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Abstract

Purpose – The purpose of this paper is to investigate the antecedents of inconsistent responding in web surveys. Consistency of responses to personal information questions and scale items were compared, and the influence of perceived social support, social appearance anxiety, academic self-efficacy and social networking habits on inconsistent responding was examined.

Design/methodology/approach – A gaming application on Facebook was used to collect data. A repeated-measures design was conducted with 806 respondents in two online survey administrations. After inconsistent responses provided by the same nicknames were identified, consistent and inconsistent respondents were compared with regard to their responding patterns and research variables.

Findings – Findings revealed that 45.7 percent of participants misreported their personal information such as age, educational status and gender. Participants were relatively consistent in their responses to attitude scales. Perceived social support led to inconsistent responding whereas social appearance anxiety and academic self-efficacy was not influential in response patterns. A binary logistic regression revealed that perceived family support, number of Facebook friends and Facebook use duration successfully distinguished inconsistent respondents from consistent respondents.

Research limitations/implications – The sample frame has several limitations insofar as the study only addressed a unique gaming application on Facebook. Thus, unique interactive characteristics of the current context may have altered the nature of responding.

Practical implications – Practitioners should not rely on the personal information provided by online survey respondents to conduct parametric tests, whereas responses to online attitude scales seemed relatively consistent.

Originality/value – The principal contribution of the paper is that findings have provided insights into the current status of response patterns in online survey administrations. In addition, the paper highlights the importance of individual variables which influence the consistency of responses.

Keywords Online surveys, Measurement, Social networks, Inconsistent responding, Perceived social support, Satisficing

Paper type Research paper

Introduction

Most of the society is becoming to have internet access and competence throughout the world, which seem to contribute to the volume of large scale survey research. The convenience of online administration sustains a global reach with lower costs (Evans and Mathur, 2005). In addition, the internet facilitates accessing relevant but hard-to-reach samples (Baltar and Brunet, 2012). On the other hand, samples of internet surveys are usually not constructed through probability sampling. Rather, they usually rely on the self-selection of respondents. The lack of probability sampling creates the problem of under-coverage unless all members of the target population access and use internet (Bethlehem, 2008; Loosveldt and Sonck, 2008). Thus, generalizing the results

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from online surveys to real populations who do not use internet may not be plausible (Couper and Miller, 2008).

Comparison of the effectiveness of online and pencil-and-paper surveys has been a methodological concern recently. These comparisons either advocated the psychometric equivalence of the two formats (Brock *et al.*, 2012; Hedman *et al.*, 2010) or maintained that online versions may not always measure as effectively as pencil-and-paper surveys (Denniston *et al.*, 2010). In addition to the emphasis on the psychometric features of both formats, further investigations have regarded participants as a source of the measurement error (Castro, 2013). For instance, studies show that respondents may alter their answers when they feel it is socially desirable to do so (Chesney and Penny, 2013). More specifically, they may present themselves in a more favorable manner through over reporting desirable behaviors or underreporting undesirable behaviors (Kreuter *et al.*, 2008). They may swap their gender (Zaheer and Griffiths, 2008), misreport academic performance (Kuncel *et al.*, 2005) or lie about their physical characteristics (Toma *et al.*, 2008).

When respondents strategically alter their self-presentation during an interaction, this is considered faking. Accordingly, faking in online settings is called "cyberfaking" (Grieve and Elliott, 2013). Recent evidence revealed similar faking patterns among different test administration modalities, and suggested that online and face-to-face administrations of research surveys can be equivalent in terms of respondents' faking behaviors (Grieve and de Groot, 2011; Grieve and Elliott, 2013; Hayes and Grieve, 2013).

Online survey participants may also provide the researchers with bad data simply because of insufficient effort responding. That is, they may be inattentive while reading survey instructions and items (Berinsky *et al.*, 2013), or unmotivated to participate, which may result in careless, haphazard or random responses (Huang *et al.*, 2012; Meade and Craig, 2012).

Since emerging web technologies are extensively used to collect data, examining the predictors of undesirable responding patterns is quite relevant. In addition, recent evidence in the field asks for further research to address the role of individual-difference variables on such responding patterns in addition to the modalities and situational features of the data collection tools (Ferrando and Anguiano-Carrasco, 2011). In this regard, the current study investigated the differences between the providers of consistent and inconsistent online survey responses with regard to the nature of survey questions, degree of perceived social support, social appearance anxiety, academic self-efficacy, and Facebook use habits.

Literature review

Major advantages and limitations of online surveys

Online surveys have several advantages such as the diversity of question types, convenience of data collection and entry, and ease of follow-up administration (Evans and Mathur, 2005). In addition, web surveys may be used effectively to eliminate the lack of motivation while responding to confidential questions (Gregori and Baltar, 2013). That is, the level of reporting sensitive information can be increased online since respondents may refrain from reporting such information in face-to-face settings (Kreuter *et al.*, 2008). Moreover, through addressing relevant respondent characteristics, response volume and quality can be increased (Keusch, 2013). Finally, online data collection may facilitate studying hidden populations more effectively (Bhutta, 2012). For instance, Baltar and Brunet (2012) hypothesized that using social networking sites

may expand the geographical scope of the population and expedite the identification of hard-to-reach individuals. The researchers designed a virtual method through Facebook to identify 214 Argentinean immigrant entrepreneurs in Spain. Even though some of these individuals were invisible in national statistics due to having double nationality, the use of virtual sampling and online questionnaire increased the response rate better than traditional snowball techniques.

