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Improving Survey Response Rates in Online Panels:

Effects of Low-Cost Incentives and Cost-Free Text Appeal Interventions

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Abstract

Identifying ways to efficiently maximize the response rate to surveys is important in survey-based research. However, evidence on the response rate effect of donation incentives and especially altruistic and egotistic text appeal interventions is sparse and ambiguous. Via a randomized survey experiment among 6,162 members of an online survey panel, this article shows how low-cost incentives and cost-free text appeal interventions may affect the survey response rate in online panels. The experimental treatments comprise (a) a cash prize lottery incentive, (b) two donation incentives that promise a monetary donation to a good cause in return for survey response, (c) an egotistic text appeal, and (d) an altruistic text appeal. Relative to a control group, we find higher response rates among recipients of the egotistic text appeal and the lottery incentive. Donation incentives yield lower response rates.

Keywords

Survey response, survey experiment, online panel, incentives, text appeal

Introduction

Survey questionnaires are widely used to collect data in the social sciences and are often the only financially viable option if we want to collect information from large, geographically dispersed populations (Edwards *et al*., 2002; 2009). The survey response rate—i.e., the proportion of individuals in a sample population that participates in a survey—is a significant component for the quality of survey-based research. Survey non-responses reduce the effective sample size and may easily involve that an obtained survey sample is unrepresentative of a larger population (White, Armstrong, & Saracci, 2008). A high survey response rate is thus important because it diminishes sampling bias concerns and promotes the validity of survey-based research findings (Dillman, Smyth, & Christian, 2009; Groves *et al*., 2009; Singer, 2006).

In recent decades, however, we have witnessed a general decline in the response rate to surveys (Hansen, 2006; Curtin, Presser, & Singer, 2005; de Leeuw & de Heer, 2002). In addition, electronic questionnaires are increasingly used to collect survey data (Dillman *et al*., 2009; Edwards *et al.*, 2009). Most people in the developed countries have internet access, and the use of online questionnaires is a relatively inexpensive and fast way to collect information from people for research purposes (Dillman *et al*., 2009; Ilieva, Baron, & Healey, 2002; Wright, 2005). This development is not without drawbacks, as the response rate to online surveys is often lower than the response rate to surveys using other data collection methods, e.g. postal questionnaires or face-to-face interviews (Couper, 2000; Dillman & Bowker, 2001; Petchenik & Watermolen, 2011). One meta-analysis finds that response rates in online surveys on average are 11% lower than in other types of surveys (Lozar *et al*., 2008).

Moreover, use of non-probability online panels (Couper, 2000) for, e.g., product testing, brand tracking, and customer satisfaction surveys, have become increasingly common over the past decade. According to some scholars, non-probability online panels provide easy

access to consumers and may soon become the primary sample source for market and academic research (Brügge *et al.*, 2012). However, while the response rate to online surveys is relatively low in general, it is often even lower in non-probability online panels (Tourangeau, Couper, & Steiger, 2003). Also, online panel members pay less attention to the attributes of survey email invitations from a known source (i.e., the online panel provider) than people outside an online panel who receive a comparable invitation to participate in an online study (Keusch, 2013; Tourangeau *et al.*, 2009). Common methods to ensure high survey response rates (e.g., monetary response incentives) may thus be less effective in online panel settings.

Identifying strategies that efficiently maximize the response rate to surveys in online panels is thus important. This article shows how different low-cost incentives and cost-free text appeal interventions may improve the survey response rate in online panels. It thus contributes to the survey research literature and expands our knowledge on how to generate high response rates in online survey panels in two ways. First, survey researchers have examined a range of strategies for increasing survey response rates (Edwards *et al.*, 2002; 2009). Several scholars have thus investigated the response rate effect of incentives in the form of cash prize lotteries, some the effect of charity donation incentives, and a few the effect of altruistic text appeal interventions that stress the public benefit of survey participation. However, the findings in relation to donation incentives and altruistic text appeals are mixed (Deehan, Templeton, Taylor, Drummond, & Strang, 1997; Deutskens, Ruyter, Wetzels, & Paul Oosterveld, 2004; Gattellari & Ward 2001; Warriner, Goyder, Gjertsen, Hohner, & McSpurren, 1996). In addition, only a few older studies have examined the response rate effect of text appeal interventions that seek to engage a person's ego-related need for approval from the self or others (Childers, Pride & Ferrell, 1980; Linsky, 1965), and their results are also inconclusive.

This article offers new evidence on how donation incentives, altruistic text appeals, and egotistic "need for approval" text appeals may affect the survey response rate in online panels. As both altruistic and egotistic text appeal interventions are essentially cost-free and easily implemented, a clearer and less ambiguous understanding of how these strategies may benefit the survey response rate in online panels is salient to survey practitioners.

