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Examining the Gender Effects of Different Incentive Amounts in a Web Survey

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Abstract

Researchers are struggling to determine effective methods to improve response rates to web surveys. This study presents the results of an experiment that varied the disbursement of an incentive in a web survey. Participants were randomly assigned to receive either a $5 or a $10 prepaid incentive. In line with the social exchange theory of survey participation, no significant differences were found in response rate between the two conditions. However, the incentive amount interacted with gender. Specifically, women were more likely to respond to the survey when provided with a $5 incentive compared to a $10 incentive.

Keywords

incentives, web survey, gender

Web surveys are becoming quite popular, but response rates to web surveys are generally lower than for other modes such as mail surveys (Manfreda et al. 2008; Shih and Fan 2008). Researchers have tried to improve response rates by offering various incentives, and a large literature has developed on the impact of these incentives (see, e.g., Cook et al. 2000; Göritz 2006a; Shih and Fan 2008). This article presents the results of an experiment that varied the disbursement of an incentive in a web survey. Participants (N = 350) were randomly assigned to receive either a $5 or $10 prepaid incentive.

Incentives

Incentives have long been an important part of survey methodology. For mail and telephone surveys, cash incentives are more effective than nonmonetary awards such as gift certificates or small tokens, like pens, even if the nonmonetary incentive has a greater cash value than the cash incentive. For example, Ryu et al. (2006) found that a $5 cash incentive in a mail survey worked better than offering a park pass worth $12 (and see Birnholtz et al. 2004; Church 1993; Singer et al. 1999). Other studies have also found that cash incentives work better than cash cards or phone cards, even if the cards are worth more money (Bailey et al. 2007 and Teisl et al. 2005 as cited in Dillman et al. 2009). Prepaid incentives are more effective than incentives provided on completion of the survey, even if the postpaid incentive is of greater monetary value (Berk et al. 1987; Church 1993; Hopkins and Gullickson 1992; James and Bolstein 1992; Singer et al. 2000).

Several studies have found that a larger cash incentive produces a higher response rate than a smaller cash incentive (James and Bolstein 1990; Singer et al. 1999; Trussell and Lavrakas 2004), but the relationship between incentive size and response rate is not linear (Fox et al. 1988; James and Bolstein 1992; Mizes et al. 1984; Trussell and Lavrakas 2004; Warriner et

al. 1996). There seems to be linear increases in response rates with smaller incentive amounts and a flattening effect on response rate with larger incentive amounts. The tipping point changes with inflation, but studies done on telephone and mail surveys over the last decade suggest that $5 is more effective at increasing response rates than smaller amounts and that $5 works almost as well as incentives between $7 and $10 (Alexander et al. 2008; Brick et al. 2005; Curtin et al. 2007; Trussell and Lavrakas 2004; also see discussion of additional studies in Dillman et al. 2009). In sum, prepaid cash incentives of about $5 work best in telephone and mail surveys, but it is unclear whether these findings apply to web surveys.

Explaining Participation in Surveys

There are several theories of why people respond to surveys. Classical economic theory suggests that people make a rational choice about whether to participate in a survey after weighing the costs and benefits of doing so. People are believed to consider two factors when deciding to act based on a perceived benefit: the value of the reward and the probability of receiving the reward (Homans 1974; and see Emerson [1976] for a review). If the value of the reward is sufficient, given the costs of participation, and the probability of receiving the reward is high, then people are expected to comply with a request to participate. From this perspective, cash incentives could be used to compensate people for the costs associated with survey participation and the value of the cash incentive is tied to the effort required to comply with the request. For example, Dillman et al. (2009) cite a researcher who offers participants 1 euro for each 10-minute interval of a survey. Dillman (1978) cautions against such thinking because at a certain dollar value, which varies for individual participants, the incentive may reduce, rather than increase, response rates by increasing refusal rates. Nonetheless, *based on classic economic theory, a larger cash*

incentive is expected to produce a higher response rate than a smaller cash incentive. Incentives should also increase the timeliness of responses, because respondents may view themselves as being paid to perform a job and want to deliver. *Based on this theory, participants who receive a larger incentive should respond more quickly to a request to participate in a survey than participants who receive a smaller incentive.*