Evans and Mathur (2005) list potential weaknesses of online survey administration. First of all, respondents may perceive e-mail invitations as junk mail. Second, online respondents may not be similar to the desired target population in technologically deprived settings. Third, sample selection may be quite biased, if large volumes of arbitrary invitations were sent and only a small portion of invitations were answered by unintended participants. Fourth, technological variations in survey interface or the online expertise of users may interfere with the reliability of administration. Fifth, unclear instructions may reduce the quality of responses since online surveys are generally self-administered. That is, the lack of human contact may limit the ability of researchers to probe in-depth. Finally, privacy and security concerns of respondents are not considered properly, respondents can be hesitant to reply.

Another problem with the web surveys is the influence of individual variables on response patterns. In this regard, Payne and Barnfather (2012) investigated differences between an online and face-to-face sample drawn from the same student population in South Africa. The majority of the participants (72.2 percent) chose to complete the pen-and-paper version of the same questionnaire. Findings revealed that demographic factors affected the choice to complete the online version even after the degree of internet access has been accounted for. In addition, individual differences including race, age, time spent online, level of maternal and paternal education and gender influenced the survey modality preferences. Thus, even if the digital divide problems are eliminated, differences between online and pen-and-paper administrations are likely to occur. This should urge scholars to seek for the antecedents of different response patterns in web surveys, since these platforms have been extensively used for social science research.

Responding problems in web surveys

One of the potential limitations of online surveys is faking. When respondents strategically alter their self-presentation during a psychological assessment, this is classified as faking or malingering (Grieve and Elliott, 2013). Several studies revealed that respondents are able to modify their responses on self-report measures to present themselves either more favorably such as during a job interview (Goffin and Boyd, 2009) or less favorably, such as to be diagnosed of a mental problem (Grieve and Mahar, 2010). Through the developments in online survey administration, the need to extend traditional definition of faking to the cyberspace emerges. Referred to as cyberfaking, this extended form involves respondents' modification of their responses during online assessment.

Unfortunately, an explicit distinction between socially desirable responding and faking has not been made in the related literature. Empirical studies seem to use socially desirable responding and faking more or less interchangeably (e.g. van de Mortel, 2008; Ziegler and Buehner, 2009). Disguising one's true identity and giving wrong information about one's self can be regarded as faking. If there are facilitators to over-report desirable behaviors/attitudes or under-report undesirable behaviors/attitudes, this

would be regarded as socially desirable responding. For instance, there are a lot of opportunities for absolute anonymity in the cyberspace. If these opportunities are employed to build, empower or further online social interactions, cyberfaking and socially desirable responding may overlap. However, there may also be instances where the source of faking is not desirable self-presentation. In brief, all socially desirable responding instances may involve relatively more conscious (e.g. impression management) or subconscious (e.g. self-deception) faking for better self-presentation, whereas all faking behaviors may not be typical instances of socially desirable responding.

Within the framework of socially desirable responding, an explanation on faking in online environments can be made through the concept of self-presentation. Self-presentation can be defined as the modification of the self-during social interactions to build a desired or favorable impression before a target audience (Toma and Hancock, 2010). Creating a favorable impression may somewhat depend on individuals' ability to implement that impression; however, this ability is further influenced by the characteristics of the medium in which self-presentation occurs (Toma and Hancock, 2010). In this regard, unique interactive characteristics of the digital world may alter the nature of the self-presentation. While traditional interaction involves face-to-face dialogue and body language, online interactions are limited with regard to these communication channels, which requires individuals to employ appropriate virtual communication skills successfully. The virtual world further allows individuals to misreport easily because the addressees cannot confirm the authenticity of the provided information through real communication cues.

While some scholars reported that online and pen-and-paper measures were similar with regard to faking (Grieve and de Groot, 2011; Grieve and Elliott, 2013; Hayes and Grieve, 2013), research on moral reasoning implies that faking can be more prominent in online settings. For instance, Naquin *et al.* (2010) observed that participants were more likely to lie in an e-mail than when writing on paper. This finding was further retained when the participants were assured that their lying behavior would not be detected. A social cognitive theory on moral disengagement explains this phenomenon and suggests that individuals demonstrate specific moral standards, but may behave inconsistently with those standards in unmonitored situations (Bandura, 1999). In virtual worlds, individuals can easily release themselves from moral responsibility through several mechanisms such as distancing themselves from the harmful consequences of their actions or through changing their perceptions of the deviant conduct itself. In brief, they either neglect or downplay moral consequences, or focus on the benefits of misconduct.

Accordingly, another explanation for inconsistent or fake responses can be made through the concept of satisficing – a term first introduced in economics in the 1950s – which occurs when individuals do not have the motivation to respond to surveys thoroughly and take a shortcut when responding (Krosnick, 1991). That is, satisficing involves providing a satisfactory response to a survey question rather than an accurate one. This behavior is regarded as an individual characteristic regarding the responding behavior. It can be associated with several motivation factors like incentives, personal factors like gender and education, or situational factors like sensitive questions (Castro, 2013).

Quite similar to the concept of satisficing, recent studies have provided a rationale for undesirable responding patterns through resorting to the theoretical framework on insufficient effort responding (e.g. Huang *et al.*, 2012). That is, rather than desirable or undesirable self-presentation, respondents may simply click

through some of the survey items in exchange for extra credit or bonus points (Meade and Craig, 2012). They may also respond in a random or careless pattern just because they are unmotivated to participate (Huang *et al.*, 2012), which may reflect itself as paying less attention to questions and instructions (Berinsky *et al.*, 2013). Such problematic responding may not only stem from the lack of motivation, but also from the length of the measure or environmental distractions (Meade and Craig, 2012).

