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**Working Paper**

## Which incentives to increase survey response of secondary school pupils?

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# Which Incentives to Increase Survey Response of Secondary School Pupils?

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29th August 2016

## Abstract

Increasing participation rates in pupil surveys has become an important challenge for empirical educational research. In this paper we investigate whether combining a monetary incentive with a personalised invitation to participate in a survey increases the response rate of secondary school pupils. It is found that pupils who receive a personalised invitation and a monetary incentive are not more likely to participate, nor to participate more quickly following the invitation, than those who received a non-personalised invitation and a monetary incentive.

**JEL Classification:** I20, C83

**Keywords:** response rate, pupil survey, incentives

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# 1 Introduction

Pupil surveys have become an essential resource for empirical educational research. Alongside international representative pupil surveys such as for instance PISA or TIMSS, smaller pupil and teacher surveys at the regional or school-level have become increasingly common in the last decade. At the same time, the participation rate in pupil surveys has declined over time (Sturgis et al., 2006). Several reasons are thought to contribute to low response rates in pupil surveys. Firstly, surveying schoolchildren below the age of 18 generally requires the consent, not only of the pupils themselves, but also of their parents. This can prove problematic if communication between schools, teachers and parents is not optimal. Moreover, the necessity of gaining parental agreement may reinforce a selection bias in participation due to limited language and reading skills in disadvantaged families. Secondly, school directors in the UK report that the number of research requests for schools and pupils to participate in surveys increased over the five years preceding the survey. They stated a lack of time and lack of limited benefit for the school as significant reasons for not participating in surveys (Sturgis et al., 2006). Anecdotal evidence from the Ministry of Education and school directors suggests that in Germany, schools receive an increasing number of requests to participate in pupil and teacher surveys as well.

This paper makes a first step towards the identification of pupil, school and parent characteristics which are associated with higher participation in voluntary pupil surveys. A second aim is to find out whether the a personalised invitation to participate yields higher response rates to an online pupil survey than a non-personalised invitation.

In order to increase the willingness to participate in surveys, several incentivisation strategies (Schnepf et al., 2014) have been developed. Pforr et al. (2015) provide an overview of the effectiveness of monetary incentives in increasing response rates in surveys conducted in Germany. They conclude that monetary

incentives do lead to higher response rates. The surveys considered in their paper, however, were aimed exclusively at adult participants.

But monetary incentives are not the only means of increasing willingness to participate in surveys. The empirical literature from market survey research points to a variety of possible approaches to successfully increasing response rates. There is evidence that the response rate for surveys aimed at adult participants is influenced by the way invitations are formulated (Kreuter et al., 2015), the aesthetic quality of the invitation (Kereakoglow et al., 2013), or the type of communication technology used for the invitation. Bosnjak et al. (2008) for instance find that response rates are higher when individuals receive an invitation by email, than when they receive an invitation as an SMS. Moreover, response rates seem to vary depending on how personal the request to participate is. One experiment done in the US, for example, showed that putting post-its with a short thank you message on paper questionnaires, yielded significantly higher response rates (Garner, 2005). Personalised invitations to participate, that is invitations that use the name of the recipient in the salutation of the body text, were also shown to increase web survey response rates of pupils by Heerwegh et al. (2005).

All these elements are likely to change individuals' perception of the invitation to participate. Rather than being perceived as an administrative or gain-oriented process, the invitation to participate is perceived as a request for a personal favour. However, none of this evidence was gathered in regard to young people, although secondary school pupils may respond differently to incentives than adults.

This paper contributes to the literature by providing field-experimental evidence on the effectiveness of combining monetary and non-monetary incentives to increase response rates in a survey of secondary school pupils in Germany. In addition, it provides information on selection bias in survey response for this age group. The aim is to gain insights into possible approaches to increase

participation rates in pupil surveys.

The paper is structured as follows. In section 2 we present the design of the intervention and the survey. Results can be found in section 3 and section 4 concludes.

## 2 Data and Design of the Intervention

As part of a study on career orientation and career guidance, 527 German secondary school pupils were surveyed in two German cities: Mannheim and Freiburg. Pupils from all three secondary school tracks were included: the “Gymnasium” (upper and most general track), the “Realschule” (intermediate, more vocational track) and the “Werkrealschule” (lower, most vocational track). The first survey was performed by means of a paper-and -pencil questionnaire in the classroom in spring 2014. The same researcher went to all classrooms to present the study, distribute the questionnaires and answer any questions the pupils had. One year later, in spring 2015, all pupils who had agreed to be contacted again at the time of the first survey (326), received an invitation to participate in the second survey by email or by post. It was announced at the time of the first survey that participants to the second survey would receive a voucher for an online shop. A large set of individual and family characteristics is available in the dataset.

