UC Merced
Proceedings of the Annual Meeting of the Cognitive Science Society

Title
Study on Preferred Duration and Reimbursement in Web-Based Experiments

Permalink
https://escholarship.org/uc/item/6c0158tz

Journal
Proceedings of the Annual Meeting of the Cognitive Science Society, 46(0)

Authors
Palmetshofer, Alina
Winter, Alice
Dudschig, Carolin
et al.

Publication Date
2024

Copyright Information
This work is made available under the terms of a Creative Commons Attribution License, available at https://creativecommons.org/licenses/by/4.0/

Peer reviewed

eScholarship.org Powered by the California Digital Library
University of California

# Study on Preferred Duration and Reimbursement in Web-Based Experiments

**Alina Palmetshofer* (alina.palmetshofer@uni-tuebingen.de)**
Department of Psychology, University of Tübingen
Schleichstraße 4, 72076 Tübingen, Germany

**Alice Winter* (alice.winter@uni.tuebingen.de)**
Department of Psychology, University of Tübingen
Schleichstraße 4, 72076 Tübingen, Germany

**Carolin Dudschig (carolin.dudschig@uni-tuebingen.de)**
Department of Psychology, University of Tübingen
Schleichstraße 4, 72076 Tübingen, Germany

**Barbara Kaup (barbara.kaup@uni-tuebingen.de)**
Department of Psychology, University of Tübingen
Schleichstraße 4, 72076 Tübingen, Germany

*shared first authorship

## Abstract

In Experiment 1, we conducted a survey in which we asked a sample of $N$ = 762 participants explicitly about their preferences regarding reimbursement and experimental duration of web-based experiments. Participants significantly prefer donations and raffles over other forms of reimbursement in 5-minute experiments. When experiments take 30 minutes or longer, participants significantly prefer direct payment. This finding applies to 15-minute experiments, too, if only data of PayPal account holders is analyzed (75.23% of our sample). In Experiment 2, we implicitly measured the preferences of $N$ = 189 participants by letting them choose between experiments with different durations and forms of reimbursements. As in Experiment 1, direct payment was the preferred reimbursement in longer studies. The most popular choice of duration and reimbursement was to receive direct payment for an experiment of 60 minutes, which was selected by 57% of all participants.

**Keywords:** Web-based Experiment; Incentive; Reimbursement; Lottery; Prize Draw; Online Survey; Sample size; Online Research Methods

The interrelationship between incentives, motivation, and performance is subject to a long-lasting debate in the fields of social science, economics and psychology. In experimental psychology, the debate gained new relevance since psychological science has been increasingly focusing on web-based studies (Lukács, Huber, Talypova, Miccoli, & Reips, 2023; Sassenberg & Ditrich, 2019) and the possibility to recruit participants over the web. Web-based studies provide new opportunities, such as easy access to participants from diverse countries, cultures, or with rare characteristics, and offer an efficient way to realize large sample sizes (Sauter, Draschkow, & Mack, 2020). A crucial factor in the transformation toward web-based experiments is the reimbursement of participants. It has been shown that incentives influence different facets of performance, like data quality, participation rate and dropout rate. For example, Göritz (2006) showed in two meta-analyses that whether the participants received some form of reimbursement or not had significant impact on the motivation of participants to start a web-based study. Not only the existence or the amount of reimbursement per se influences participants' performance. In web-based studies, various types of reimbursement exist (Göritz, 2006; Stähli & D., 2016) and there is evidence that also the type of reimbursement influences quantity. Ikeda and Bernstein (2016) showed that the completion rate differed significantly between reimbursement conditions. The influence of the type of payment on the quantity was also shown for several studies conducted on the Crowdsourcing Platforms MTurk (Soratana, Liu, & Yang, 2022a), finding that increased payments led to participants being willing to completing more trials. (Mason & Watts, 2009). This poses the question for researchers of how the invested resources, i.e. the overall money spent for reimbursements, can be distributed most efficiently to motivate participants to take part in web-based studies. Most of the cited literature focuses on studies ran via MTurk, where many users are viewing their participation as a primary source of income (Litman, Robinson, & Rosenzweig, 2015). However, many researchers still recruit a substantial number of participants for their web-based studies from their university. We therefore decided to investigate the underlying motivation of partaking in experiments in such a sample. With the focus on university members, this work aims to investigate which types of reimbursement increase the likelihood of participants to take part in web-based experiments. The findings will provide evidence-based guidance for experimenters on how the reimbursement should be designed for their experiments. To achieve this, we investigate different types of reimbursements and analyzed how preferences vary across different study durations.