In brief, the rationale for undesirable responding in surveys can be explained through several rationales such as socially desirable responding, deceptive self-presentation, affordances of virtual worlds to hide real identity, individual differences, a social cognitive explanation on moral disengagement, the construct of satisficing and insufficient effort responding. Problematic responding in surveys is a critical phenomenon which may result in fallacious research findings and implications. In this regard, predictors of such responding patterns should be investigated further.

Role of individual-difference variables on responding patterns

The current study aimed to focus on individual difference variables to predict inconsistent responses in online surveys. Participants' perceived social support levels were addressed first. Perceived social support can be defined as the perception of individuals regarding the degree of their acceptance in a social network. The variable is regarded as a significant predictor of online behaviors (Akbulut and Gunuc, 2012; Longman *et al.*, 2009). In addition, a causal relationship between social anxiety and social support is suggested (Calsyn *et al.*, 2005). The construct is further investigated with diverse populations and regarded as a predictor of good health (Davidson and Demaray, 2007) and academic achievement (Akbulut and Gunuc, 2012). Moreover, online environments are regarded as significant sources of social support (Longman *et al.*, 2009; Stepanikova *et al.*, 2010; Valenzuela *et al.*, 2009). In this regard, the degree of perceived social support may have a predictive role on misreporting in online environments as well.

The second variable of interest was social appearance anxiety, which is the fear of being negatively evaluated for one's appearance (Hart *et al.*, 2008). Like social support, the construct is also associated with social anxiety (Coles *et al.*, 2006). A recent investigation by Toma and Hancock (2010) revealed that individuals' physical attractiveness influenced their self-presentation and especially their use of deception in online networks. More specifically, the lower the participants' attractiveness, the more likely they were to lie about their physical descriptors. However, the relationship between deception and attractiveness did not extend to other personal information that is unrelated with the physical appearance.

The final variable of interest was academic self-efficacy, which can be defined as the belief regarding one's ability to complete an academic task successfully (Odacı, 2011; Tsai and Tsai, 2010). Academic self-efficacy is a confirmed predictor of success and associated with social anxiety. Evidence reveals that individuals' academic self-efficacy beliefs can contribute to scholastic achievement, promote higher academic aspirations, more prosocial behavior, and reduce vulnerability to depression and feelings of worthlessness (Bandura *et al.*, 1996). A comprehensive review of literature maintains that even the objective measures of achievement like grade point average (GPA) or test scores are misreported by survey respondents (Kuncel *et al.*, 2005). Moreover, this deception is further influenced by the actual achievement levels of respondents. That is, self-reported achievement is regarded as a good reflection of actual

achievement only for individuals with high ability and good GPAs. However, they are unlikely to represent the actual scores for respondents with low ability (Kuncel *et al.*, 2005). Thus, the variable is considered relevant in terms of misreporting in online surveys.

Research objective

The current study aimed to investigate the predictors of providing inconsistent responses in online surveys through addressing respondents' perceived social support, social appearance anxiety, and academic self-efficacy levels. In addition, the relationship between inconsistent responding and Facebook use characteristics was investigated. To serve the research objective, the number of consistent and inconsistent respondents were determined through exploring the responses by the same usernames in a social network. Then, the degree of consistency in personal information questions and attitude scales was discussed. Moreover, differences between the providers of consistent and inconsistent responses were investigated with regard to perceived social support, social appearance anxiety, academic self-efficacy and Facebook use. Finally, significant predictors of inconsistency were investigated.

Methods

Research context

Participants were recruited through a popular gaming application in Facebook. The application was among the top ten gaming applications at the time of data collection and had more than 500,000 active Turkish users per month. The application asked users to build commercial facilities and sell goods to Facebook friends. Participation in the surveys was rewarded with bonus points in the game. Respondents were recruited through an announcement on the homepage of the application. No additional invitations, pop-ups or e-mails were used aside from this announcement. The researcher was not able to track how many users saw the announcement. Thus, an exact response rate could not be calculated.

Since the data collection context was a serious platform where gaming achievement carried importance; it was assumed that participants would use the same username consistently, keep their log in information confidential, and not let anybody else play the game with the same user name so that they could preserve their current profile. Two online administrations were conducted biweekly to diagnose misreporting of personal information. Each administration lasted three days. In the first administration, 1,620 participants responded to items of perceived social support, academic self-efficacy and social network use. In the second administration, 1,683 participants responded to items of social appearance anxiety and social network use. A total of 806 users responded in both administrations. The data were merged into a single file and inconsistent responses to personal information questions (e.g. age, gender, education) were detected through matching responses with the user names. Gender and education information was collected with categorical questions whereas age was collected with an open-ended question. A deviance of five years or more in different administrations was considered as inconsistency.

The participants provided inconsistent responses in successive administrations, which created the current data. Despite the inconsistencies, mutual findings reveal that over 70 percent were males, over 65 percent were students, and participants' mean age was about 23.

Measures

A personal information form addressing participants' profiles and Facebook use habits was accompanied with different attitude scales. The Multidimensional Scale of Perceived Social Support (MSPSS) developed by Zimet *et al.* (1988) was used to investigate perceived social support. The scale consists of 12 items that were piloted with university students in the US. Different sources of support are addressed through three subscales which were named as family, friends and significant other. A seven-point rating scale is used ranging from 1 (very strongly disagree) to 7 (very strongly agree). The scale was first adapted to Turkish by Eker and Arkar (1995), who validated it with 146 university students and 200 hospital visitors with different psychological or physiological problems. The scale was further validated among university students (Duru, 2007), school administrators (Başol, 2008) and adolescents (Akbulut and Gunuc, 2012) in Turkey. In this regard, it was considered an effective tool to measure the sources of perceived social support in the current context.