While economic theory helps explain why cash incentives work better than non-monetary ones, social exchange theory helps explain why people participate in surveys when there is no observable and direct benefit to them, why there are diminishing returns between the size of the incentive and the response rate, and why prepaid incentives work better than promised incentives. Social exchange theory considers "personal ties and social ends" (Firth 1967:5), opening up the possibility of looking at nonmonetary factors in the decision to participate in a survey. While Emerson (1976) focuses on longitudinal relations and social structure, many of his principles apply to the exchange relation between a researcher and study participant. He suggests that people are neither bound by strict rules around rationality in making decisions nor by the principle of equity as they might be with economic exchanges.

In deciding to participate at all, a respondent might consider the authenticity of the survey, the prestige of the sponsor, their relationship to the sponsor, or whether the survey will contribute to scientific knowledge or, more generally, to the common good. Some respondents may be motivated by the desire to be helpful. Providing an incentive may establish trust between the researcher and the respondent and stimulate a reciprocal relationship of goodwill, which results in survey completion (Collins et al. 2000; Dillman 2007; Porter and Whitcomb 2003). A prepaid incentive is a goodwill gesture that puts the survey, the researcher, and/or the sponsor in a positive light, encouraging participants to complete the survey (Dillman 2007). Postpaid

incentives, on the other hand, are ineffective in establishing trust or creating a sense of reciprocity between the researcher and the respondent.

Finally, according to social exchange theory, *once people agree to participate in a survey, the size of the incentive should not have a significant effect on the response rate.* This theory, however, does not explain why cash incentives of approximately $5 work better than non-monetary incentives or cash incentives that are smaller in size.

Leverage-Saliency Theory and Differential Effects of Incentives

Leverage-saliency theory proposes that people consider a variety of factors when deciding whether to participate in a survey (Groves et al. 2000). For some respondents, the topic of the survey is the primary motivation to participate; for others, it's the material incentive. If these factors are known before survey recruitment, they could be emphasized during survey recruitment to improve response rates (Groves et al. 2000). One way to know what factors are important to people is to predict these factors based on demographic variables like gender, age, education, and the like.

In general, studies have found little difference in the demographic composition of no-incentive groups compared to those who received incentives of various types (Furse and Stewart 1982; Hopkins and Gullickson 1992; Singer et al. 2000; Warriner et al. 1996). There are indications, however, that demographic factors play some role in the importance of incentives to participate in a survey. For example, some college-educated people may be turned off by incentives, especially small tokens (e.g., a pen), while those with less education may be more responsive to an incentive, especially prepaid cash (Nederhof 1983; Singer et al. 1999, 2000).

Heerwegh (2006) found that lottery incentives worked better for improving women's response rates to a web survey compared to men's response rate. Alexander et al. (2008) found an interaction effect of gender and incentive amount on enrollment in a health plan. However, their findings suggest that men were more responsive to a $2 condition, as opposed to $1 or $5 conditions, and men were more responsive to $2 than were women. In a telephone survey, Ritter et al. (2005) found that men were less cooperative than women when no incentive was provided for participating in the study. These findings suggest that incentives may have differing importance and influence in participation by men and women in surveys. This study explores the differential impacts, if any, of incentives on men and women's participation in a survey.

Incentives in Web Surveys

The findings about incentives in mail and telephone surveys may not apply to web surveys since the effort required to complete the survey is different compared to other modes. On the one hand, a hyperlink to a web survey may ease access to a survey instrument and enable timely completion, but service outages and technological problems could make web survey completion a huge burden. In addition, an interviewer is not present to encourage survey completion when motivation may be dwindling. Furthermore, clicking on a "submit" button is far less burdensome than walking down the street to a postal box to mail a self-administered questionnaire.

