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Ballpoint Pens as Incentives with Mail Questionnaires – Results of a Survey Experiment

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Abstract

The results of meta-analyses carried out in studies designed to examine the effectiveness of different types of incentives routinely applied in numerous Anglo-American survey research projects to secure higher response rates have led to the following general conclusion: monetary incentives (i.e. cash) perform better than non-monetary incentives (e.g. small-sized gifts). Comparatively few such studies have been conducted in Germany and they cover only a rather limited range of monetary or money-related incentives. The current paper seeks to go beyond such limitations by testing the assumption that, in the case of surveys covering rather more intimate and morally relevant issues, less expensive non-monetary incentives might be quite effective in increasing the response rate. This study was carried out within the context of a larger research project ("Self-Expressive Forms and Functions of Personal Conscience in Every-Day Life") conducted at the University of Halle-Wittenberg and based on a random sample of 4000 people drawn from the city registry in Halle (Saale). These individuals were then randomly assigned to a control group (without an incentive) or a test group (presented with a ballpoint pen, i.e. a non-monetary incentive), each made up of 2000 people. Our data analysis showed that the gift of a ballpoint pen affected the willingness to respond, the speed of the response, and the completeness of the surveys that were returned. Furthermore, no negative effects were detected on the composition of the sample that was obtained.

Even though the effect of the non-monetary incentive was revealed to be fairly small in comparison with the effect of monetary incentives observed in other studies, the use of small in-kind incentives can be advantageous in certain survey designs. Inexpensive, non-monetary incentives may serve as a possible substitute for follow-up contact in study-designs that face a variety of limitations such as budget-restrictions or regulations on data protection.

Keywords: mail questionnaire, experiment, non-monetary incentive, response rate, response speed

1 Introduction: Monetary or Non-monetary Incentives with Mail Questionnaires?

The completeness of the responses that were returned and the response rate are central quality markers of postal surveys. The Total Design Method (TDM, Dillman, 1978; Dillman, 2000) recommends sending small monetary or non-monetary incentives with the survey in order to increase willingness to respond on the part of the subjects. Such incentives have been in use in conjunction with surveys since the 1930's (see Armstrong, 1975, p. 116 or Wotruba, 1966, p. 398) and practically no other issue has received as much attention in studies on survey methodology (for an overview see Hippler, 1988, p. 245). A vast number of methodological experiments have been conducted, especially in the Anglo-American area, to investigate the effects of monetary and in-kind incentives on the willingness to respond to surveys.[1] These studies conclude that incentives not only increase the general response readiness of subjects, but that they also positively impact on response speed, the make-up of the sample thus obtained, and the completeness of responses to open and closed questions (for an overview, see Berger, 2006).

To achieve these effects, it is beneficial if the incentive is sent together with the mail questionnaire. Even though incentives that are paid out upon successful completion of the survey can have positive effects on the response rate (see e.g. Singer et al. 1999, p. 223), unconditional incentives are generally considered to be comparatively more effective in increasing the odds of response (Church 1993; Auspurg & Schneck, 2014; an example in which conditional incentives outperform unconditional incentives is given by Castiglioni, Pforr, & Krieger, 2008). Meta-analyses from the Anglo-American language area demonstrated that monetary incentives are much better at increasing the return rate for postal surveys than non-monetary incentives (Church, 1993, p. 75; Fox, Crask & Kim, 1988, p. 485; Goodstadt, Chung, Kronitz, & Cook, 1977; Simmons & Wilmot, 2004, p. 3; Yu & Cooper 1983, p. 40; for telephone and personal interviews, see Singer et al., 2000).

1 The meta-analysis in Singer, van Hoewyk, Gebler, Raghunathan, and McGonagle (1999, p. 219) identified more than 1000 reviews that dealt with the topics of incentives, survey experiments, and response rates.

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Non-monetary incentives of low financial value proved to be particularly ineffective in American surveys.

Comparatively few reviews on this topic exist in the German language area, where literature research carried out by the author revealed that only the effects of monetary or near-monetary incentives had been examined. In these studies, money was either sent directly with the mail questionnaire (see Becker, Imhof, & Mehlkop, 2007; Blohm & Koch, 2013; Börsch-Supan, Krieger, & Schröder, 2013; Castiglioni, Pforr, & Krieger, 2008; Fick & Diehl, 2013; Mehlkop & Becker, 2007; Stadtmüller, 2009) or incentives were used that had a clear corresponding monetary value, such as phone cards or stamps (see Arzheimer & Klein, 1998; Diekmann & Jann, 2001; Harkness, Mohler, Schneid & Christoph, 1998; Porst, 1999; Reuband, 1999). Schröder et al. (2013), commissioned by the German Socio-Economic Panel, showed that conditional monetary incentives were more efficient than a lottery ticket in increasing the response rate. The work carried out by Anja Göritz and colleagues provides evidence for the effects of prepaid cash (van Veen, Göritz, Sattler, 2015), cash lotteries (Göritz & Luthe, 2013; Göritz, 2006) and promised cash (Göritz, Wolff & Goldstein, 2008) in web surveys.