Social appearance anxiety was investigated through the measure created by Hart *et al.* (2008). Respondents indicate how characteristic a statement is through a scale ranging from 1 (not at all) to 5 (extremely). The one-factor structure of the 16-item scale was validated with different populations including eating disorder patients (Claes *et al.*, 2012) and university students (Levinson and Rodebaugh, 2011). Translation to Turkish context and validation was realized by Doğan (2010) with university students.

Academic self-efficacy was measured through a one-factor scale sheltering seven Likert items. Total scores range from 7 to 28 where higher scores indicate stronger belief in self-efficacy regarding academic endeavors. The scale was introduced by Jerusalem and Schwarzer (1992). Adaptation to the current context was conducted by Yılmaz *et al.* (2007) and it was used in further studies successfully (Odacı, 2011).

Data analysis

The data were checked to identify inconsistent responses provided by the same users. Further statistical analyses were conducted through descriptive statistics, Pearson correlations, χ^2 and *t*-tests. Moreover, a binary logistic regression was conducted to see the influence of independent variables on the current binary dependent variable (i.e. inconsistent respondent: 1 vs consistent respondent: 0). Significant results were supported with the effect size indices (i.e. eta squared: η^2). Since several parametric tests were conducted, the probability value was reduced to 0.01 in order to reduce the likelihood of committing a Type I Error (i.e. Bonferroni Adjustment Technique, Huck, 2012).

Results

Findings suggested that respondents demonstrated inconsistency while reporting their age (*f:* 330; 41 percent), educational status (*f:* 90; 11 percent) and gender (*f:* 43; 5 percent). Inconsistency in more than one question was possible such as age and education together (*f*: 64; 8 percent), age and gender together (*f*: 30; 4 percent), or gender and education together (*f*: 2; < 1 percent). Swapping gender from male to female (*f:* 19) and from female to male (*f:* 24) was almost equal across administrations. In terms of educational status, swapping from student to non-student (*f*: 18), from non-student to student (*f*: 23), from higher degree to lower degree (*f*: 21) and from lower degree to higher degree (*f*: 28) were distributed evenly where there were no significant differences. In terms of age, the majority reported a significantly higher age (i.e. 5 years

or more) at the second administration (*f*: 216) whereas some participants (*f*: 29) reported ages that were not probable in the target group (e.g. 5 or 109).

In brief, a total of 368 participants (45.7 percent) changed their responses to personal information questions whereas 438 participants (54.3 percent) were consistent in all administrations. Based on this diagnosis, participants were classified as either inconsistent or consistent. Internal consistency coefficients of social appearance anxiety, perceived social support and academic self-efficacy scales were quite high and similar between the two groups (Table I).

Relationships among social appearance anxiety, academic self-efficacy and perceived social support produced similar probability values when the data file was split as inconsistent and consistent respondents (Table II). Thus, it was concluded that participants' response inconsistency in personal information questions did not extent into scale responses.

Table II suggests a positive relationship between social appearance anxiety and academic self-efficacy. However, neither of them was related with the sources of perceived social support, which prevented the researcher from building a robust structural equation model. Further analysis to compare inconsistent and consistent respondents revealed that they were equal in terms of social appearance anxiety and academic self-efficacy whereas inconsistent respondents had significantly less perceived social support (Table III). Furthermore, this difference was consistent across the types of perceived social support (i.e. family, friend, significant other). On the other hand, as indicated through the eta squared values, the effect sizes were small.

Further statistical analyses revealed interesting findings. For instance, inconsistent respondents reported to have fewer friends in Facebook ($t_{[804]} = 4.324$; $p < 0.001$; η^2: 0.023) even though their overall Facebook use was significantly higher ($t_{[804]} = 4.772$; $p < 0.001$; η^2: 0.028) than consistent respondents. Both results can be used to confirm the lack of social support among inconsistent respondents. Another personal information question addressed whether participants used their real names in Facebook. It was observed that 7.5 percent of consistent respondents preferred to hide their real names in Facebook whereas the volume was 20.4 percent among inconsistent respondents. The difference was statistically significant ($\chi^2 = 28.440$; $p < 0.001$).

Based on these preliminary analysis, a binary logistic regression was conducted to reveal the predictors of inconsistent responding. This analysis allows researchers to test models to predict categorical outcomes whereas predictors can be either categorical or continuous (Pallant, 2011). The dependent variable was binary (i.e. inconsistent respondent: 1 vs consistent respondent: 0) whereas above independent variables were included in the model (i.e. perceived social support, number of friends, Facebook use duration). Assumptions of sample size, multicollinearity and outliers were all checked and retained. The final logistic regression model was statistically significant ($\chi^2 = 58.414$;

Table I.
Internal consistency coefficients (α) of research scales across inconsistent and consistent respondents

Variables	Inconsistent respondents ($n = 368$)	Consistent respondents ($n = 438$)
Social appearance anxiety	0.964	0.962
Academic self-efficacy	0.829	0.818
Family support	0.921	0.884
Friend support	0.916	0.914
Significant other support	0.936	0.929