Second, this article contributes with evidence on the *relative* response rate effects of cash prize lottery incentives, donation incentives, and altruistic and egotistic text appeal interventions. Our knowledge about the relative effects of these strategies is mainly based on reviews (Edwards *et al.*, 2002; 2009; Fan & Yan 2010; Yammarino, Skinner, & Childers 1991) that infer the aggregated findings of individual studies that (a) use widely heterogeneous sample populations and (b) test the effect of only one or (on occasion) two strategies. A single study that uses the same sample to simultaneously examine the response rate effect of cash prize lottery incentives, donation incentives, and altruistic and egotistic text appeal interventions has never been conducted. However, valid comparisons of response rate effects across different response strategies must be based on such same-sample approach. For example, Rose, Sidle, and Griffith (2007) study the effect of a cash incentive among retail employees, while Thistlethwaite and Finlay (1993) examine the effect of a non-monetary incentive among elderly people. The response rate effect of these two strategies will likely differ due to differences in sample population characteristics, in turn prohibiting further conclusions on the two strategies' average effect. This different-sample bias problem is diminished (though not eliminated) if the effect estimate of a given response strategy can be based on the aggregated results of several studies. However, when only few studies have examined the response rate effect of a given response strategy—as in the case with donation incentives and especially altruistic and egotistic text appeal interventions—this bias problem is compounded.

Moreover, the use of samples comprising particular types of individuals—e.g., physicians (Leung *et al.*, 1993), surgeons (Gattellari & Ward 2001), or women reporting a history of hot flashes (Whiteman *et al.*, 2003)—limits the inference potential of all findings on relative effects. Say that two studies use sample nurses. One study tests the effect of a cash treatment, and the other the effect of a text appeal treatment. While this setting allows for some extent of valid identification of relative treatment effects, the potential for extrapolating this finding to a broader population than nurses or health practitioners is likely limited, in the worst case erroneous. This article uses a single sample of adults at all stages in life, thus minimizing the concern that comparison of effects across response strategies is biased by sample heterogeneity—while simultaneously maintaining a reasonable potential for generalizing the result.

We use a randomized survey experiment among 6,162 adults—all members of a Danish non-probability online panel—to test the response rate effect of low-cost incentives and cost-free text appeal interventions. For both types of strategies, the immediate beneficiary of survey response is either the individual respondent or a larger social entity. In particular, the survey response rate is operationalized as the ratio of solicited panelists who call up the first page of the online survey (i.e., contrasting the ratio of solicited panelists who fail to move to the first survey page).[1] The experimental treatments comprise differences in an email invitation to participate in an online survey. More specifically, each panelist is randomly assigned into either a control group or one of five treatment groups. A cash prize lottery treatment tests the response rate effect of a monetary incentive that directly benefits the respondent, while two other treatments reward survey participation with a monetary donation to a good cause, thus testing the effect of a monetary incentive directed at altruistic motivation (the size of the donation differs in the two treatments). Similarly, we test the response rate effect of egotistic text appeal via a text treatment that appeals to a person's need

for approval from the self or others, while another text treatment engages altruistic motivation by stressing the public benefit of survey participation.

Motivation

Survey research has examined many different ways to increase the responses to postal and online survey questionnaires (Edwards *et al.*, 2002; 2009; Fan & Yan 2010; Yammarino *et al.*, 1991). This article focuses on two types of incentives (cash prize lottery and donation) and two types of text appeal strategies (egotistic appeal and altruistic appeal).

As to *incentive strategies*, research shows that cash incentives may increase the survey response rate (Beebe, Davern, McAlpine, Call, & Rockwood, 2005; James & Bolstein, 1990; 1992; London & Dommeyer, 1990; Rose *et al.*, 2007; Warriner *et al.*, 1996)—especially when such incentives are unconditional (i.e., given before or with the survey invitation) (Singer & Ye, 2013). Similarly, several studies find that cash prize lottery incentives have a positive response rate effect (Leung *et al*., 2002; Göritz & Luthe 2013a, 2013b; Kalantar & Tally 1999; Marrett, Kreiger, Dodds, & Hilditch, 1992; Whiteman *et al.*, 2003). For exceptions, see Göritz (2006a) and Göritz & Luthe (2013c).

Other studies have examined the response rate effect of donation incentives, i.e. linking survey response to the promise of a monetary donation to a charity. However, the results are mixed: some studies find a positive effect (Brennan, Seymour, & Gendall, 1993; Deehan *et al.*, 1997, Deutskens *et al.*, 2004; Faria & Dickinson, 1992), others find no effect (Furse & Stewart 1982; Skinner, Ferrell, & Pride, 1984; Warriner *et al.*, 1996). In fact, Gattellari and Ward (2001) find a counterproductive effect of a donation incentive; Hubbard and Little (1988) that it did not improve the response rate and may have deterred response. Two studies test the relative response rate effects of donation versus lottery incentives (Hubbard & Little

1988; Warriner *et al.*, 1996), and both find a null-effect of donation incentives and a higher response rate among lottery treatment recipients than donation treatment recipients.