In addition to the monetary incentive, a randomly selected group of half of the pupils who accepted to be contacted again were sent a personalised invitation to participate in the second survey. The personalised invitation included a picture of, and was personally signed by the researcher that they had met during the classroom survey. The other half of the pupils received an invitation to participate signed “the research team” without a picture. The idea was that pupils would remember the researcher from the classroom survey and consider the invitation as a personal request of the researcher. The body texts of the

invitations are otherwise identical and all are personalised in that the salutation includes the pupil's first name. In addition, all pupils were reminded that they would receive a voucher worth 10 Euros if they participated in the online survey. The aim was to estimate the effect of receiving such a personalised invitation to participate on the probability of participating in the second wave of the survey, as well as the effect on the time elapsed between receiving the invitation and participation.

Table 1 shows the individual and family characteristics of pupils that received the non-personalised and the personalised invitation to participate. The majority of pupil characteristics are not significantly different between the two groups. The pupils that received the personalised invitation attend the intermediate school track somewhat more often than the pupils in the other group. Grades in German and mathematics are measured on a scale of 1 (excellent) to 6 (fail). The binary variables "good grades" in German and in mathematics are set equal to one when a pupil obtained a grade of maximum 2. Pupils that received the non-personalised invitation have better grades in German but are also more likely to have entered Kindergarten after age three. We therefore estimate the effect of receiving a personalised invitation on the probability that pupils participate in the second wave of the survey, controlling for the type of secondary school and other pupil characteristics.



Table 1: Descriptive Statistics by Treatment Status

	Received a personalised invitation	Received a non-personalised invitation
Male	0,46	0,49
Received invitation by post	0,05	0,06
Good grade in German	0,32	0,39*
Good grade in mathematics	0,35	0,30
Speaks German at home	0,93	0,90
Parents attended tertiary education	0,40	0,39
Parents read books to the pupil as a child	2,6	2,5
Entered Kindergarten after age 3	0,21	0,28*
Attends the upper school track	0,45	0,50
Attends the middle school track	0,34	0,24**
Attends the lower school track	0,21	0,26
Risk aversion	6,3	6,2
Has a preferred occupation	0,7	0,6
Observations	125	128

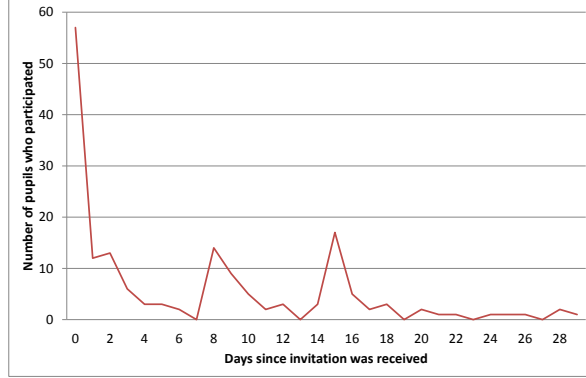
Note: \*\*\*, \*\*, \* stand for statistical significance of the difference at the 1, 5 and 10% level respectively.

Figure 1 shows the number of pupils that filled out the questionnaire on each day subsequent to receipt of the first invitation to participate. We observe that 33% of pupils filled out the questionnaire on the same day that they received the invitation to participate and 57% filled it out within one week of receipt. At the beginning of the next week (day 8) an email reminder was sent out. This yielded a second peak in participation on the day that the reminders were received. If the pupil still not participated in the survey after two weeks, they received a further invitation to participate by post. We are only able to compare the response rates of those pupils who answered within one week. This is because the invitation sent in the reminder email was always personalised.

### 3 Results

The overall response rate in the second wave of the survey was 52%. However, we observe large differences between pupils in various school tracks. Whilst only

Figure 1: Number of responses per day



28% of the invited pupils from the lower track participated in the second wave, 56% of pupils in the intermediate track and 63% of pupils in the upper track participated in the second wave.