Table II.
Correlations among the variables

		Social appearance anxiety	Academic self-efficacy	Family support	Friend support
Academic self-efficacy	Inconsistent	0.194*	–		
	Consistent	0.229*			
Family support	Inconsistent	0.043	0.023	–	
	Consistent	−0.024	−0.034		
Friend support	Inconsistent	0.028	0.005	0.863*	–
	Consistent	−0.050	−0.043	0.720*	
Significant other support	Inconsistent	0.032	0.000	0.777*	0.781*
	Consistent	−0.019	−0.016	0.581*	0.626*

Notes: $n = 368$ (inconsistent respondents); 438 (consistent respondents); *Correlation is significant at the 0.001 level

Table III.
Independent-samples *t*-tests comparing inconsistent and consistent respondents

Variable	Group	n	$\bar{x}$	SD	t	df	p	η^2
Social appearance anxiety	Inconsistent	368	2.423	1.066	−0.974	804	0.331	na
	Consistent	438	2.495	1.029				
Academic self-efficacy	Inconsistent	368	2.651	0.714	−0.965	804	0.336	na
	Consistent	438	2.699	0.674				
Family support	Inconsistent	368	4.766	1.743	−5.099	804	0.001	0.031
	Consistent	438	5.358	1.553				
Friend support	Inconsistent	368	4.713	1.727	−4.295	804	0.001	0.022
	Consistent	438	5.217	1.601				
Significant other support	Inconsistent	368	4.470	1.890	−2.913	804	0.004	0.01
	Consistent	438	4.865	1.937				

$p < 0.001$), which revealed that three variables successfully distinguished inconsistent respondents from consistent respondents: Perceived family support (odds ratio (OR): 0.832; Wald's χ^2: 16.443; $p < 0.001$), duration of Facebook use (OR: 1.384; Wald's χ^2:16.152; $p < 0.001$) and number of Facebook friends (OR: 0.837; Wald's χ^2:13.067; $p < 0.001$). As suggested by the OR values, increased family support and higher number of friends reduced inconsistency whereas increased usage led to inconsistency.

Overall classification percentage of the null model was 54.3 percent. The current logistic regression model explained 9.4 percent of the variance in cyberfaking (Nagelkerke's R^2), and correctly classified 62 percent of cases, with a sensitivity of 43 percent and a specificity of 78 percent. These values suggested that the current predictors were valuable. More specifically, the first step of the binary logistic regression included family support with 4.3 percent variance; the second step included family support and duration of Facebook use with 7.3 percent variance; and the last step included family support, duration of Facebook use and number of Facebook friends with 9.4 percent explained variance. Finally, probability values in Hosmer and Lemeshow Tests were all non-significant ($p > 0.949$, 0.174, 0.266 successively), which indicated that there was not a model misspecification problem and supported the current model as being worthwhile (Pallant, 2011). Heuristics of the current study were discussed in the next section in relation to the recent literature on cyberfaking and assessment.

Discussion and conclusion

This study has provided valuable insights into inconsistent responding patterns in web surveys. Along with the response variety with regard to personal information questions, findings underlined the importance of individual variables which led to response inconsistency. More specifically, results indicated that a considerable percentage of respondents misreported their personal information in successive online administrations. In contrast to the contemporary literature (Toma *et al.*, 2008), age was the most frequently misreported attribute followed by education and gender. Misreporting age and education level may not be explained through the social desirability response bias because the participants did not use the current online platform for dating or to further their social interaction with peers. Thus, current findings served as an instance of misreporting personal information questions in quite an innocuous setting where misreporting personal information in a desirable direction was not facilitated through social factors. There was not any explicit motive to lie, which may lead us to revisit Bandura's (1999) social cognitive theory on moral disengagement, the theoretical frameworks on satisficing (Krosnick, 1991) and the discussion on insufficient effort responding (Huang *et al.*, 2012). According to such frameworks, respondents may have ignored the ethical implications of their misreporting behaviors, concentrated on the benefits of the responding (i.e. bonus points for filling in the surveys), and provided an arbitrary answer to survey questions rather than the accurate one. In this regard, bonus points for responding may have led to a high volume of responses rather than the accurate responses (Meade and Craig, 2012).

When no incentives are used in similar research settings, a different responding pattern may emerge. If the degree of inconsistency decreases in incentive-free contexts, hypotheses of satisficing, insufficient effort responding and social cognitive theory on moral disengagement can be retained more effectively. On the other hand, if misreporting is observed in dating platforms, the pattern can be explained through the social desirability response bias. In this regard, further investigations to explore respondent

behaviors in both social networking and innocuous settings are needed where incentive-based participation is compared with voluntary participation.

The inconsistency of responses to the gender question can be interpreted within the same theoretical framework mentioned above. Similarly, the construct of satisficing can be associated with several personal factors including gender (Castro, 2013). Participants' swapping their gender (Zaheer and Griffiths, 2008), or showing different modality preferences based on gender (Payne and Barnfather, 2012) are common findings in the literature. On the other hand, this finding may also be discussed through resorting to the conservative gender characteristics of the current research context. That is, misreporting gender may be a protection strategy employed by female users against cyberbullies. To test this hypothesis, the researcher conducted an informal focus group interview with four female undergraduate students, which revealed that female students tended to lie about their gender to protect themselves from cyber harassment.