As to *text appeal strategies*, some studies have tested the effect of cover letters emphasizing the public benefit of survey participation, i.e., appeal to a person's altruistic motivation to do something good for others and society. Also here the results are mixed and inconclusive: some studies find a positive effect (Cavusgil & Elvey-Kirk, 1998; Houston & Nevin, 1977; Kropf & Blair, 2005; Thistlethwaite & Finlay, 1993), others find no effect (Bachman, 1987; Dillman *et al.*, 1996; Linsky, 1965; Roberts, McGory, & Forthofer, 1978).

Two caveats weaken the inference potential of these findings. First, most studies test the response rate effect of altruistic text appeal by text treatments specifying the social utility of survey participation in relation to a particular area of interest, e.g., auto services and supplies retail (Cavusgil & Elvey-Kirk, 1998), local retail shopping facilities (Houston & Nevin, 1977), and dental practice (Roberts *et al.*, 1978). The response rate effect observed in these studies is thus potentially more related to area-particular preferences than to general altruistic public interest. Second, several of the studies test the effect of altruistic text appeal relative to another type of appeal rather than a control group, e.g., a narrow self-interest appeal (Kropf & Blair, 2005), help-the-sponsor appeal, or both (Bachman, 1987; Cavusgil & Elvey-Kirk, 1998; Houston & Nevin, 1977). Disentangling whether the observed response rate effects are driven by the altruistic text appeal or the other type(s) of text appeal is therefore impossible. Also, the relative effect of altruistic text appeal interventions versus monetary incentives has never been tested.

Only a few older studies examine the response rate effect of text appeal interventions seeking to engage a person's ego-related needs for approval from the self or others. The findings are mixed: Relative to a control group, Linsky (1965) observes a positive effect, whereas Childers *et al*. (1980) find a null (business sample) and a negative (academic

sample) effect. Two other studies have examined the effect of egotistic "need for approval" text appeal relative to other types of appeal, i.e., operating without a control group. Champion and Sear (1969) thus find a positive effect relative to a "help-the-sponsor" appeal, while Houston and Nevin (1977) find a positive effect relative to a "commercial sponsor" appeal, but a negative effect relative to a "university sponsor" appeal. The relative response rate effects of egotistic text appeal interventions serving a person's need for approval versus monetary incentives or altruistic text appeal have never been directly tested.

The scarcity of survey research on the response rate effect of egotistic "need for approval" text appeal interventions is puzzling, considering that prominent motivation research suggests that this form of egotistic motivation is an important psychological motivator for individual discretion and behavior. Self-determination theory (SDT; Deci & Ryan, 1985; Gagné & Deci, 2005)—a theory of human motivation and personality spanning more than three decades of research (Deci & Ryan, 2004)—suggests that motivation is not a unitary construct. Rather, the initiation, focus, and persistence of human behavior are explainable by different types of motivation that are not necessarily mutually exclusive. In light of SDT, survey response strategies in which the immediate beneficiary of survey response is a social entity (donation incentives or altruistic text appeal) may affect the survey response rate by activating recipients' "identified" or "integrated motivation" to do good for others and society.[2] Similarly, respondent-directed cash incentives may stimulate the survey response rate by engaging a person's "external motivation," i.e., motivation referring to behavioral self-regulation to obtain an external reward (e.g., money) or avoid an external constraint (Deci & Ryan, 2004; Gagné & Deci, 2005). SDT also emphasizes a fourth—equally important—type of motivation: "introjected motivation," i.e., motivation referring to behavioral self-regulation based on internal pressures of pride or self-importance relating to a basic need for approval (Deci & Ryan, 2004; Gagné & Deci, 2005). SDT thus supports the

notion that text appeal interventions targeting a person's egotistic need for approval may constitute an effective strategy for engendering high survey response rates. Yet survey research appears to have largely overlooked this particular form of essentially cost-free intervention.

Data

The sample population comprises more than 6,000 individuals in an online panel maintained and used for survey purposes by Kompas Kommunikation—a Danish full-service communications and PR agency for healthcare, finance, education, and organizations. Kompas Kommunikation is part the European network Scholz and Friends and the global Health Collective Network. Its organizational profile and setup are typical for a medium-size communications firm. Kompas Kommunikation sponsored the survey experiment costs.

Panel enrollment is voluntary and panelists may terminate participation at any time. Individuals enroll as panelists electronically (at www.kompaskommunikation.dk). Panel recruitment occurs via advertising and panelists' word-of-mouth enrollment endorsements to their social networks. Usually, panelists receive an email invitation to participate in an online survey on a monthly to bimonthly basis. The typical response rate is relatively low at 15-20%. While this article may thus be of special relevance to online panels with low and declining response inclinations, response rates under 20% are not uncommon in non-probability online panels (Tourangeau, Couper, and Steiger, 2003)—and there is no apparent reason to suspect that the treatments would work differently in online panel populations with higher average response rates.