Lotteries or prize drawings have been widely tested in online surveys. Some studies find a small positive effect of lotteries on response rates (Göritz and Wolff 2007; Heerwegh 2006; O'Neil and Perrod 2001; O'Neil et al. 2003; Tuten et al. 2004); others have found no effects of lotteries on response rates in web surveys (Göritz 2006b; Porter and Whitcomb 2003). Other studies found that lotteries could improve the response rate to a web survey if provided alongside

a prepaid incentive (Cobanoglu and Cobanoglu 2003; Göritz 2008) or if the lottery itself was not contingent on survey completion (Sánchez et al. 2010).

Prepaid, cash incentives are the favored incentive type, based on research on other survey modes, but this type of incentive is difficult to administer in a web survey. Some researchers have tried to find an online cash equivalent. For example, Bosnjak and Tuten (2003) used Paypal credits distributed as both pre- and postpaid incentives. These credits, regardless of when they were distributed, did not have a significant effect on response rate. Another web survey study found that prepaid gift certificates are more effective than postpaid gift certificates, even if the postpaid gift certificates are of greater value (Downes-Le Guin et al. 2002). Birnholtz et al. (2004) tried an online gift certificate delivered as part of an email and as part of a printed letter as well as material cash. However, they found that material cash was more effective than an online gift certificate in improving the response rate.

As an aggregate, these studies tend to affirm the superiority of prepaid, material cash as an incentive. Given the superiority of prepaid, material cash incentives, researchers have experimented with a multi-mode contact approach such as mailing the incentive associated with a web survey. The multi-mode contact approach presents opportunities for exploring social exchange theory. For example, if respondents are distrustful of the Internet generally and the authenticity of web surveys specifically, mailed correspondence may convey authenticity and promote trust (Porter and Whitcomb 2007). A hand-signed letter might evoke more trust and authenticity than an electronic signature. Corporate letterhead could also convey a sense of authenticity.

Data and Methods

Respondents in this survey comprised a stratified, random sample of first-year students at Grant MacEwan University, Alberta, Canada. The registrar's office provided a list of all new students in the fall of 2009. This list was screened to ensure that students had a Canadian mailing address. From this list of approximately 4,500 students, the sample was stratified by gender. Some 175 men and 175 women were randomly selected to participate in the study. Men were oversampled (50:50) compared to their composition in the student body (40:60) to ensure a sufficient sample size for analysis of the data. When selected, participants were randomly assigned to two equal-sized groups receiving different incentive amounts. The randomization was verified to have produced two lists that had a 50:50 distribution of men and women.

On January 12, 2010, participants were mailed a prenotification letter informing them that they would receive an email invitation for a survey about their general interests and hobbies. The survey was identified as an initiative of professors in the Department of Sociology. The survey instrument included questions about community attachment; membership in various groups; civic ethic, civic engagement; political engagement; and media usage. Participants were randomly assigned to receive a $5 or $10 cash incentive. (I chose these amounts because the smallest paper bill in current circulation in Canada is the $5 bill and coins present a variety of processing and handling problems (Dillman et al. 2009). The cash was attached to the prenotification letter. The letter presented the incentive as follows: "Please accept the attached as a token of our appreciation for participating in the project." All letters were hand signed and printed on university letterhead.

Four days after the prenotification letter was mailed, participants received a survey invitation via email. If they did not respond to the initial email invitation within 3 days, they

were sent a reminder email. If they had not responded in another 6 days, they were sent a final email reminder.

A variety of bivariate and multivariate analyses were performed to assess the difference in response rate by incentive condition. Cross-tab analysis was used to analyze group differences; chi-square statistics are reported alongside the results of this analysis. Multivariate logistic regression was used to assess the interaction effects of gender and incentive condition on the probability of responding to the survey.