Even though the responses to personal information questions were inconsistent, similar internal consistency coefficients and interrelationships among variables were observed in the attitude scales. This implies that misreporting personal information does not necessarily lead to inconsistent responding in attitude scales. This may also mean that the probability of insufficient effort responding (Huang *et al.*, 2012) is weak. However, further measures and external validations are needed to understand the degree of misreporting in such scales. For instance, some respondents might have misreported their personal information consistently across measurements, which is not possible to detect in the current research design. Current responding patterns may also be peculiar to the nature of the unique constructs measured with the research scales. On the other hand, findings have valuable practical implications. It appears that researchers should not rely on the demographic data provided by online survey respondents to conduct further parametric tests. That is, if respondents are lying about their personal information even in innocuous settings, conducting parametric tests to compare them with regard to self-reported background variables may be misleading. In contrast, findings further suggested that responses to current attitude scales seemed relatively consistent and credible. That is, inconsistency in personal information questions did not extend to inconsistency in scale items. Maybe respondents did not want to be identified through their personal information. However, further qualitative analysis and external validation with additional data are needed to support such arguments.

Findings further revealed that inconsistent respondents reported lower degrees of perceived social support. The decreased degree of social support was also reflected through the number of friends and duration of Facebook use. Accordingly, it was not surprising to see that these respondents preferred to hide their real names in Facebook. Further analysis through the logistic regression revealed that perceived family support was the dominant predictor of misreporting, which was followed by the duration of Facebook use and the number of Facebook friends. More specifically, higher levels of family support and more friends reduced the probability of misreporting personal information whereas longer Facebook use led to misreporting. These findings somewhat retained previous hypotheses, which maintained that online social network using patterns can change in accordance with the degree of perceived social support (Akbulut and Gunuc, 2012). The current study extended those arguments and revealed that perceived social support from family was a significant predictor of inconsistent responding in web surveys. In addition, the number of Facebook friends and duration of Facebook use were also related with such inconsistency.

Other variables of interest (i.e. social appearance anxiety and academic self-efficacy) did not predict inconsistent responding in contrast to the discussed literature. This might stem from the contextual characteristics of the data collection environment. That is, since the current online platform was not a dating context, participants might not have implemented impression management strategies to manipulate the opinions of their addressees. The volume of misreporting which was observed in the current context should not be generalized to different social networking settings and web surveys either. That is, the sample frame is limited insofar as the study only addressed a peculiar gaming application on Facebook where dating and social interaction opportunities were limited. In other words, unique interactive characteristics of the current context may have altered the nature of the self-presentation among current participants. Thus, future studies should be designed in a way to include larger and multicultural settings involving different forms of online interaction such as online dating or e-learning contexts.

Current findings may inform the scholars about the characteristics of respondents who misreport their personal information. However, additional testing to diagnose the degree of self-deception and impression management in the current scales should be conducted so that the current heuristics can be improved. For instance, the integration of scales on the influence of self-monitoring and self-regulation can be quite plausible since recent research highlights the influence of these constructs on deviant online behaviors (Jacobs *et al.*, 2012). In addition, contemporary detection methods, which were successfully implemented to eliminate interview falsifications, can be adapted to differentiate between real and fake data (Menold and Kemper, 2013). In this regard, including special items and instructions to detect inconsistent responses (Berinsky *et al.*, 2013), conducting multivariate outlier analysis, computing consistency indices and exploring response times (Huang *et al.*, 2012; Meade and Craig, 2012) could be quite plausible.

Finally, the nature of the topics addressed in the scales and the structure of the current scales may have influenced the current response patterns. This necessitates integrating further psychosocial variables to the research design so that we can understand the characteristics of inconsistent respondents better. As mentioned beforehand, the most critical limitation of the current design was that there was no external and reliable records to be used as a benchmark for comparison with the answers of current respondents. Such external validation studies were proved useful in recent research (Berinsky *et al.*, 2013; Huang *et al.*, 2012; Meade and Craig, 2012; Menold and Kemper, 2013). The current study only revealed whether participants changed their responses from the first administration to the second one. This was a limitation, since participants who misreported twice might have been in the current data set. Therefore, without the existence of a true value or external confirmation, current arguments about inconsistent and consistent responding might be considered as suggestive implications rather than definitive results.

References

Akbulut, Y. and Gunuc, S. (2012), "Perceived social support and facebook use among adolescents", *International Journal of Cyber Behavior, Psychology and Learning*, Vol. 2 No. 1, pp. 30-41.

Baltar, F. and Brunet, I. (2012), "Social research 2.0: virtual snowball sampling method using facebook", *Internet Research*, Vol. 22 No. 1, pp. 57-74.

Bandura, A. (1999), "Moral disengagement in the perpetration of inhumanities", *Personality and Social Psychology Review*, Vol. 3 No. 3, pp. 193-209.

Bandura, A., Barbaranelli, C., Caprara, G.V. and Pastorelli, C. (1996), "Multifaceted impact of self-efficacy beliefs on academic functioning", *Child Development*, Vol. 67 No. 3, pp. 1206-1222.

Başol, G. (2008), "Validity and reliability of the multi dimensional scale of perceived social support: revised with a Turkish sample", *Social Behavior and Personality*, Vol. 36 No. 10, pp. 1303-1314.

Berinsky, A.J., Margolis, M.F. and Sances, M.W. (2013), "Separating the shirkers from the workers? Making sure respondents pay attention on self-administered surveys", *American Journal of Political Science*, in press, doi:10.1111/ajps.12081.

Bethlehem, J. (2008), "How accurate are self-selection web surveys?", Discussion paper No. 08014, Statistics Netherlands, The Hague/Heerlen.

Bhutta, C.B. (2012), "Not by the book: facebook as a sampling frame", *Sociological Methods & Research*, Vol. 41 No. 1, pp. 57-88.

Brock, R.L., Barry, R.A., Lawrence, E., Dey, J. and Rolffs, J. (2012), "Internet administration of paper-and-pencil questionnaires used in couple research: assessing psychometric equivalence", *Assessment*, Vol. 19 No. 2, pp. 226-242.