No German studies were found that examine the effects of non-monetary incentives without a clear corresponding monetary value. However, Singer et al. (1999, p. 219) and Harkness et al. (1998, p. 205) point out that the expected reciprocity of a monetary incentive is culturally variable. Because of this, it is questionable whether the superiority of monetary incentives over in-kind incentives, as demonstrated in American and Canadian studies, can be transferred to other cultures. However, this superiority is implied in the literature for the German language area: Stadtmüller and Porst (2005, p. 8) recommend incentives with a clear monetary value as opposed to non-monetary incentives. Mehlkop and Becker (2007, p. 14) agree with this recommendation based on the fact that, in comparison with monetary incentives, in-kind incentives like ballpoint pens are valued differently by different subjects and therefore only appeal to certain groups (see also Little & Engelbrecht, 1990). The current study is the first of its kind that investigates the effects of a non-monetary incentive offered to a sample drawn from the population of a German city, challenging these assumptions and addressing this rather under-researched aspect. In the context of the diminishing response rates in surveys (Auspurg & Schneck, 2014; Börsch-Supan, Krieger & Schröder, 2013), the paper addresses an important issue. The results suggest that sending a ballpoint pen along with the mail questionnaires can yield meaningful effects on response behavior.

2 Theoretical Background, Past Research on Non-monetary Incentives and Hypotheses

2.1 Theoretical Background

The positive effects of monetary or in-kind incentives on an individual's readiness to help have been discussed in several disciplines, for example in economics (see Falk 2007) and in psychology, where this mechanism is called the "Feeling-Good-Effect" (Levin & Isen 1975). In sociological methodological research, the effects of incentives on response behavior in postal surveys are usually based on four theoretical approaches:

Gouldner's (1960, pp. 171-175) approach on the effect of incentives is based on a universal norm of reciprocity that urges a person to help others from whom this person has received help or material goods.

Dillman's Social Exchange Theory (2000) stresses, with a reference to Blau (1964) and Thibaut and Kelly (1959), that a subject's trust in the researcher is the most important factor in increasing their readiness to participate.

According to the rational choice perspective (e.g. Singer, 2011), respondents will decide to answer a survey when the perceived benefits outweigh the costs of participation in the survey. While the benefits of participation can be related to intrinsic motives of the respondents, to the perceived usefulness of the survey (to oneself or others), as well as to incentives associated with participation, the perceived costs can include the time required to answer the questions or can be privacy-related.

The Leverage-Saliency-Theory (Groves & McGonagle, 2001; Groves, Singer & Corning, 2000) additionally emphasizes that interviewer behavior can influence the saliency of specific benefits and costs of survey participation, dropping the assumption that the effects of specific aspects of a survey are constant across respondents.

2.2 Response Rate

Against this theoretical background, it is to be expected that a ballpoint pen used as an in-kind incentive could have a positive impact on the response rate. As stated above, there are no published methodological experiments describing the effects of a ballpoint pen as an incentive on a German sample. In the USA, Houston & Jefferson (1975) studied the effects of ballpoint pens as incentives in an American sample of vehicle buyers, as well as the difference between personalized and non-personalized letters in a 2x2 design. The ballpoint pen increased the response rate in the personalized group by 6% and by a remarkable 31% in the non-personalized group. In an American postal survey, Hansen (1980, p. 79) compared the effect of a monetary incentive with that of a ballpoint pen: while the response rate in people who had received a quarter along with the questionnaire reached 39%, the response rate

for the group that had received a ballpoint pen of the same value was only 22%, and the response rate for the control group (with no incentives) was 14%. In two Dutch studies (Nederhof, 1983), ballpoint pens increased the response rate from 20.6% to 31.8% and then from 27.3% to 33.8% after the first mailing. However, after further reminder letters were sent, the differences were balanced out to become non-significant, leading to the hypothesis that non-monetary incentives like ballpoint pens only influence response behavior for a short time and show no long-lasting effects.

These results are, however, based on non-German samples. Furthermore, these study designs used non-personalized letters and, at most, one follow-up mailing. Nonetheless, in the context of these findings, the following two hypotheses can be put forward:

H_{1a}: Survey participation is higher if the respondents receive a ballpoint pen together with the questionnaire.

H_{1b}: The increase in the response rate caused by the incentive is only short-lived and diminishes with the number of days after its mailing.