The panel comprises Danish adults (18+) of all ages. Compared to 2013 population statistics from Statistics Denmark, the panel has a slight preponderance of women, individuals geographically located in the Capital Region of Denmark, and individuals below

age 60.[3] This sample skewness does not confound the internal validity of our results, but the generalized inferences from the findings should be interpreted in perspective of this minor caveat.

The survey experiment was conducted in early August 2013. 6,162 individuals were enrolled in the panel at the date of data collection. The panelists received a two-week response deadline.

Design

Of the 6,162 panelists, 5,000 were randomly assigned into one of five distinct treatment groups (1,000 in each). The remaining 1,162 panelists comprise the experiment control group, henceforth referred to as $C^{baseline}$. Power analysis—with type I error at two-sided 0.05, power (1 – type II error) at 80%, and using Cohen's (1988) effect size index—suggests sample size distributions allowing for identification of small effects (effects of 0.125 or larger).

All panelists were sent an email encouraging them to participate in a brief online survey. The specific content of the survey (i.e., general survey satisfaction, suggestions for improvements, background information) was not revealed in the e-mail—and should therefore not affect the validity of the results. The $C^{baseline}$ panelists received the following invitation text: "Dear participant in the Kompas Panel, We kindly ask you to participate in a brief survey."

The panelists in the five treatment groups received the same basic text as the $C^{baseline}$ panelists, along with the following text, stated in bold font, after the sentence "We kindly ask you to participate in a brief survey":

Group $T^{lottery}$ (incentive treatment, cash prize lottery): "If you participate, you are in the draw for a coupon redeemable for 300 DKK. Your chance of winning will be 1 in 100."

Group $T^{donation3}$ (incentive treatment, monetary donation of 3 DKK): "We donate money to a good cause for each participant. We donate 3 DKK to school projects on anti-bullying if you participate."

Group $T^{donation10}$ (incentive treatment, monetary donation of 10 DKK): "We donate money to a good cause for each participant. We donate 10 DKK to school projects on anti-bullying if you participate."

Group $T^{altruistic}$ (text appeal treatment, altruistic): "Your participation will contribute to new social knowledge and thus serves the public interest."

Group $T^{egotistic}$ (text appeal treatment, egotistic) "You have been specifically selected among Kompas Panel participants."

As the panel is Danish, all monetary values were listed in Danish Kroner (DKK).[4] The $T^{lottery}$ treatment targets activation of external extrinsic motivation via a cash prize lottery incentive. In the two donation treatments, $T^{donation3}$ and $T^{donation10}$, the immediate beneficiary of survey response is not the individual respondent, but rather a larger social entity. Both donation treatments thus target altruistic motivation to serve the public interest, i.e., by substantiating the public benefit of survey participation through the promise of a monetary donation to a good cause. The size of the donations differs in $T^{donation3}$ and $T^{donation10}$, which allows us to estimate the importance of the incentive size.

The $T^{lottery}$ treatment explicates that the chance of winning the 300 DKK is 1 in 100. The expected average pay-off of survey participation is thus 3 DKK—corresponding to the 3 DKK in the $T^{donation3}$ treatment. We therefore suggest that any difference in the response rate

of group $T^{lottery}$ relative to $T^{donation3}$ is a consequence of treatment type rather than monetary amount.[5]

To make the two donation incentives more tangible, we explicate the donation recipient: school projects on anti-bullying. We do not specify a particular organization or project to minimize the risk of confounding effects of attitudes, feelings, and perceptions about a given organization or project. Had we indicated a particular organization, our findings could be driven by organization-specific publicity and reputation concerns rather than the panelists' altruistic motivation to do good for others and society. We chose anti-bullying projects because most Danes are likely to see childhood bullying as a societal phenomenon worth minimizing, irrespective of their own experiences with bullying (Kofoed and Søndergaard, 2013). We considered donation incentives relating to Red Cross and projects to help homeless people, but our estimates would likely be more vulnerable to bias attributable to organization- or project-specific attitudes, e.g., about foreign aid or homelessness.

The $T^{altruistic}$ treatment targets activation of an individual's altruistic motivation to serve the public interest by text appeal intervention. Similarly, the $T^{egotistic}$ text appeal treatment targets activation of a particular aspect of a person's egotistic motivation. In terms of SDT (Deci & Ryan, 2004; Gagné & Deci, 2005): an individual's "introjected extrinsic motivation" reflecting feelings of pride and self-importance relating to a basic human need for approval from the self or others. This concept of motivation is closely related to "ego involvement," a classic form of self-regulation whereby a person acts as to enhance or maintain his or her self-esteem and the feeling of worth (Nicholls, 1984; Ryan, 1982).

For both incentive and text appeal strategies, we thus operate with two treatment types in which the immediate beneficiary of survey response is either the individual respondent or a

larger social entity (donation incentives are captured by two treatments, allowing us to gauge the importance of the incentive size). Table 1 shows the four types of treatments.