Calsyn, R.J., Winter, J.P. and Burger, G.K. (2005), "The relationship between social anxiety and social support in adolescents: a test of competing causal models", *Adolescence – San Diego*, Vol. 40 No. 157, pp. 103-114.

Castro, R. (2013), "Inconsistent respondents and sensitive questions", *Field Methods*, Vol. 25 No. 3, pp. 283-298.

Chesney, T. and Penny, K. (2013), "The impact of repeated lying on survey results", *SAGE Open*, Vol. 3 No. 1, pp. 1-9.

Claes, L., Hart, T.A., Smits, D., Van den Eynde, F., Mueller, A. and Mitchell, J.E. (2012), "Validation of the social appearance anxiety scale in female eating disorder patients", *European Eating Disorders Review*, Vol. 20 No. 5, pp. 406-409.

Coles, M.E., Phillips, K.A., Menard, W., Pagano, M.E., Fay, C.,Weisberg, R.B. and Stout, R.L. (2006), "Body dysmorphic disorder and social phobia: cross-sectional and prospective data", *Depression and Anxiety*, Vol. 23 No. 1, pp. 26-33.

Couper, M.P. and Miller, P.V. (2008), "Web survey methods: introduction", *Public Opinion Quarterly*, Vol. 72 No. 5, pp. 831-835.

Davidson, L.M. and Demaray, M.K. (2007), "Social support as a moderator between victimization and internalizing-externalizing distress from bullying", *School Psychology Review*, Vol. 36 No. 3, pp. 383-405.

Denniston, M.M., Brener, N.D., Kann, L., Eaton, D.K., McManus, T., Kyle, T.M., Roberts, A.M., Flint, K.H. and Ross, J.G. (2010), "Comparison of paper-and-pencil versus web administration of the youth risk behavior survey (YRBS): participation, data quality, and perceived privacy and anonymity", *Computers in Human Behavior*, Vol. 26 No. 5, pp. 1054-1060.

Doğan, T. (2010), "Adaptation of the social appearance anxiety scale (SAAS) to Turkish: a validity and reliability study", *Hacettepe University Journal of Education*, Vol. 39 No. 1, pp. 151-159.

Duru, E. (2007), "Re-examination of the psychometric characteristics of the multi dimensional scale of perceived social support among Turkish University students", *Social Behavior and Personality*, Vol. 35 No. 4, pp. 443-452.

Eker, D. and Arkar, H. (1995), "Perceived social support: psychometric properties of the MSPSS in normal and pathological groups in a developing country", *Social Psychiatry and Psychiatric Epidemiology*, Vol. 30 No. 3, pp. 121-126.

Evans, J.R. and Mathur, A. (2005), "The value of online surveys", *Internet Research*, Vol. 15 No. 2, pp. 195-219.

Ferrando, P.J. and Anguiano–Carrasco, C. (2011), "Faking propensity and faking-related change: a model-based analysis of the EPQ-R scores", *Personality and Individual Differences*, Vol. 51 No. 4, pp. 497-501.

Goffin, R.D. and Boyd, A.C. (2009), "Faking and personality assessment in personnel selection: advancing models of faking", *Canadian Psychology*, Vol. 50 No. 3, pp. 151-160.

Gregori, A. and Baltar, F. (2013), "Ready to complete the survey on facebook: web 2.0 as a research tool in business studies", *International Journal of Market Research*, Vol. 55 No. 1, pp. 131-148.

Grieve, R. and de Groot, H.T. (2011), "Does online psychological test administration facilitate faking?", *Computers in Human Behavior*, Vol. 27 No. 6, pp. 2386-2391.

Grieve, R. and Elliott, J. (2013), "Cyberfaking: i can, so i will? Intentions to fake in online psychological testing", *Cyberpsychology, Behavior, and Social Networking*, Vol. 16 No. 5, pp. 364-369.

Grieve, R. and Mahar, D. (2010), "The role of fluid and emotional intelligence in malingering", *Australian Journal of Psychology*, Vol. 62 No. 2, pp. 103-111.

Hart, T.A., Flora, D.B., Palyo, S.A., Fresco, D.M., Holle, C. and Heimberg, R.C. (2008), "Development and examination of the social appearance anxiety scale", *Assessment*, Vol. 15 No. 1, pp. 48-59.

Hayes, J. and Grieve, R. (2013), "Faked depression: comparing malingering via the Internet, pen-and-paper, and telephone administration modes", *Telemedicine and e-Health*, Vol. 19 No. 9, pp. 714-716.

Hedman, E., Ljótsson, B., Rück, C., Furmark, T., Carlbring, P., Lindefors, N. and Andersson, G. (2010), "Internet administration of self-report measures commonly used in research on social anxiety disorder: a psychometric evaluation", *Computers in Human Behavior*, Vol. 26 No. 4, pp. 736-740.

Huang, J.L., Curran, P.G., Keeney, J., Poposki, E.M. and DeShon, R.P. (2012), "Detecting and deterring insufficient effort responding to surveys", *Journal of Business and Psychology*, Vol. 27 No. 1, pp. 99-114.

Huck, S.W. (2012), *Reading Statistics and Research*, 5th ed., Pearson Education, Boston, MA.

Jacobs, R.S., Heuvelman, A., Tan, M. and Peters, O. (2012), "Digital movie piracy: a perspective on downloading behavior through social cognitive theory", *Computers in Human Behavior*, Vol. 28 No. 3, pp. 958-967.