Table 2 presents the results of an estimation of the determinants of the probability of participating in the second wave. Pupils who received an invitation to participate presented as a personal favour, in addition to the monetary incentive, did not participate significantly more often than those that received a non-personalised invitation to participate. Within a given school track, parental and individual characteristics such as grades or having a preferred occupation already are not related to the probability of participating. As already mentioned, pupils in the intermediate and upper tracks are more likely to participate. Although it is not uncommon for more highly educated persons to show greater willingness to participate in surveys, it had been expected that the monetary incentive would be more attractive to pupils in the lower school track. Unfortunately, our data does not enable to identify the reasons behind the low response rates among the pupils in the lower track. According to a recent study by Jünger (2013), 99% of youths aged 12-19 have a smartphone and most of them use it every day. Access to email should therefore not be an issue in this age group. However, one hypothesis is that lower track pupils may use other

Table 2: Determinants of participation in second wave. Marginal Effects of probit estimation. Dependant variable : probability of participating in the second wave

	Probit (1)	Probit (2)	Probit (3)	Probit (4)
Received a personalised invitation	0,08 (0,06)	0,07 (0,06)	0,07 (0,06)	0,07 (0,06)
Lives in Mannheim		0,02 (0,06)	0,03 (0,06)	0,05 (0,06)
Male		0,05 (0,05)	0,05 (0,05)	0,05 (0,05)
Attends the middle school track		0,24*** (0,08)	0,23*** (0,08)	0,22** (0,08)
Attends the upper school track		0,25*** (0,06)	0,22*** (0,06)	0,23*** (0,06)
Parents read books			0.00 (0.04)	-0.01 (0.03)
At least one parent attended tertiary education			0.08 (0.07)	0.06 (0.07)
Both parents are German			-0.01 (0.07)	-0.03 (0.07)
Good grades in Mathematics				0.10 (0.07)
Good grades in German				0.08 (0.07)
Expects to attend tertiary education				0,02 (0,08)
Has a preferred occupation				0,05 (0,06)
Observations	253	253	253	253

Note: Standard errors clustered by school in parentheses. \*\*\*, \*\*, \* stand for statistical significance of coefficients at the 1, 5 and 10% level.

communication software and may be less familiar with the use of emails. As a result, they may have failed to read the invitation to participate.

Although the personalised invitation did not increase the average willingness to participate in the second wave, it could be the case that specific pupils react to the personalised invitation. We test this hypothesis by estimating the treatment effect separately by school track (Table 3) and gender (Table 4). It is the case across all school tracks that pupils who received a personalised invitation to participate were not more likely to participate in the survey. In the intermediate and upper track, none of the individual or family characteristics affect the probability of pupils participating in the second wave. In the lower track,

Table 3: Determinants of participation in the second wave, by type of school track

	Lower school track	Middle school track	Upper school track
Received a personalised invitation	-0,02 (0,08)	0,07 (0,12)	0,06 (0,08)
Lives in Mannheim	0,39*** (0,09)	-0,13 (0,12)	0,06 (0,07)
Male	-0,07 (0,06)	0,13 (0,11)	0,07 (0,08)
Parents read books to the pupil as a child	0,01 (0,03)	0,05 (0,08)	-0,03 (0,05)
At least one parent attended tertiary education	0,21*** (0,08)	0,03 (0,14)	0,08 (0,09)
Both parents are German	0,02 (0,06)	0,03 (0,18)	-0,06 (0,15)
Good grades in Mathematics	0,18* (0,10)	0,12 (0,13)	0,06 (0,13)
Good grades in German	0,07 (0,08)	0,02 (0,17)	0,10 (0,11)
Expects to attend a tertiary education	0,06 (0,07)	-0,02 (0,14)	0,11 (0,17)
Has a preferred occupation	0,25* (0,13)	0,02 (0,10)	0,05 (0,09)
Observations	77	77	122

Note: Standard errors clustered by school in parentheses. \*\*\*, \*\*, \* stand for statistical significance of coefficients at the 1, 5 and 10% level.

however, pupils with at least one parent who attended tertiary education, with good grades in Mathematics or who could name their preferred future occupation were more likely to participate in the second wave.

Separate estimations by gender (Table 4) show that response rates for neither girls nor boys are affected by the receipt of a personalised invitation. Nevertheless, we do observe differences between girls and boys with respect to the response rate by school track. The lower response rates in the lower track are only observed for boys. In contrast, grades are irrelevant for the probability of boys participating whilst girls with better grades are more likely to participate than girls with lower grades.