[Table 1 here]

Because of the randomized survey experiment design, only the invitation text should differ systematically across the experiment groups. In other words, the six experiment groups should be balanced on all characteristics—in turn allowing for an unbiased identification of treatment effects. Nevertheless, as a validation check, we test the robustness of our results using a non-parametric matching procedure known as Coarsened Exact Matching (Iacus, King, & Porro, 2012).

Results

The experiment design allows for unbiased effect estimation only inasmuch as all characteristics affecting panelists' response inclinations are equally distributed between the six experiment groups ($C^{baseline}$, $T^{lottery}$, $T^{donation3}$, $T^{donation10}$, $T^{altruistic}$, and $T^{egotistic}$). Table 2 shows the distribution in gender, age, and regional location for the full sample and by experiment group. Panelists provide this information upon enrollment (age is based on date of birth). We thus have background data for all panelists, respondents as well as non-respondents.

The effective sample size is 6,101. 6,162 people were enrolled in the Kompas panel at the date of data collection—and thus randomly assigned into either the control group or one of the five treatment groups—but 61 survey invitation emails "bounced." Those 61 individuals were dropped from the sample. Importantly, we find no difference in the distribution of the 61"bouncers" (at $p < .1$) across the six experiment groups or for any of the pairwise group constellations.

[Table 2 here]

For each variable, we use one-way analysis of variance (ANOVA) estimation to test for difference in means across the six experiment groups. Column "*p*>F" shows the results. We find no statistically significant difference in the distribution of gender, age, and regional location across the groups (at $p < .1$). For each variable, we also use Bonferroni-Dunn multiple-comparison tests (and two-sample t-tests) to check for differences in means for all pairwise constellations of experiment groups—again finding no significant differences in means (at $p < .1$). These findings support that the experiment groups are, indeed, balanced. Nevertheless, to account for any imbalances for these covariates, our model specifications also include measures on gender, age, and regional location.

Moreover, Table 2 (bottom) shows the across-group survey response rate. The response rate ranges from 0.14 to 0.22 across the six experiment groups. ANOVA estimation shows that the difference in means is significant ($p < .001$). Bonferroni-Dunn tests (and two-sample t-tests) reveal that $T^{egotistic}$ panelists exhibit a five percentage points higher response rate relative to the $C^{baseline}$ panelists ($p = .03$) and seven and eight percentage points relative to the $T^{donation3}$ and $T^{donation10}$ panelists, respectively ($p < .001$). Similarly, the response rate is five and six percentage points higher among $T^{lottery}$ panelists than among $T^{donation3}$ and $T^{donation10}$ panelists, respectively ($T^{donation3}$: $p = .08$; $T^{donation10}$: $p = .01$), and five percentage points higher among $T^{altruistic}$ panelists relative to $T^{donation10}$ panelists ($p = .03$).

These results are straightforward and provide some information about the relative treatment effects. However, given the binary nature of the dependent variable (non-response or response), we employ logit regression analyses testing the response rate effect of the five treatments relative to the control group.

Table 3 shows the results (we have also tested the treatments' response rate effect by linear probability modeling. The results are qualitatively the same). Model 1 includes the five treatments ($T^{lottery}$, $T^{donation3}$, $T^{donation10}$, $T^{altruistic}$, and $T^{egotistic}$). Model 2 adds gender, age, and

regional location as control variables. We report both odds ratio estimates and predicted probability estimates.

[Table 3 here]

The findings are in line with the Bonferroni-Dunn results. The estimated X^2 in model 1 is significant ($p>X^2 = <.001$), suggesting a total effect of the five treatments relative to the control group. Moreover, the odds ratio and predicted probability estimates are very similar across the two models, i.e., without and with controls. In support of the balancing tests, this consistency suggests that individual characteristics that may affect the panelists' response inclinations are equally distributed among the six experimental groups.[6]

The treatment estimates show the response rate effects of the five treatments relative to the $C^{baseline}$ panelists. However, as we are also interested in between-treatment comparison of effects, we estimate the relative response rate effects for all pair-wise constellations of treatments (the predicted probability estimates of these procedures are listed in Appendix A).

Like the Bonferroni-Dunn tests, the results suggest a positive response rate effect of the text appeal treatment on egotistic motivation for approval ($T^{egotistic}$) relative to the control group and both donation incentives. Treatment $T^{egotistic}$ improves the predicted probability of individual survey response by 4.5% relative to the control group ($C^{baseline}$), 7% relative to the $T^{donation3}$ panelists, and 8% relative to the $T^{donation10}$ panelists.

Similarly, the cash prize lottery treatment ($T^{lottery}$) appears to generate a higher response rate relative to the $C^{baseline}$ panelists (2.7%) and panelists receiving donation incentive treatments ($T^{donation3}$: 5.3%; $T^{donation10}$: 6.3%). The altruistic text treatment ($T^{altruistic}$) appears to increase the predicted probability of survey response relative to both donation incentives as well ($T^{donation3}$: 4.2%; $T^{donation10}$: 5.3%).