2.3 Sample Composition

The thesis that in-kind incentives are especially likely to be valued differently by various socio-demographic groups (Mehlkop & Becker, 2007) raises the question on how non-monetary incentives might affect sample composition. Incentives could either lead to the over-representation of certain groups or might encourage otherwise under-represented respondents to take part in the survey, thereby reducing non-response bias (Singer & Ye, 2013). Divergent results are found in the literature on the effects of incentives on sample composition: for example, Arzheimer (1998, p. 24), Nederhof (1983, p. 106) and Stadtmüller (2009, p. 180) explicitly deny a gender-specific incentive effect. In contrast, Harkness et al. (1998, p. 216) state that women over the age of 65 were especially likely to respond to a lottery-incentive. Mehlkop & Becker (2007) found slightly (but not significantly) stronger effects of a monetary incentive on women. Investigating the effect of a monetary incentive, Baron et al. (2008) were more likely to contact respondents with a higher socio-economic status. More recently, Blohm and Koch (2013) and Martin et al. (2014) have concluded that the value of monetary incentives does not have a substantial effect on sample composition. In contrast, Börsch et al. (2013) and Medway (2012) found that a monetary incentive significantly affected the age composition of the sample that was collected. Furthermore, in the study by Börsch et al. (2013), retired respondents and respondents without university degrees were less likely to react to the monetary incentive. Simmons and Wilmot (2004) provide evidence that incentives can influence the composition of the achieved sample with respect to ethnic affiliation, income and education. A systematic review from Singer and Ye (2013)

concludes that few studies have found significant effects of incentives on sample composition. However, no results on the effect of ballpoint pens on sample composition were found in the literature.

H_{2a}: The distribution of socio-demographic characteristics differs between the samples collected in the incentive and the control conditions.

H_{2b}: Sending a ballpoint pen does not influence the composition of the sample that is collected.

2.4 Response Speed

While it is clear that sending monetary incentives also has a positive impact on response speed in the German language area (see Becker et al., 2007; Berger 2006; Diekmann 2001; Stadtmüller 2009), there are differing results on the effects of ballpoint pens. Houston and Jefferson (1975, p. 400) found a significantly higher cumulative response rate in the trial group, that ceased one week after the questionnaire was mailed. Nederhof (1983, p. 106) also confirmed that receiving a ballpoint pen led to increased response speed among the subjects. This may be explained by the fact that a ballpoint pen has a direct relationship to the questionnaire in that it is an instrument that can be used for the completion of the survey. This may strengthen the subject's motivation to begin right away with answering the questions presented to them. Conversely, Hansen (1980, p. 81) indicated a clear decrease in response speed, with a ballpoint pen nearly doubling the time (from an average of 8 days to an average of 15 days) required to complete the questionnaire. These findings lead to the formulation of two competing hypotheses:

H_{3a}: Sending a ballpoint pen together with the questionnaire increases the response speed.

H_{3b}: Sending a ballpoint pen together with the questionnaire slows down the response speed or has no effect.

2.5 Item Non-response

The question on whether or not a non-monetary incentive with low monetary value could have a similar effect on the response rates for postal surveys as monetary incentives (see Stadtmüller, 2009, p. 167) is especially important as reasons can be found to consciously decide to send such items instead of money. Several studies have shown that the response effect of incentives increases linearly with their monetary value (Church, 1993, p. 73; Furse & Stewart 1982, p. 377; James & Bolstein, 1990, p. 351; Jobber, Saunders, & Vince-Wayne, 2004, p. 23; Singer et al., 1999, p. 223; Yu & Cooper, 1983), at least until they approach certain thresholds

(Armstrong, 1975, p. 115; Berger, 2006; Fox et al., 1988, p. 485; Linsky, 1975, p. 8; Martin, Abreu, & Winters, 2001, p. 274; Mizes, Fleece & Roos, 1984, pp. 797-799; Warriner et al., 1996, p. 549). However, it has also been shown that incentives that are too valuable can demotivate subjects for further studies (Lynn, 2001), lead subjects to a "quid-pro-quo" thought process over time (Martin et al., 2001, p. 280), or provoke a reactive response behavior (Hansen, 1980). Data quality can suffer in cases where the individual views the money sent to them as being unwarranted or pushy (see Barón et al., 2008, p. 11; Trussell & Lavrakas, 2004, p. 361). This is explained by Stadtmüller and Porst (2005, p. 5) via an interpretive process in which a subject addressed in this way no longer views the incentive as a symbolic gesture, but instead as a form of financial pre-payment, calling for participation in an economic exchange instead of an exchange based on a cultural norm of reciprocity (see Trussell & Lavrakas, 2004, p. 364).

Following this "case for smaller incentives" (Stadtmüller, 2009, p. 170), one may assume that a ballpoint pen could prove to be quite an advantageous incentive within the context of postal surveys that deal with rather complex or intimate questions. In comparison to monetary incentives, such incentives are less obtrusive and therefore less likely to produce a negative response on the part of the subject. A ballpoint pen as an incentive, so the assumption, will retain its symbolic meaning and thus, due to its low financial value, not run the risk of being seen as a form of payment (see Singer et al. 1999, p. 222).