Results

Of the 350 participants, 170 participants completed the survey. Eleven recruitment letters were returned because the participant had moved and the new address was unknown. While there were no bounced or undeliverable email invitations, I adjusted the base of 350 to exclude the 11 letters that were returned. The reason for this exclusion is that these people did not experience the manipulation (the incentive) and thus should not be included in the estimation of the response rate for the purposes of this study. Thirty-two participants were coded as ineligible to participate. These students were enrolled in English as a Second Language classes at the university at the time of the study and might not have had sufficient knowledge of English to respond to the survey questions or to read the letter explaining the incentive. Two other participants were coded as ineligible because they were no longer students at the university. Using the AAPOR Response Rate 1 formula, which adjusts for undeliverables and other non-cases, the overall response rate was 55.7% (Table 1). The response rate is not weighted by gender.

[TABLE 1 ABOUT HERE]

The first research question is whether the response rate differs depending on the incentive amount. From economic theory, we expect a $10 incentive to produce a higher response rate to a survey than a $5 incentive. Since a larger incentive should increase the perceived benefit of completing a survey, the second research question is whether the response speed differs depending on the incentive amount. No differences in response rates and response time between a $5 and a $10 incentive would provide support for social exchange theory. Finally, we can assess whether the effect of incentive amount on response rate differs by gender. If it does, this would provide support for leverage saliency theory.

In terms of the overall response rate (question 1), those who received the $5 incentive were slightly more likely to respond (57.9%) than those who received the $10 incentive (53.6%). However, the difference was not statistically significant (Table 1; two-sided Pearson chi-square; $p = .45$). This finding addresses the first research question about the effect of the incentives amounts on overall response rate.

With regard to timeliness of response (question 2), 37.3% of those who received the $10 incentive responded after the first invitation compared to 28.9% of those who received the $5 incentive (Figure 1). Of the total responses, 70% of all responses ($n = 82$) for the $10 incentive group came after the first email invitation and before a reminder was sent. For the $5 incentive group, 50% of all responses ($n = 88$) came after the first invitation. This difference was statistically significant (two-sided Pearson Chi-Square; $p < .05$). With multiple reminders, the difference in response rates by incentive group diminished.

[FIGURE 1 ABOUT HERE]

With regard to gender (question 3), 51.0% of all men responded, compared to 60.0% of all women (two-sided Pearson chi-square; $p = .134$). As shown in Figure 2 and Table 2, however,

women who received the $10 prepaid incentives were significantly *less* likely to complete the survey than were men who received the $10 prepaid incentive (two-sided Pearson chi-square; 50.6% versus 69.1%, p <.05). Men were slightly more likely to respond with the $10 prepaid incentive, compared to the $5 prepaid incentive, but the difference was not statistically significant (Figure 2; Table 2). To assess the significance of the interaction effects, a logistic regression model was created using gender (women=1; men=0), incentive amount ($10=1, $5=0)), and an interaction coefficient (gender multiplied by incentive) to predict participation in the survey (response coded as 1; non-response is coded as 0). The findings affirm the significance of the interaction effect between gender and incentive amount on response rate (Table 3; $p < .05$).

[TABLES 2 AND 3 AND FIGURE 2 ABOUT HERE]

An analysis of how the incentive affects item non-response and breakoffs was not possible because of the extremely low frequency of these behaviors. There were only two breakoffs; one in each incentive group. Of the 33 core questions for the 170 respondents, only 13 items did not have a valid response, which is extremely small compared to the 5,610 item responses provided by all respondents as part of the survey. Additional analysis was performed to investigate whether survey responses differed by incentive conditions. Of the 33 questions in the survey, only one variable (membership in a civic group) revealed a statistically significant difference (p <.05) between those who received the $5 and those who received the $10 incentive. This finding is likely due to chance.

Discussion

In general, the larger incentive improved the timeliness of responses. However, the additional cost of the incentive is unlikely to offset the minimal administrative costs of additional contacts. The cost of sending email reminders is trivial when compared to the labor costs of multiple telephone calls or the postage costs of mailing subsequent survey packages. Considering the high cost of a larger incentive and the low cost of sending reminder emails, the findings here do not support the $10 incentive.