Jerusalem, M. and Schwarzer, R. (1992), "Self-efficacy as a resource factor in stress appraisal processes", in Schwarzer, R. (Ed.), *Self-Efficacy: Thought Control of Action*, Hemisphere, Washington, DC, pp. 195-213.

Keusch, F. (2013), "The role of topic interest and topic salience in online panel web surveys", *International Journal of Market Research*, Vol. 55 No. 1, pp. 59-80.

Kreuter, F., Presser, S. and Tourangeau, R. (2008), "Social desirability bias in CATI, IVR and web surveys: the effects of mode and question sensitivity", *Public Opinion Quarterly*, Vol. 72 No. 5, pp. 847-865.

Krosnick, J.A. (1991), "Response strategies for coping with the cognitive demands of attitude measures in surveys", *Applied Cognitive Psychology*, Vol. 5 No. 3, pp. 213-236.

Kuncel, N.R., Credé, M. and Thomas, L.L. (2005), "The validity of self-reported grade point averages, class ranks, and test scores: a meta-analysis and review of the literature", *Review of Educational Research*, Vol. 75 No. 1, pp. 63-82.

Levinson, C.A. and Rodebaugh, T.L. (2011), "Validation of the social appearance anxiety scale: factor, convergent, and divergent validity", *Assessment*, Vol. 18 No. 3, pp. 350-356.

Longman, H., O'Connor, E. and Obst, P. (2009), "The effect of social support derived from World of Warcraft on negative psychological symptoms", *Cyberpsychology and Behavior*, Vol. 12 No. 5, pp. 563-566.

Loosveldt, G. and Sonck, N. (2008), "An evaluation of the weighting procedures for an online access panel survey", *Survey Research Methods*, Vol. 2 No. 2, pp. 93-105.

Meade, A.W. and Craig, S.B. (2012), "Identifying careless responses in survey data", *Psychological Methods*, Vol. 17 No. 3, pp. 437-455.

Menold, N. and Kemper, C.J. (2013), "How do real and falsified data differ? Psychology of survey response as a source of falsification indicators in face-to-face surveys", *International Journal of Public Opinion Research*, in press, doi:10.1093/ijpor/edt017.

Naquin, C.E., Kurtzberg, T.R. and Belkin, L.Y. (2010), "The finer points of lying online: e-mail versus pen and paper", *Journal of Applied Psychology*, Vol. 95 No. 2, pp. 387-394.

Odacı, H. (2011), "Academic self-efficacy and academic procrastination as predictors of problematic internet use in university students", *Computers and Education*, Vol. 57 No. 1, pp. 1109-1113.

Pallant, J. (2011), *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS*, 4th ed., Allen & Unwin, Crows Nest.

Payne, J. and Barnfather, N. (2012), "Online data collection in developing nations: an investigation into sample bias in a sample of South African university students", *Social Science Computer Review*, Vol. 30 No. 3, pp. 389-397.

Stepanikova, I., Nie, N.H. and He, X. (2010), "Time on the Internet at home, loneliness, and life satisfaction: evidence from panel time-diary data", *Computers in Human Behavior*, Vol. 26 No. 3, pp. 329-338.

Toma, C.L. and Hancock, J.T. (2010), "Looks and lies: the role of physical attractiveness in online dating self-presentation and deception", *Communication Research*, Vol. 37 No. 3, pp. 335-351.

Toma, C.L., Hancock, J.T. and Ellison, N.B. (2008), "Separating fact from fiction: an examination of deceptive self-presentation in online dating profiles", *Personality and Social Psychology Bulletin*, Vol. 34 No. 8, pp. 1023-1036.

Tsai, M.J. and Tsai, C.C. (2010), "Junior high school students' internet usage and self-efficacy: a re-examination of the gender gap", *Computers and Education*, Vol. 54 No. 4, pp. 1182-1192.

Valenzuela, S., Park, N. and Kee, K.F. (2009), "Is there social capital in a social network site?: Facebook use and college students' life satisfaction, trust, and participation", *Journal of Computer-Mediated Communication*, Vo. 14 No. 4, pp. 875-901.

van de Mortel, T.F. (2008), "Faking it: social desirability response bias in self-report research", *Australian Journal of Advanced Nursing*, Vol. 25 No. 1, pp. 40-48.

Yılmaz, M., Gürçay, D. and Ekici, G. (2007), "Adaptation of the academic self-efficacy scale to Turkish", *Hacettepe University Journal of Education*, Vol. 33 No. 1, pp. 253-259.

Zaheer, H. and Griffiths, M.D. (2008), "Gender swapping and socializing in cyberspace: an exploratory study", *CyberPsychology and Behavior*, Vol. 11 No. 1, pp. 47-53.

Ziegler, M. and Buehner, M. (2009), "Modelling socially desirable responding and its effects", *Educational and Psychological Measurement*, Vol. 69 No. 4, pp. 548-565.

Zimet, G.D., Dahlem, N.W., Zimet, S.G. and Farley, G.K. (1988), "The multidimensional scale of perceived social support", *Journal of Personality Assessment*, Vol. 52 No. 1, pp. 30-41.

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2. Daniel M. Coughlin, Bernard J. Jansen. 2016. Modeling journal bibliometrics to predict downloads and inform purchase decisions at university research libraries. *Journal of the Association for Information Science and Technology* **67**:9, 2263-2273. [CrossRef]
3. Agnieszka LandowskaWeb questionnaire as construction method of affect-annotated lexicon - Risks reduction strategy 421-427. [CrossRef]