Conflicting hypotheses are found in the existing literature on the effect of incentives on the readiness to respond to more or fewer questions. James and Bolstein (1990), Houston and Ford (1976), Shettle and Mooney (1999), as well as Wotruba (1966), describe a positive effect of monetary incentives on the completeness of answers in American studies. Singer and Ye (2013) conclude that further research is needed on this question. Stadtmüller (2009, p. 182) found no evidence for a positive effect of incentives on data quality in a German sample. In contrast, Davern, Rockwood, Sherrod, & Campbell (2003, p. 140) suspect that incentives can animate undecided subjects to participate in a superficial manner and to refrain from answering certain questions. With respect to nonmonetary incentives, Hansen (1980, 81) concurs, stating that the ballpoint pen sent in his study had a negative impact on the quality and completeness of responses to open-answer style questions. Furthermore, sensitive items may be more susceptible to incentive effects than non-sensitive items (Medway, 2012). With regard to sensitive questions, Tzamourani and Lynn (1999) showed that a monetary incentive increased non-response, while Medway (2012) and Krenzke et al. (2005) could not confirm a negative effect on data quality.

H_{4a}: Sending a ballpoint pen together with the questionnaire has no effect on item non-response.

H_{4b}: Sending a ballpoint pen together with the questionnaire has a negative impact on data quality and increases item non-response.

2.6 Cost-effectiveness

A relevant question addresses the additional costs associated with the use of an incentive in relation to the gain in response rate. Depending on the nature and size of the incentive, the cost per completed interview can increase (see for instance Börsch et al., 2013) or decrease (see for instance Jobber et al., 2004; Medway, 2012). Sending a hard object like a ballpoint pen can be associated with additional mailing cost, thus increasing the cost per completed interview. However, in comparison with phone cards or a banknote, a ballpoint pen is an inexpensive gift, which makes it especially well-suited for surveys with a large sample size.

H_{5a}: Sending a ballpoint pen together with the questionnaire increases the cost per completed interview.

H_{5b}: Sending a ballpoint pen together with the questionnaire decreases the cost per completed interview.

3 Method and Design of the Experiment

The experiment was carried out within the context of the research project "Self-Expressive Forms and Functions of Personal Conscience in Every-Day Life" [2] conducted at the Martin-Luther University of Halle-Wittenberg. The sample of 4000 subjects was taken, using a stratified randomization approach, from the registry of inhabitants of the city of Halle (Saale), which is home to 230,000 residents. The twelve page questionnaire consisted of 118 closed and five open-ended questions that dealt with personal experiences of shame and guilt in everyday life, moral values and pangs of conscience. In the preliminary test, respondents took between 45 and 90 minutes to complete all the questions. R*espondent burden was fairly high,* given the scope of the questionnaire and the intimate and emotionally stressful nature of the questions. *The study was carried out from May 2012 to September 2012*. In total, 1166 respondents aged 17 to 94 years (mean: 48.5 years; SD: 18.8) answered the survey.

The sample of 4000 subjects was randomly partitioned into a control group and a test group, each comprising 2000 subjects. The members of the test group received a plastic ballpoint pen (worth 21 eurocents) along with the questionnaire.

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2 The project was funded by the German Research Foundation (DFG (TH 260/7-1)) from April 2011 to April 2014 and was led by Prof. Dr. Helmut Thome.

The internet address of the project was printed in one color on the pen. In addition, all subjects were informed of monetary prizes totaling 1,500 Euro that were to be raffled off among the respondents who returned their questionnaires.[3]

The design of the survey was limited to a single follow-up action (possible skewing of the sample discussed by Hippler, 1985, p. 50). The subjects had to be assured of absolute anonymity as the mail questionnaire was characterized by several time-consuming and particularly intimate questions. Therefore, the questionnaires were not numbered and did not display any other identification markers. Because of this, it was impossible to know which subjects had already completed the questionnaire and which subjects needed a reminder. In order to assign the returned questionnaires to the experimental conditions, a marker was used that was not visible to the respondents: the incentive group received a questionnaire with the headline printed in bold, while the headline was underlined in the control group. Due to financial considerations, only one follow-up letter was sent out four weeks after the original questionnaires had been included in the gross samples.

Our survey design deviated in a further point from the TDM recommendations and all studies known to us that assess the effects of incentives on response behavior: the ballpoint pen sent with the questionnaire was not explicitly referred to as a small "thank you" gift. This was done to avoid provoking any adverse reactions – especially with respect to the topic of the survey "Moral and conscience in everyday life".

3.1 Results: Effects of the Ballpoint Pen on Response Rate

The effect of the ballpoint pen on the readiness to participate in the survey is summarized in Table 1. According to the AAPOR standard definition, RR2, the response rate was calculated by dividing the number of returned surveys (complete and partial) by the sum of returned surveys, refusals, non-contacts and all cases of unknown eligibility. The response rate reached 26.2% in the control group and 30.9% in the test group (recipients of the ballpoint pen). This difference of 4.7 percentage points between the response rate in the control and test groups proved to be statistically significant ($C=0.052$; $p<0.05$).

It is worth mentioning that the pen only affected the willingness to respond in subjects who responded before the reminder was sent out: there was no discernible difference in the response behavior between the control and test group after the reminder was sent. The increase in the response rate caused by the ballpoint pen was therefore only short-term.