The results provide partial support for all three prevailing theories of survey participation. In aggregate, there were no significant differences in response rate by incentive condition, which provides support for the social exchange theory. This null finding could be explained in terms of the population having a high level of financial need, which motivates survey response regardless of the size of the incentive. For men, the findings are consistent with other modes, which suggest that a larger incentive produces a slightly higher response rate than does a smaller incentive. However, in this study, women were more responsive to the lower incentive condition, whereas men were more responsive to the higher incentive condition. In fact, for women respondents, a $10 incentive was detrimental to the response rate. Their greater responsiveness to the $5 incentive condition explains why the overall response rate was slighter higher for the $5 incentive condition than for the $10 incentive condition. These gender effects imply that at least part of the motive for survey participation could be gender specific, which provides support for the leverage-saliency theory of survey participation.

Further research should examine whether the combination of different incentive amounts and different appeals for survey participation produce gender differences in response patterns. For example, would men respond more favorably to a survey request that emphasized the $10 incentive as a payment for services rather than as a token of appreciation? Would women

respond more favorably to a small incentive and an appeal for assistance? Incentives alone cannot produce a perfect response rate, but incremental improvements can continue to be achieved.

Acknowledgments

This work was supported by a grant from Grant MacEwan University Faculty of Arts and Science Research Fund to the author.

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Table 1: Response Patterns

	$5 prepaid incentive	$10 prepaid incentive	Overall
Completes	88	82	170
Breakoffs Unusable	1	1	2
Not Eligible (language)	16	16	32
Not Eligible (no longer a student)	2	0	2
Undeliverable	6	5	11
AAPOR Response Rate 1	57.9%	53.6%	55.7%

Table 2. Response Rates by Gender and Incentive

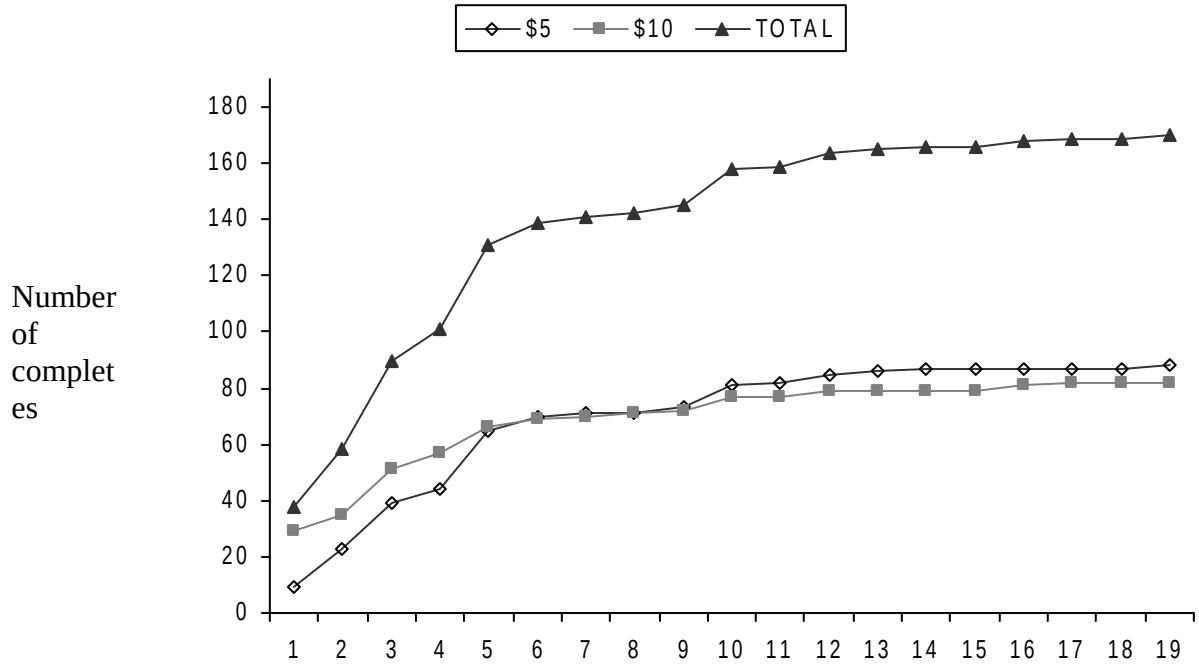
	Women			Men		
	$5 incentive	$10 incentive	Total	$5 incentive	$10 incentive	Total
Number of nonrespondents	25 30.9%	39 49.4%	64 40.0%	39 54.9%	32 43.2%	71 49.0%
Number of respondents	56 69.1%	40 50.6%	96 60.0%	32 45.1%	42 56.8%	74 51.0%
Total responses	81 100%	79 100%	160 100%	71 100%	74 100%	145 100%
	Pearson Chi-Square = 5.7; two-sided p =.024			Pearson Chi-Square = 2.0; two-sided p=.185		

