



Completion rates and non-response error in online surveys: Comparing sweepstakes and pre-paid cash incentives in studies of online behavior



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ABSTRACT

This study aims to compare the effects of incentives and contact modes on survey completion rates, and examine how non-response rates might affect the quality of responses in online surveys. Two online surveys with different incentives and contact modes were conducted. In study 1, both pre-paid cash incentives and a sweepstakes offering of equal monetary value were more effective than no incentive but the pre-paid incentive were more effective than the sweepstakes. In study 2, respondents who received a pre-paid cash incentive via postal mail after initially failing to respond to an emailed sweepstakes offer differed from the initial respondents with respect to demographic and psychological characteristics previously found to be important in a widely cited study of social networking. Therefore, non-response error may indeed be a problem in online surveys, at least among those directed to college students and using a common method of recruitment in which offers of sweepstakes drawings are delivered via email. Not only do the levels of variables important to an understanding of online communication vary by survey method, but also the lawful relationships among variables differ between groups recruited by different methods.

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1. Introduction

Surveys have long been used in social science research and lately online surveys of college students have become a widely used method, particularly in published studies of online behavior. For example, among the 20 survey studies published in the *Social Science Computer Review* during 2009–2012 (November), 10 were based on online surveys and 3 of those online surveys involved college student populations. Among the 34 survey studies published in the *Journal of Computer-Mediated Communication* in the last three and a half years (2009–2012), 19 were based on online surveys and 8 of those online surveys involved college student populations. Among 49 survey studies published in the *New Media & Society* in the last three and a half years (2009–2012), 17 were based on online surveys and 8 of those involved college student populations. As for *Cyberpsychology, Behavior, and Social Networking*, 115 survey studies were published during 2009–2012 (April) and 59 of them used online surveys. Among these online surveys, 23 surveys involved college student samples. Online surveys are attractive because of the relative ease and low cost of data collection, the multimedia design options they offer, and the quality of data that they obtain (Barrios, Villarroya, Borrego, & Ollé, 2011;

Evans & Mathur, 2005; Fan & Yan, 2010; Fricker & Schonlau, 2002; Kaplowitz, Hadlock, & Levine, 2004).

However, past studies found that online surveys generally yielded lower completion rates than conventional survey methods, especially when compared to surveys administered through postal mail (Börkan, 2010; Jones & Pitt, 1999; Manfreda, Bosniak, Berzelak, Haas, & Vehovar, 2008; Matz, 1999; Mertler, 2003; Sax, Gilmartin, & Bryant, 2003; Shih & Fan, 2008). In a recent study comparing response rates in web and mail surveys, the web survey yielded a higher response rate (64.8%, 407 surveys were sent by email) than the mail survey (48.8%, 165 surveys were sent by post), but the respondents were highly educated (PhD holders) (Barrios et al., 2011). Furthermore, Dillman's Tailored Design method was used for both web survey and mail survey, which was not commonly seen in studies using web surveys. In another recent Facebook study using an online survey with an academic staff sample, the completion rate was 28.9% (Lampe, Vitak, Gray, & Ellison, 2012). These successful efforts notwithstanding, the completion rates to online surveys, defined here as the percent of those initially contacted for a study who participate in the survey, have declined over time (Crawford, Couper, & Lamias, 2001; Fan & Yan, 2010; Kwak & Radler, 2002), making non-response error a growing concern.

Past studies found that non-response rates, whether from the incentive schedule or the method of contact, had no effect on the answers respondents provide in phone and mail surveys (Groves,

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2006; Keeter, Miller, Kohut, Groves, & Presser, 2000; Ryu, Couper, & Marans, 2005). This suggests that no matter what incentive or contact method is used, the same relationships among variables will be observed. However, demographic differences were found among different incentive groups: people who are unemployed, single, and have lower educational levels tended to respond more frequently than others to the cash incentives in (postal) mail surveys (Ryu et al., 2005). And, at the time of the previous studies at least, both mail and phone surveys yielded far better completion rates than those currently observed for online surveys.

Thus, the relationship among incentives, survey contact modes, non-response rates, non-response error, and the quality of responses in online surveys is not yet clear. The present study aims to compare the effects of incentives and survey contact modes on completion rates, and examine how non-response rates might affect the quality of responses in online surveys. Two online surveys with different incentives and contact modes will be conducted.

2. Literature review

2.1. Non-response error

Non-response error occurs when the respondents to a survey differ from the population from which they are drawn (Dillman, Smyth, & Christian, 2009). These errors threaten the validity of descriptive results of population surveys when important demographic groups, such as minorities or young adults, are under-represented in the sample. Statistical weighting is often used to compensate for these discrepancies (Burkell, 2003; Groves, 2006) in studies based on random samples (e.g. Pew Internet Research, 2012), although it is inappropriate when non-random samples are used, as is often the case with online surveys, since non-random samples represent only the respondents to the survey.