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3 Both the control and test groups were assured of participation in the raffle and the effects of these potential prizes are therefore ignored in the discussion of our results.

Table 1 Number of returned questionnaires and response rates in a postal survey conducted in the city of Halle / Saale on the theme "Morality and Conscience in Life Today" for the control group and the test group that received an ballpoint pen (absolute values; response rate in parentheses)

	Gross Sample	Absentees	Eligibles	Participation before reminder	Participation after reminder	Net Sample
Control Group	2000	54	1946	442 (22.1 %)	83 (4.15 %)	525 (26.25 %)
Experimental Group: Ballpoint Pen	2000	53	1947	538 (26.9 %)	81 (4.05 %)	619 (30.95 %)

Contingency coefficient (for the total inquiry period) C = 0.052

3.2 Results: Effects of the Ballpoint Pen on Sample Composition

Figure 1 shows the response rate in the control and test groups according to age and gender. While male subjects between 62 to 76 years showed the most prominent reaction to the incentive, the ballpoint pen affected women between 32 and 61 years of age most strongly: the response rate increased by about 6 percentage points (from 26.8% to 33.3%) in women aged 32 to 46 and by about 9 percentage points (from 30.0% to 38.9%) in women aged 47 to 61.

In summary, Figure 1 displays three results: Firstly, the effect of the ballpoint pen on the willingness to participate in the postal survey varies dependent on age. However, this relationship is not a monotone function. Secondly, an interaction between age and gender on the effectiveness of the incentive is visible, even though these effects are not significant and cannot be interpreted contextually. The incentive in this study, for example, shows a comparatively weak effect on women over the age of 62. Thirdly, Figure 1 suggests that women were more likely than men to be motivated by the ballpoint pen to take part in the survey. This hypothesis was tested using logistical regression and the results are presented in Table 2. Women completed the survey significantly more frequently than men, both in the control and incentive group. The fourth column in Table 2 shows that women tended to respond more strongly to the incentive than men. Furthermore, the ballpoint pen was especially effective in raising the response rate among respondents aged 32 to 46 years and 62 to 76 years. However, none of these interaction effects proved to be significant.

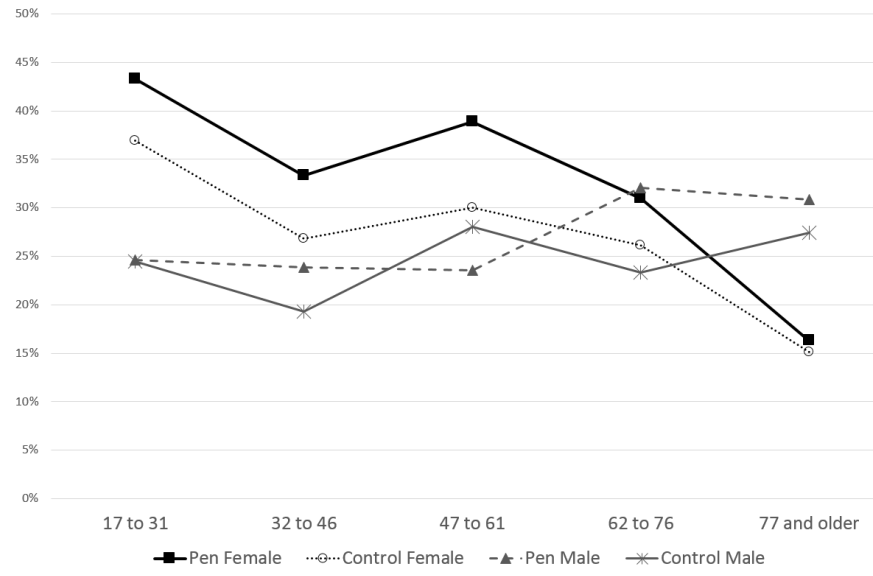

Figure 1 Response rate in the control and test group based on age and gender

Table 3 compares the composition of the sample collected with the results of a representative survey of local residents from the City of Halle / Saale (Harm & Jaeck, 2013), taking religious affiliation, education and employment status into consideration. Data analysis is limited to 1137 cases as no information was available about the non-responders in the current study. Respondents with a religious affiliation are slightly over-represented in the incentive condition, whereas the distribution within the control condition comes closer to the results reported by Harm and Jaeck (2013). Regarding the school-leaving certificate, respondents with a university entrance exam are noticeably over-represented in both experimental conditions, which might be due to the topic of the survey. In comparison to the reference study, the percentage of respondents with a technical baccalaureate, a university entrance exam, a Master's certification and a university degree is slightly higher in the incentive condition. Furthermore, unemployed respondents are marginally under-represented in the sample that received a ballpoint pen. In summary, the use of the ballpoint pen as an incentive did not substantially alter the composition of the sample. Furthermore, none of the differences between the control and incentive conditions proved to be significant in bivariate analyses.