Table 3: Logistic Regression of Interaction Effects of Gender and Incentive on Probability of Completing the Survey

	Exp(B)	B	Standard Error	*p*-value
Gender (women=1; men=0)	2.73	1.00	.339	.003
Incentive ($10=1; $5=0)	1.60	.47	.335	.160
Gender * Incentive	.286	-1.25	.470	.008
constant	.821	-.20	.239	.407

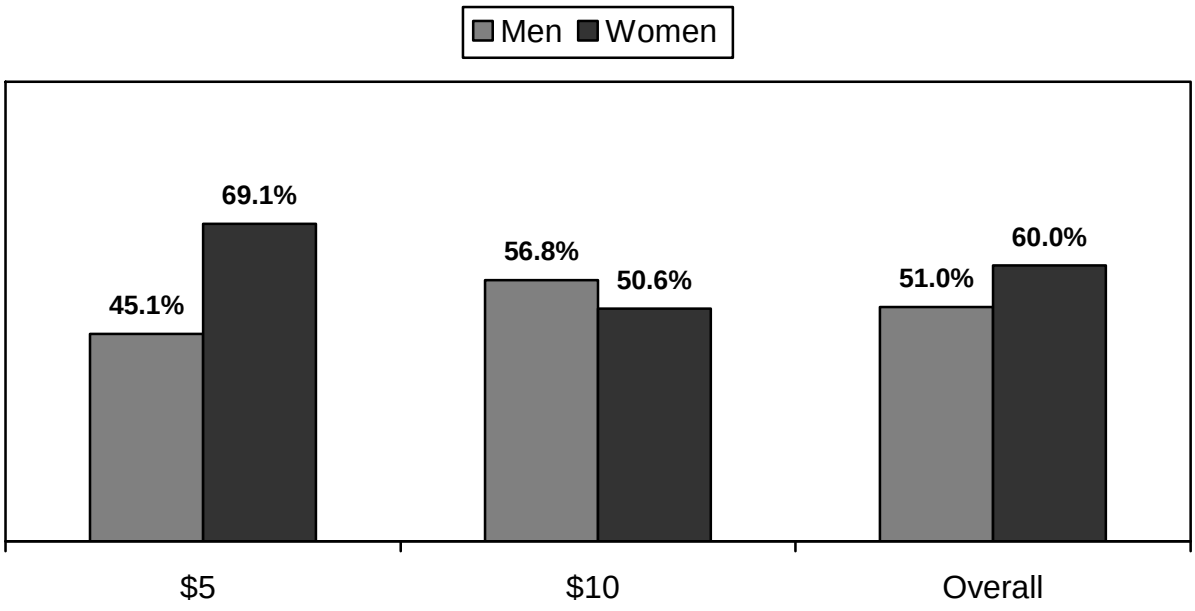
N = 305

Figure 1: Response Timeliness



Note: Reminders were sent on Day 4 and Day 10.

Figure 2: Interaction Effects of Gender and Incentive on Response Rate



Note: For women: Difference between $5 and $10 incentive = -18.5%; $p < .05$

For men: Difference between $5 and $10 incentive = 11.7%; $p > .05$