Finally, treatment $T^{donation10}$ appears to decrease the predicted probability of survey response relative to the control group ($C^{baseline}$) by 3.5%. The results also suggest a negative

effect of $T^{donation3}$ relative to $C^{baseline}$ (negative 2.6%), but the effect estimate is not statistically significant (at $p < .1$).

We test the robustness of our findings by weighing the data using Coarsened Exact Matching (CEM; Iacus *et al.*, 2012), a non-parametric matching procedure. The results of this robustness test confirm the main results. The estimation results and further details on the CEM procedure are listed in Appendix B.

Conclusion

Over the last decade, the use of non-probability online panels in market and academic research has increased (Brügge *et al.*, 2012). However, the survey response rate in online panels is often relatively low (Tourangeau, Couper, & Steiger, 2003), and members of online panels pay less attention to the attributes of survey email invitations from a known source (i.e., the online panel provider) than non-members who receive comparable invitations (Keusch, 2013; Tourangeau *et al.*, 2009). Salient survey research questions thus pertain to the collection of data in online survey panels. How can survey-based research involving online panels increase the survey response rate and which strategies are useful in that regard?

This article shows that the survey response rate in online panels can be increased by low- to no-cost incentive and text appeal strategies. Using a non-probability online panel with relatively low response rate propensities, we find robust evidence that both low-cost cash prize lottery incentives and cost-free text appeal interventions targeting an individual's egotistic need for approval may increase the survey response rate.

The observed effect of the cash prize lottery incentive is in line with previous findings (Leung *et al.*, 2002; Göritz & Luthe 2013a, 2013b; Kalantar & Tally 1999; Marrett *et al.*, 1992; Whiteman *et al.*, 2003), while the observed effect of the egotistic text appeal intervention is an important contribution to general survey research: SDT (Deci & Ryan,

1985; 2004; Gagné & Deci, 2005) has long emphasized the behavioral importance of (introjected) motivation reflecting behavioral self-regulation based on internal pressures of pride and self-importance relating to a basic human need for approval. Yet little research has tested how text appeal interventions engaging this form of motivation may increase an individual's survey response inclinations. Instead, the survey literature has largely focused on incentive and text appeal strategies targeting other forms of motivation (e.g., monetary incentives catering to "external motivation" or donation incentives or altruistic text appeal interventions catering to "integrated" or "identified motivation" to do good for others and society). In this context, this article's findings offer evidence that egotistic "need for approval" text appeal is a cost-free and effective way to ensure higher survey response rates in online panels. Future survey research should seek to replicate this finding in samples to do not involve online panelists.

The results also suggest that donation incentives should be used with some caution in online panels as they may both be ineffective and counterproductive (Gattellari & Ward, 2001). However, not all response inducement efforts targeting altruistic motivation are necessarily futile and best avoided. While we find a statistically non-significant response rate effect of an altruistic text appeal treatment, the sign of the treatment coefficient is still positive—and we cannot reject that our null-finding is a partial product of insufficient statistical power.

But what may possibly explain that donation incentives, as opposed to no incentives, have a negative response rate effect? Hubbard and Little (1988, p. 225) acknowledge that charity donations may relate to philanthropic considerations, but suggest that donations "could just as easily involve some kind of *quid pro quo*." In other words, donation incentives may not activate a person's altruistic motivation. A complementary explanation is that people, for some reason, disapprove of linking survey participation with a monetary donation

incentive. For example, the respondent may perceive such strategies as “hostage-taking” or “control”; as inappropriate survey manipulation incentives. In line with motivation crowding theory (Frey & Jegen, 2001), such feelings may “crowd out” their motivation to respond to a survey. Future research will have to substantiate these propositions.

Overall, we suggest that scholars collecting online panel survey data may benefit from using cash prize lottery incentives and egotistic text appeal interventions: Even low-cost cash prize lotteries may help ensure a higher survey response rate, and “need for approval” text appeals, which are cost-free, appear to produce similar results. Nevertheless, future research should seek to replicate the results of this article on larger and preferably cross-country samples.

