somebody's request		.77	
Somebody's expectations		.81	
Seeking to help other people		.60	
Feeling the obligation		.60	
Seeking to do something useful		.47	
Other people's influence		.40	
<i>Factor 3: Amotivation</i>			
Through chance			.61
The feeling of monotony			.65
Regular boredom			.55
Some free time			.59
Just seeing the invitation			.53
A spontaneous impulse			.35
Eigenvalue	4.27	2.63	2.53
Variance explained (%)	20.35	12.52	12.02
Cronbach's alpha	.84	.75	.68

motivation (20.35% of variance explained), extrinsic motivation (12.52%), and amotivation (12.02%). Together these three factors accounted for a total of 44.89% of the variance in motivation.

The results of confirmatory factor analysis revealed a good fit of the 3-factor structure to the empirical data with Satorra-Bentler scaled $\chi^2 = 83.48$, $df = 41$, $p < .01$, GFI = .98, AGFI = .97, CFI = .95, RMSEA = .09, RMSEA 95% CI [.062; .12]. The factor loadings ranged from .73 to .93 for intrinsic motivation, from .61 to .85 for extrinsic motivation and from .63 to .86 for amotivation. The intercorrelations between the three factors in the measurement model ranged from -.01 to .41 indicating relative independence of these three factors.

Discussion

The aim of this study was to test the construct validity of a scale developed to measure motivation to participate in web-based surveys. We searched for a more parsimonious structure predicted by SDT (Ryan & Deci, 2000), of the 7 motives identified in our previous study (Kaczmarek et al., 2011). The current study supports the notion that the concepts of intrinsic motivation and extrinsic motivation do not cover the whole complexity of motivations observed among internet users who decide to complete a web-based questionnaire. We identified the additional distinct factor of amotivation that drives behavior through associative links rather than deliberative processes.

It might be tested in future studies whether participants reporting the state of amotivation may produce reliable and mindful responses when compared to intrinsically or extrinsically motivated participants. Further studies might test empirically whether amotivation leads to inferior quality of data as might be expected in line with SDT. If such a hypothesis received support, then actions to discourage participants lacking positive motivation (intrinsic or extrinsic) could be employed in research protocols in order to trade quality for quantity of collected data.

Intrinsic motivation most closely attributed to flow (Nakamura & Csikszentmihalyi, 2002; Rettie, 2001) emerged as the factor explaining the largest amount of variation in motivations. Flow or optimal experience is a mental state in which a person is fully involved in and focused on an activity (Nakamura & Csikszentmihalyi, 2002). We might thus predict that the state of flow would promote high data quality. Further studies could test if intrinsic motivation contributes to more reliable and valid data compared to the other types of motivation, and if it does, flow theory might provide an additional framework that web-based survey designers could draw on in order to balance the challenge of promoting optimal attentional focus during completing surveys.

This current study and the respective scale cover only the motivation of those participants who decided

to participate and consequently completed a web-based study. It specifically focuses on those motives that drive towards participation in web-based surveys in order to advance our understanding of survey completion behavior. Complementary research might in addition focus on motives leading to the decision to decline participation. As previously mentioned, the response rates in web-based studies are relatively low (Kraut et al., 2004). In accordance, only 68% of those who opened the invitation started the current study, and only 25% completed it. These numbers suggest the need for studies on samples that would comprise both potential respondents and non-respondents.

In sum, our study is an initial step towards a more comprehensive understanding of individuals' motivation for web-based survey participation which has the potential to lead to interventions to increase data quality. More specifically we offer a psychometrically sound and theory-based instrument for measuring participants motivations to complete web-based surveys.

Disclosure Statement

The authors have no conflict of interest.

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Appendix A.

The Polish version of the Voluntary Participation in Online Surveys Scale (VPOSS) [Skala Motywacji do Udziału w Badaniach Internetowych, VPOSS-PL]

Poniższa lista zawiera różne powody, dla których ludzie mogą decydować się na udział w badaniu internetowym. Spróbuj określić, dlaczego zdecydowałeś/-aś się na udział w tym badaniu. Przeczytaj każdy z możliwych powodów i określ, w jakim stopniu zgadza się on z Twoimi własnymi motywami udziału w badaniu? Prosimy bądź tak szczerzy/-a, jak to tylko możliwe.

- 1 - zupełnie nie zgadza się
- 2 – raczej nie zgadza się
- 3 – ani się zgadza ani nie zgadza
- 4 - raczej się zgadza
- 5 – w pełni się zgadza

1. Czysta ciekawość
2. Chęć zrobienia czegoś pożytecznego
3. Zwykła nuda
4. Chęć zrobienia czegoś nowego
5. Chęć podzielenia się własnymi doświadczeniami
6. Spontaniczny impuls
7. Ochota na chwilę odprężenia
8. Czyjeś oczekiwania
9. Zainteresowanie badaniem
10. Chęć wyrażenia swoich opinii i poglądów
11. Czerpanie przyjemności z wypełniania ankiet
12. Poczucie monotonii
13. Przypadek
14. Wolna chwila
15. Po prostu widok zaproszenia
16. Chęć dowiedzenia się czegoś o sobie
17. Dla zabawy
18. Czyjaś prośba
19. Poczucie obowiązku
20. Wpływ innych osób
21. Chęć udzielenia pomocy