Although it might be problematic to generalize the conclusions from college sample to general population (Abelman, 1996; Basil, Brown, & Bocarnea, 2002), when convenience samples are used, including samples drawn from college classrooms, population estimates are not of interest. Population estimates may also be of minor interest when samples are drawn at random from a population of limited scope, such as the student body of a single university, when generalizations are sought for a large population, such as all college students. However, the scientific value of such studies is not to provide estimates of population parameters but rather to establish lawful relationships among variables and for that purpose even convenience samples are regarded adequate. A study about differences in univariate values and multivariate relationships (Basil et al., 2002) found that the lawful relationships among variables were the same for a random phone survey sample, a college student convenience sample, and an online convenience sample.

Previous research (Keeter et al., 2000) suggested that non-response error was not an important issue in that the demographics, media characteristics, and attitudes found among initial respondents to a phone survey conducted using standard methods varied little from those among further respondents reached through more effortful survey procedures. But, that research was completed when standard phone survey methods were still obtaining completion rates well above 30%. Now that online survey completion rates are plunging into the single digits, should researchers still be confident that the respondents they attract are similar in their characteristics, media behaviors, and attitudes to those who refuse their survey requests? Could even the lawful relationships among variables be affected, as well as their relative levels?

To take an example from an influential stream of Internet research, a seminal study of the effects of Facebook with a 35.8% completion rate ($N = 286$) (Ellison, Steinfield, & Lampe, 2007) found

significant relationships between the use of Facebook and bridging, bonding social capital. Besides, Facebook usage interacted with psychological well-being (self-esteem and life satisfaction). In a later study in the same series (Steinfield, Ellison, & Lampe, 2008), the relationships were attenuated in that psychological measures (self-esteem) moderated the relationship between Facebook intensity and bridging social capital. Also the composition of a key variable (Facebook intensity) differed from the first study in the series, while the completion rate declined to 24% ($N = 477$). In a third study (Ellison, Steinfield, & Lampe, 2011), the completion rate decreased to 22.5%, and neither minutes on Facebook nor the number of Facebook friends, two components of Facebook intensity in earlier research, were significantly related to bridging social capital. Each of these studies was completed among random samples drawn from the same student population at a major Midwestern University and using the same recruiting methods (i.e. sweepstakes offers issued via emailed invitations) in each wave. The differences in the results could of course be the result in changes in the student population, random variations in the yearly samples, or changes in Facebook and the role it plays in student life. However, non-response error in the later studies cannot be ruled out as an explanation for the differences in the findings.

3. Incentives in online student surveys

How, then, can the completion rate to online surveys be improved among student populations and what impact does non-response error have on the validity of survey results? The nature of the incentives offered to potential survey respondents is a well-studied and recognized important factor in improving completion rates (Church, 1993; Dillman et al., 2009; Ryu et al., 2005). The present study examines the effect on completion rates of different incentive conditions. Furthermore, do people who respond under different incentive conditions vary with respect to their social and psychological characteristics and do the lawful relationships found among these variables also hold among groups recruited under differing conditions?

Here, pre-paid cash incentives commonly used in postal mail surveys (Dillman et al., 2009) are contrasted with sweepstakes drawings that are often used in online surveys (e.g., Porter & Whitcomb, 2003). The effectiveness of the two options may vary by survey modality. Pre-paid cash incentives are offered as a token of positive mutual regard and are thought to increase completion rates by initiating a mutually beneficial social exchange between the researcher and the respondent (Dillman et al., 2009). The practice of including a nominal cash payment in the survey request is especially recommended, while cash payments offered after the fact in return for a completed survey are thought to evoke the perception of an economic exchange and a lack of trust on the part of the survey sponsor, with no effect on completion rates. Previous empirical studies involving conventional survey methods have found that pre-paid cash incentives work better than sweepstakes drawings. However, it has been found that small cash incentives (e.g. of 10 cents) are ineffective with the optimal recommended incentive believed to be between \$1 and \$5 (Dillman et al., 2009).

Incentives play an important role in the web survey delivery process. In a study comparing the effects of pre-paid and post-paid incentives in web surveys, the pre-paid incentives did not yield higher completion rates than post-paid incentives, or even compared to no incentives among members of a professional association (Bosnjak & Tuten, 2003). Furthermore, the amount of incentives does not have a linear correlation with the completion rates in either mail or web surveys (Bosnjak & Tuten, 2003; Göritz, 2006; Porter & Whitcomb, 2003). However, given the success of pre-paid cash incentives and the ineffectiveness of sweepstakes drawings in

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