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Notes

1. The survey retention rate (i.e., the ratio of respondents who complete the full survey; do not drop out) is another outcome measure of scholarly interest. For example, Göritz (2006b) finds that incentives have a smaller effect on response than on retention. Such a test is beyond the scope of this article. As a likely consequence of the survey's (short) length, the empirical variance in retention is simply too small for meaningful analyses: Only 5 of 1,054 responding panelists did not complete the survey. Similarly, less than 4 percent of the completed responses had one or more "missing item values," thus ruling out item-nonresponse analyses.
2. "Identified motivation" means that individuals behave in accordance with personal values and goals. "Integrated motivation" refers to identification with the value of an activity to the point that it becomes an internalized part of a person's habitual functioning and self-identity (Deci & Ryan 2004). Altruistic motivation to serve others and the public interest relates to these forms of motivation. Vandenabeele (2007) suggests that altruistic "public service motivation" originates from within institutions that have institutionalized certain public values which individuals, in turn, internalize in their self-identity.
3. Assuming that age is highly correlated with internet accessibility and interest, the underrepresentation of the 60+ age group is unsurprising. Kompas Kommunikation is located in Copenhagen, which explains the preponderance of individuals geographically located in the Capital Region.
4. 100 DKK translate to about 18 USD. The sizes of the incentives are thus comparable to those of contemporary survey response studies (Cycyota & Harrison 2002; Rose *et al.*, 2007; Teisl, Roe, & Vayda, 2005; Whiteman *et al.*, 2003).
5. Scholars suggest that the intangible nature of the internet raises (administrative) problems for the use of "direct" cash incentives in online surveys. Thus, "empirical research is needed to identify alternative online incentive systems, such as lotteries or donations, and examine their effect on response rates" (Deutskens *et al.*, 2004, p. 23). We therefore examine the response rate effect of a cash lottery incentive, rather than a "direct" cash incentive.
6. The response rate effect of treatment $T^{lottery}$ is not significant in model 1. This difference is explainable by standard error differences: Inclusion of gender, age, and regional location covariates reduces the residual variance in the response rate measure, in turn lowering the standard errors of the regression estimates in model 2 (see Angrist & Pischke, 2009, p. 24).

Appendix

A: Relative Treatment Effects

[Table A-1 here]

B: Coarsened Exact Matching

Iacus *et al*. (2012) suggest a new method to improve the estimation of causal effects by reducing imbalance in covariates between treated and control groups: CEM. The panelists are organized in bins of overlapping covariates. Bins with at least one treatment and one control observation are admitted to the matched sample. Weights are calculated to get an estimate of the sample average treatment effect on the treated. We match on the full set of panelist covariates, i.e., gender, age category, and regional location category. Because we operate with a multichotomous treatment variable, we follow the recommendation of Blackwell, Iacus, King, and Porro (2009) and run CEM on each pair of treatment levels, get the correct weights for each, and calculate separate response rate effects. The logit regression framework (with controls and appropriate weights) is applied to each of the matched samples. Table A-2 shows the predicted probability estimates of these procedures.

[Table A-2 Here]

The results of the matched sample analyses are fully consistent with the full sample results and thus confirm the robustness of our findings. Compared to the full sample, precision is a little lower and the numerical point estimates differ slightly, but the estimated response rate effects are qualitatively similar with respect to sign, magnitude, and level of statistical significance.

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Table 1. The Treatment Design

		Immediate beneficiary	
		Individual	Social entity
Strategy type	Incentive	Cash prize lottery ($T^{lottery}$)	Monetary donation ($T^{donation3}$, $T^{donation10}$)
	Text appeal	Egotistic ($T^{egotistic}$)	Altruistic ($T^{altruistic}$)

Table 2. Sample Characteristics. Mean and Standard Deviation (in Parentheses)

	Full sample	$C^{baseline}$	$T^{lottery}$	$T^{donation3}$	$T^{donation10}$	$T^{altruistic}$	$T^{egotistic}$	*p*> F
Gender (female)	.59 (.491)	.60 (.490)	.58 (.494)	.59 (.491)	.62 (.487)	.58 (.494)	.59 (.493)	.56
Age: 18-29	.21 (.408)	.20 (.397)	.21 (.409)	.22 (.411)	.21 (.410)	.22 (.412)	.22 (.411)	.87
——: 30-39	.15 (.361)	.15 (.357)	.15 (.359)	.15 (.361)	.17 (.378)	.15 (.353)	.15 (.356)	.70
——: 40-49	.22 (.412)	.24 (.427)	.23 (.421)	.19 (.395)	.20 (.403)	.22 (.416)	.21 (.404)	.13
——: 50-59	.22 (.414)	.23 (.421)	.22 (.411)	.23 (.418)	.20 (.398)	.23 (.422)	.22 (.414)	.54
——: 60+	.20 (.399)	.18 (.388)	.19 (.395)	.21 (.409)	.21 (.410)	.19 (.388)	.21 (.409)	.37
Region: Capital	.40 (.489)	.38 (.485)	.42 (.494)	.42 (.494)	.39 (.487)	.38 (.486)	.38 (.486)	.14
——: Zealand	.12 (.321)	.13 (.341)	.11 (.315)	.11 (.312)	.11 (.307)	.12 (.328)	.12 (.319)	.39
——: North	.09 (.287)	.09 (.285)	.10 (.305)	.09 (.279)	.08 (.278)	.09 (.281)	.09 (.292)	.74
——: Central	.19 (.395)	.19 (.390)	.19 (.388)	.20 (.397)	.20 (.402)	.19 (.391)	.20 (.402)	.89
——: Southern	.21 (.404)	.21 (.408)	.18 (.384)	.19 (.390)	.22 (.416)	.22 (.416)	.21 (.405)	.12
Response rate	.18 (.381)	.17 (.376)	.20 (.398)	.15 (.356)	.14 (.343)	.19 (.392)	.22 (.415)	.00
N	6,101	1,152	983	988	994	992	992	