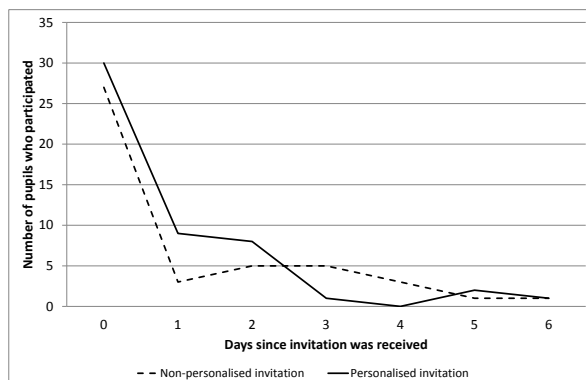
Focus shall now be placed on the period of time elapsing between pupils' receipt of the invitation and their completion of the survey. Figure 2 presents the num-

Table 4: Treatment effects by gender, marginal effects on the probability of participating

	Female	Male
Received a personalised invitation	0,11 (0,09)	0,05 (0,06)
Lives in Mannheim	0,05 (0,07)	0,07 (0,07)
Attends the middle school track	0,18 (0,11)	0,29*** (0,09)
Attends the upper school track	0,19 (0,11)	0,34*** (0,07)
Parents read books to the pupil as a child	0,05 (0,05)	-0,07 (0,06)
At least one parent attended tertiary education	0,12 (0,09)	-0,03 (0,10)
Both parents are German	0,06 (0,11)	-0,12 (0,09)
Good grades in Mathematics	0,13* (0,08)	0,07 (0,10)
Good grades in German	0,16* (0,09)	0,06 (0,10)
Expects to attend a tertiary education	-0,09 (0,10)	0,11 (0,10)
Has a preferred occupation	0,00 (0,07)	0,10 (0,08)
Observations	119	132

Note: Standard errors clustered by school in parentheses. \*\*\*, \*\*, \* stand for statistical significance of coefficients at the 1, 5 and 10% level.

Figure 2: Number of responses per day, by type of invitation



ber of participants per day after the invitations were sent out for the pupils that received the personalised and non-personalised invitations, during the first week after invitation receipt. It does not seem to be the case that pupils who received personalised invitations participate more quickly to the survey. Table 5 then shows the results of a probit estimation of the probability of pupils participating in the second survey on the same day that they received the invitation. The type of invitation received has no effect on the likelihood that pupils complete the survey on the day of receipt. Girls, as well as middle track pupils, were less likely to respond the on the day of receipt of the invitation than boys or pupils from other school tracks. Apart from these, none of the other individual characteristics are related to the probability of responding on the day of the invitation.

## 4 Conclusion

The aim of the paper has been to test whether survey response rates amongst secondary school pupils can be increased using a combination of monetary and non-monetary incentives. A field experiment has been performed, in which one group of pupils received a personalised invitation to participate from a researcher

Table 5: Determinants of the timing of participation in second wave. Dependant variable : probability of answering on the day of receiving the invitation

	Probit (1)	Probit 2	Probit 3
Received a personalised invitation	-0,00 (0,09)	-0,00 (0,10)	-0,09 (0,10)
Lives in Mannheim	-0,08 (0,10)	-0,07 (0,10)	-0,09 (0,10)
Male	0,14 (0,11)	0,16 (0,12)	0,25*** (0,11)
Attends the middle school track	-0,08 (0,17)	-0,11 (0,18)	-0,21** (0,16)
Attends the upper school track	0,16 (0,16)	0,12 (0,18)	0,13 (0,17)
Parents read books to the pupil as a child		0,03 (0,07)	0,07 (0,07)
At least one parent attended tertiary education		0,02 (0,13)	0,02 (0,13)
Both parents are German		-0,00 (0,13)	0,01 (0,12)
Good grades Mathematics			0,31*** (0,12)
Good grades in German			-0,35*** (0,10)
Expects to attend a tertiary education			-0,08 (0,13)
Has a preferred occupation			0,15* (0,09)
Observations	83	83	83

known to them, whilst the other group received a non-personalised invitation from the research team, both groups receiving a voucher for an online shop. It was found that pupils who received a personalised invitation were not more likely to participate in the second wave of our survey than pupils who did not. We thus find no evidence that a personalised invitation increases response rates in a pupil survey, at least when combined with a monetary incentive. Tests for heterogeneous effects by gender and secondary school track did not reveal any significant differences in the effect between subgroups.

Our findings also show that there is selection in participation to the survey by school track. Pupils in the lower and middle tracks are overall less likely to participate. In the lower school track, boys are less likely to participate to the survey than girls. Girls with lower grades were less likely to participate in the survey than girls with better grades across all school types.



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