Table 2 Logistic regression of response behavior on gender and age in the incentive and control condition (betas, standard errors in parenthesis)

	Control	Incentive	Incentive vs. Control
Gender			
Male (Reference)			
Female	0.217* (0.104)	0.384*** 0.099)	0.167 (0.143)
Age			
17 to 31 (Reference)			0.065 (0.167)
32 to 46	-0.410* (0.158)	-0.264 (0.150)	0.146 (0.218)
47 to 61	-0.095 (0.145)	-0.136 (0.142)	-0.041 (0.202)
62 to 76	-0.313* (0.151)	-0.141 (0.145)	0.172 (0.209)
77 and older	-0.678** (0.200)	-0.692 (0.193)	-0.014 (0.279)
Constant	-0.914*** (0.120)	-0.849*** (0.117)*	
n	2000	2000	
Cox & Snell Pseudo- R^2	0.01	0.014	

Note: #: p<0,1; *: p < 0,05; **: p < 0,01; ***: p < 0,001

Table 3 Composition of the sample collected compared with a survey of local residents from the city of Halle / Saale (Harm & Jaeck, 2013)

	Survey of local residents 2012	Current study	Current study: incentive condition	Current study: control condition
Religious affiliation				
none	79.6%	78.7	77.4	80.1
Catholic	5.1%	5.4	5.9	5.2
Protestant	13.1%	13.9	14.4	13.2
Christian Congregational Chapel	1.5%	1.2	1.5	1
Non-Christian	0.8%	0.7	0.8	0.6
n	2780	1134	611	523
School leaving certificate				
In school education	0.3%	0.6%	0.3%	1.0%
Without a school-leaving qualification	1.2%	1.0%	1.1%	0.8%
Lower secondary school qualification	15.3%	12.0%	11.7%	12.3%

	Survey of local residents 2012	Current study	Current study: incentive condition	Current study: control condition
Secondary education (ISCED level 2)	38.0%	31.9%	30.9%	33.0%
Technical baccalaureate	13.7%	13.0%	13.4%	12.6%
University entrance exam	31.4%	41.5%	42.5%	40.4%
n	2729	1136	614	522
Vocational training				
None, or still in vocational training	10.4%	10.5%	10.0%	11.1%
Completed vocational training	45.2%	39.6%	39.0%	40.0%
Master certification	5.1%	8.9%	9.6%	8.1%
Technical college degree	14.9%	16.5%	16.5%	16.5%
University degree	24.4%	24.5%	25.0%	24.0%
n	2824	1134	613	521
Employment status				
Full-time	36.6%	35.7%	35.5%	35.9%
Part-time	8.4%	9.0%	9.3%	8.6%
Student	8.2%	12.0%	11.4%	12.8%
In vocational training	1.1%	2.0%	2.4%	1.5%
Irregularly employed	0.6%	2.5%	3.0%	2.1%
Unemployed	5.2%	4.2%	3.7%	4.8%
Retired / on leave	36.6%	30.3%	30.8%	29.6%
Military service or alternative service	0.2%	0.6%	0.5%	0.6%
Housewife / househusband	0.7%	0.8%	0.7%	1.0%
Parental leave	1.0%	1.3%	1.5%	1.1%
Not employed for other reasons	1.4%	1.7%	1.5%	1.9%
n	2861	1137	614	523

3.3 Results: Effects of the Ballpoint Pen on Response Speed

Figure 2 shows the cumulative survival odds for the return of the survey, which illustrates the effect of the ballpoint pen on response speed.

After the ninth day, the graph for the trial group approaches the abscissa more rapidly than for the control group and the effect of ballpoint pen thus led to the questionnaire being returned more quickly. The corresponding Log-Rank Test[4] showed

4 This study used the method of calculation described by Bland & Altmann (2004).

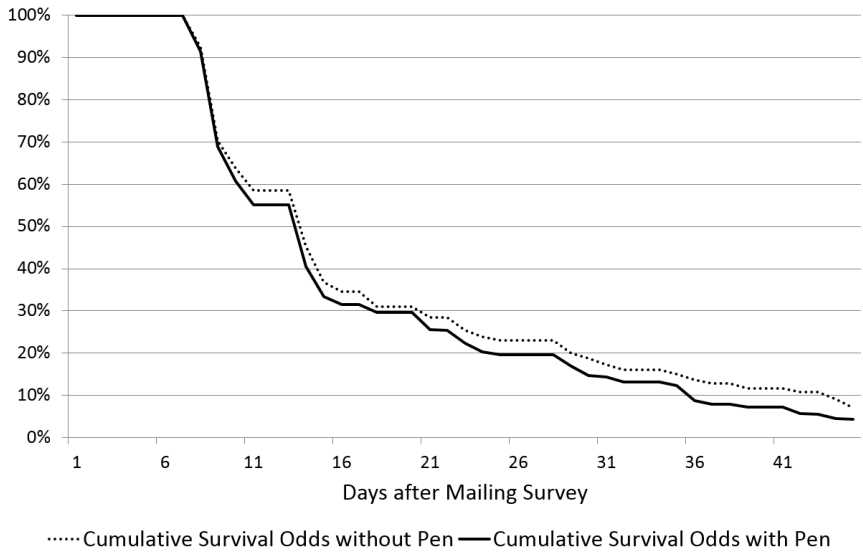

Figure 2 Cumulative survival odds (in percent) for the return of the survey with and without ballpoint pen

this effect to be significant ($p<0.05$). In this study, the inclusion of the ballpoint pen shortened the average time to the return of the questionnaire from 19.1 to 17.9 days.