Table 3. Effect of Response Treatments on Survey Response Rate. Logistic Regression

	Model 1 (without control variables)		Model 2 (with control variables)	
	Odds Ratio	Predicted Probability	Odds Ratio	Predicted Probability
Treatment $T^{lottery}$	1.195 (.135)	.027 (.017)	1.220* (.145)	.027* (.016)
Treatment $T^{donation3}$	.851 (.102)	-.022 (.016)	.814 (.103)	-.026 (.016)
Treatment $T^{donation10}$	.767** (.094)	-.034** (.016)	.747** (.096)	-.035** (.015)
Treatment $T^{altruistic}$	1.135 (.129)	.019 (.017)	1.138 (.136)	.017 (.016)
Treatment $T^{egotistic}$	1.386*** (.154)	.051*** (.017)	1.371*** (.161)	.045*** (.017)
Gender	-	-	.951 (.069)	-.007 (.010)
Age: 18-29	-	-	.321*** (.052)	-.151*** (.022)
——: 30-39	-	-	.823 (.116)	-.026 (.019)
——: 50-59	-	-	1.843*** (.206)	.081*** (.015)
——: 60+	-	-	3.271*** (.360)	.157*** (.014)
Region: Zealand	-	-	.779** (.095)	-.033* (.016)
——: North	-	-	.936 (.123)	-.009 (.017)
——: Central	-	-	.949 (.095)	-.007 (.013)
——: Southern	-	-	.907 (.089)	.013 (.013)
X^2	33.23***		425.01***	
Log pseudolikelihood	-2764.71		-2448.29	
N	6,101		6,101	

Note: *p <.1, **p <.05, ***p <.01. Robust standard errors in parentheses. The experimental control group ($C^{baseline}$) and men, age 40-49 years, who are located in the Capital Region of Denmark constitute the reference group.

Table A-1. Effect of Response Treatments on Survey Response Rate. Predicted Probabilities for All Pairwise Constellations of Experiment Groups

	$C^{baseline}$	$T^{lottery}$	$T^{donation3}$	$T^{donation10}$	$T^{altruistic}$	$T^{egotistic}$
$T^{lottery}$	.027* (.016)	-	.053***	.063***	.010	-.017
			(.017)	(.016)	(.017)	(.018)
$T^{donation3}$	-.026 (.016)	-.053***	-	.010	-.042***	-.070***
		(.017)		(.016)	(.016)	(.017)
$T^{donation10}$	-.035**	-.063***	-.010	-	-.053***	-.080***
	(.015)	(.016)	(.016)		(.016)	(.017)
$T^{altruistic}$	.017 (.016)	-.010	.042***	.053***	-	-.027
		(.017)	(.016)	(.016)		(.017)
$T^{egotistic}$	.045***	.017	.070***	.080***	.027	-
	(.017)	(.018)	(.017)	(.017)	(.017)	

Note: *p <.1, **p <.05, ***p <.01. Robust standard errors in parentheses. Estimates based on a (re)estimation of the Table 3, model 2, specification five times, each time substituting the C^0 reference group with one of the five treatments. The column "C^0"-results are thus identical to those in Table 3, model 2. Similarly, all *p*-values are identical to the results of Wald tests for each pairwise constellation of treatment estimates.

Table A-2. Effect of Response Treatments on Survey Response Rate. Logistic Regression Based on Coarsened Exact Matching. Predicted Probabilities for All Pairwise Constellations of Experiment Groups

	$C^{baseline}$	$T^{lottery}$	$T^{donation3}$	$T^{donation10}$	$T^{altruistic}$	$T^{egotistic}$
$T^{lottery}$	.030*	-	.050***	.065***	.014	-.015
	(.017) [2,049]		(.017) [1,889]	(.017) [1,875]	(.018) [1,890]	(.018) [1,883]
$T^{donation3}$	-.027	-.050***	-	.013	-.041**	-.074***
	(.016) [2,059]	(.017) [1,889]		(.016) [1,886]	(.018) [1,766]	(.018) [1,894]
$T^{donation10}$	-.031**	-.065***	-.013	-	-.050***	-.075***
	(.016) [2,037]	(.017) [1,875]	(.016) [1,886]		(.017) [1,880]	(.017) [1,871]
$T^{altruistic}$	.015	-.014	.041**	.050***	-	-.025
	(.017) [2,056]	(.018) [1,890]	(.018) [1,766]	(.017) [1,880]		(.018) [1,892]
$T^{egotistic}$	.043**	.015	.074***	.075***	.025	-
	(.017) [2,051]	(.018) [1,883]	(.018) [1,894]	(.017) [1,871]	(.018) [1,892]	

Note: *p <.1, **p <.05, ***p <.01. Robust standard errors in parentheses. Sample sizes in brackets. Exact matching on: gender, age (category), and regional location (category).