3.4 Results: Effects of the Ballpoint Pen on Non-response to the Item Using Open Answer Examples

In this survey, the ballpoint pen had no observable effect on response behavior to closed questions. However, the questionnaire contained five particularly intimate open-answer style questions, where subjects were asked to describe stirrings of conscience or situations where they felt indignation, shame, or guilt. Table 4 includes the results of a multinomial regression that predicted the number of complete answers to these questions. Model 1 shows no significant effect through the incentive for the women's reference group. In the control condition, men were more likely than women to answer only a portion of the open questions in the questionnaire. The significant interaction effect between incentive and gender shows that men who received a ballpoint pen had an increased tendency to refuse to answer any of the five open-answer questions. This gender-specific negative effect of the incentive on the readiness to respond to open-answer questions is also demonstrated when corrected for the effects of education and employment in Model 2 and for the effects of class and age in Model 3.

Table 4 Effects of incentive and sociodemographic variables on completeness of open-answer responses - Effect coefficients of a multinomial logistic regression (betas, standard errors in parenthesis; reference: 'all open-answer questions within the questionnaire completed')

	Model 1		Model 2		Model 3	
	partially answered	not answered	partially answered	not answered	partially answered	not answered
Intercept	0.173 (0.129)	-0.649* (0.162)	0.494* (0.189)	-0.345 (0.238)	0.233 (0.143)	-0.802*** (0.192)
Male (Ref: Female)	0.48* (0.201)	0.046 (0.265)	0.466* (0.208)	0.05 (0.283)	0.468* (0.215)	0.048 (0.296)
Pen (Ref.: No pen)	0.3 (0.174)	-0.087 (0.228)	0.300 (0.18)	-0.092 (0.244)	0.344 (0.188)	-0.005 (0.261)
Interaction: Male*Pen	-0.114 (0.284)	0.921* (0.360)	-0.117 (0.294)1	1.009** (0.384)	-0.134 (0.302)	0.85* (0.402)
Apprentice / Student (Reference: employment)			-0.494 (0.253)	-1.909*** (0.489)		
Not employed (Reference: employment)			0.361* (0.161)	0.499* (0.204)		
Lower secondary school (Reference: high school diploma)			0.318 (0.302)	0.874** (0.330)		
High school diploma + university entrance exam (Reference: High school diploma)			-0.631** (0.242)	-0.410 (0.313)		
University degree (Reference: high school diploma))			-0.581*** (0.171)	-0.997*** (0.221)		
Age (z-score)					0.522*** (0.079)	0.879*** (0.106)
Class (z-score)					-0.302*** (0.077)	-0.593*** (0.1)
n	1137		1115		1038	
Cox & Snell Pseudo- R^2	0.024		0.115		0.138	

Note: *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$

The category "not employed" includes unemployed, irregularly employed, retired, and individuals on leave.

The class variable was handled metrically based on Winkler (1998) and calculated based on statements about education and employment, with possible values between 4 and 13. Since no information was collected on income, this concept of class is incomplete and should only be seen as an approximation of socio-economic status.

Table 5 Costs for printing and mailing based on incentive condition

	Total	Incentive	Control
Pre notification: print	611.09 €	305.55 €	305.55 €
Pre notification: mailing	1,194.47 €	597.24 €	597.24 €
Questionnaire: print	2,492.17 €	1,246.09 €	1,246.09 €
Questionnaire: mailing	2,182.57 €	1,091.29 €	1,091.29 €
Mailing of freepost and pre-addressed envelopes	1,682.00 €	909.96 €	772.04 €
Reminder-letter: print	629.92 €	314.96 €	314.96 €
Reminder-letter: mailing	1,155.79 €	577.90 €	577.90 €
Thank you letter and preliminary results: print	810.51 €	405.26 €	405.26 €
Thank you letter and preliminary results: mailing	1,158.49 €	579.25 €	579.25 €
Raffle	1,500 €	750.00 €	750.00 €
Incentive: material	417.03 €	417.03 €	
Incentive: mailing	0.00 €	0.00 €	
Total	13,834.04 €	7,194.50 €	6,639.54 €
Response rate (RR2)		30.95 %	26.25 %
Cost per complete questionnaire	12.09 €	11.62 €	12.65 €

3.5 Results: Effects of the Ballpoint Pen on Cost-effectiveness

Table 5 shows that the ballpoint pen reduced the cost per completed questionnaire from 12.65 Euro to 11.62 Euro. This decrease in cost per completed questionnaire is caused by the higher response rate in the incentive condition (30.95 vs. 26.25%). From an economic point of view, the additional costs of 417 Euro for the ballpoint pen were redeemed. Note that the inclusion of the ballpoint pen did not cause additional costs for mailing in this study.

4 Summary of Results

In this study, the use of a ballpoint pen increased the response rate by 4.7 percentage points. This effect of the incentive proved to be statistically significant ($C=0.052$; $p<0.05$). In comparison with other experiments in the German language area that had worked with monetary or money-like incentives, the ballpoint pen thus had a relatively weak effect on the subjects' willingness to respond. However, the relationship between the effect of an incentive on the response rate and its cost also needs to be considered: Harkness et al. (1998) increased unit non-response by 5% (from 29.3% to 34.3%) by sending four stamps, each with a value of one German

Mark, while Stadtmüller (2009) increased the response rate by 13% (from 30% to 42.7%) by sending a one Euro coin, and Becker et al. (2007) reported an increase of 24% (from 39% to 63%) by sending a ten Franc bill.[5] Therefore, in view of its comparatively low financial value, the ballpoint pen had a surprisingly strong impact on the response rate.

Further analysis revealed a gender-specific effect, i.e. women were more likely than men to react to the in-kind incentive. This is consistent with the findings of Mehlkop & Becker (2007) as well as Harkness et al., (1998, p. 213), where slightly (but not significantly) stronger effects of a monetary incentive on women were demonstrated. In contrast, Arzheimer (1998, p. 24), Nederhof (1983, p. 106) and Stadtmüller (2009, p. 180) explicitly deny a gender-specific incentive effect. Baumgartner and Rathbun (1997) and Groves et al. (2000, p. 304) attribute these contradictory results to the influence of a third variable, "Interest in the Survey Topic". Applied to our survey, it is possible that the female sample contained more "undecided" subjects that, through an incentive, could be motivated to participate, whereas the male sample contained more "decided" subjects who had no interest in the survey and could not be swayed by the non-monetary incentive. This hypothesis cannot be tested as there is no further information available about the interest of the non-responders in the survey topic. Apart from the gender-specific effect, the ballpoint pen had no meaningful influence on sample composition: looking at the variables religious affiliation, education, vocational training and employment status, the incentive did not substantially alter the composition of the sample that was collected.

Consistent with the findings of Houston and Jefferson (1975) and Nederhof (1983), the ballpoint pen reduced the time required before the questionnaires were returned. The hypothesis that a ballpoint pen has an adverse effect on response speed (Hansen, 1980, p. 81) was not supported by this study. In addition, economic considerations favor the inclusion of a ballpoint pen: the "break-even-equation" proposed by Jobber et al. (2004, p. 23) calculates the cost efficiency of printing and sending the survey, the reminder, and the incentive. In this study, the cost per returned questionnaire without an incentive was 12.65 Euro, while costs were reduced to 11.62 Euro per returned survey with the incentive and the associated increased return rate.

The ballpoint pen had no observable effect on response behavior to closed questions. However, the incentive caused subjects to refuse to answer all of the sensitive open-answer questions more frequently in the male population, while this effect was not seen in the female population. These results seem to support the interpretation that uninterested men refused to answer the personal questions because they

5 These results are, however, only partially comparable to this study due to the fact that the design, sample, number of reminders, special theme and structure of the questionnaire differed in comparison to the other experiments.

felt pressured into completing the survey after receiving the incentive. The fact that this effect of the ballpoint pen on non-response to an item was only shown in relation to the open-answer questions could be based on the relative ease with which closed questions can be answered. Our results are therefore in line with the hypothesis put forward by Medway (2012), stating that sensitive items may be more susceptible to incentive effects than non-sensitive items.

5 Conclusions

This survey experiment demonstrated a significant effect of a ballpoint pen on unit non-response in a postal survey on a German sample. Although this effect on the response rate is small in comparison with the effects of monetary incentives identified in other studies, the use of in-kind incentives can be advantageous in certain survey designs: the results show that sending a ballpoint pen along with a postal survey can lead to faster response times, an effect that is short-lived and, in our study, had ceased by the time the reminder was sent. This result suggests that non-monetary incentives with a low value can be a sensible substitute for follow-ups. In study designs where financial limitations or privacy protection do not permit a reminder to be sent, sending a small gift in the form of a non-monetary incentive could be a valid alternative. The provocation of reactive response behavior is a clear disadvantage to the use of incentives. In our study, we found evidence that the quality of answers to especially intimate and complicated questions suffered through the inclusion of the incentive and that this negative effect was gender-specific. These results cannot be generalized as the sample of this study is made up of the inhabitants of Halle / Saale and the sponsor of the survey was an academic institution (the University of Halle-Wittenberg). The effect of in-kind incentives on other populations or in surveys with a different sponsorship is therefore hard to predict and should be subject of further research. Nonetheless, our results suggest the use of ballpoint pens as a cost-effective means of increasing the response rate to postal surveys. However, this gain should be weighed against the risk of lowering the validity of answers incentivized by gifts – at least when it comes to time consuming, sensitive and morally relevant questions.

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