## Experiment 1: Questionnaire

In our first study, participants responded to a questionnaire, indicating their likelihood to take part in fictional experiments



In L. K. Samuelson, S. L. Frank, M. Toneva, A. Mackey, & E. Hazeltine (Eds.), *Proceedings of the 46th Annual Conference of the Cognitive Science Society.* ©2024 The Author(s). This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY).

of varying duration given different types of reimbursement. We expected to find different reimbursement preferences depending on the experiment's duration.

## Method

**Sample** The study was created in German on SosciSurvey and all members of the University of Tübingen were invited at the 15th of June 2021 via mass email to participate. The date approximately marked the beginning of the final third of the summer term, which all students regularly attend to. Furthermore, the link to this survey was shared in Facebook groups and displayed to participants after completing other experiments from our research group. Participants were required to be proficient in German and to be at least 18 years of age. Additionally, all participants had to give their informed consent to start the survey. The study was estimated to take five minutes and no reimbursement was offered. The study followed the general guidelines of our research group that were approved by the local Ethics Committee for Psychological Research at the University of Tübingen (Identifier: Revision_1_Kaup_2020_0807_200).

A total of 1256 people clicked on the link, which resulted in 933 people starting the questionnaire and 771 completing it. Only datasets without missing responses were included in the analysis, which reduced our final sample size to $N = 762$. On average, participants were 28 years old ($M_{\text{age}} = 28.31$, $SD = 10.44$), although the most frequent age in this sample was 24 years. The majority of participants were female (70.60%). A further 25.56% identified as male, 1.59% as nonbinary and 2.25% preferred not to say. Because we included payment via PayPal as a possible form of reimbursement in the questionnaire, we collected data on how many participants owned a PayPal account, which turned out to be 75.23% in this sample.

**Material** Besides asking participants to provide their age and gender, questions focused on factors that might influence participants' likelihood of participating in fictional web-based experiments. Every question started with 'Imagine you were invited to a web-based study'. Participants were asked to rate their likelihood of participating in studies of different durations (5 minutes, 15 minutes, 30 minutes and 60 minutes) for six different types of reimbursement (1: payment via PayPal, 2: donation to a charity organization, 3: entry to a raffle for one voucher per 100 participants of high value, 4: a raffle for five vouchers per 100 participants of medium value, 5: ten vouchers per 100 participants of lower value, and 6: no reimbursement at all). All options were displayed to each participant in randomized order. For all conditions (except for the option 'no reimbursement'), the amount of money that was offered was the same, with 10€ for each hour a participant spends on the experiment. We will give an illustrative example for one duration: For the experiment of 15 minutes, reimbursement options were: payment of 2.50€ via PayPal or a donation of the same amount, standing a chance to win one voucher of 250€ among 100 participants, to win one out of five vouchers of 50€, or to win one out of ten vouchers of 25€ among 100 participants (see Figure 3 for a detailed overview for Experiment 2, which are the identical options as in Experiment 1 only lacking the question regarding no reimbursement). Self-assessment of their probability to participate was provided on a five-point Likert scale, ranging from (1) 'very unlikely' over (3) 'possibly' to (5) 'very likely'. Participants were always instructed to answer honestly and intuitively.

Furthermore, participants were asked to rate the extent to which five factors influence their decision to participate in web-based experiments using a four-point Likert scale with the options 'not at all', 'a little', 'to some degree', and 'much'. The five factors evaluated were the type of reimbursement, the study topic, the duration, what company the vouchers are from and whom participants help with their data.

Afterward, participants were asked to answer on a five-point Likert scale how often they usually partake in web-based studies and if they have a PayPal account. In two further yes-no questions, participants stated whether they consider all types of reimbursement in the previously described fictional experiments as too low and whether they prefer course credits over all other forms of reimbursement included in this survey.

## Results

To address the question of participants' preferred type of reimbursement, we analyzed the data separately for each of the four different durations. For each duration, we conducted a Friedman test to determine if there were any differences in participants' preferences between the available reimbursement options. In the case of statistically significant differences, we report *Kendall's W* as a measure of effect size. We analyzed which types of reimbursement differed regarding participants' preferences in pairwise post-hoc comparisons using Dunn's tests, adjusted for multiple comparisons by the Benjamini-Hochberg procedure, also known as false discovery rate (FDR).

**Experiment of 5 Minutes** In experiments of five minutes, participants' preferred type of reimbursement varied significantly $\chi^2(5) = 348.65$, $p < .001$. This effect was small given *Kendall's W* = 0.09, CI = [0.07, 0.11]. Dunn's tests revealed that all comparisons involving PayPal and no reimbursement were highly significant, with $p$s $< .001$, making no reimbursement the worst and 0.80€ payment via PayPal the second-to-worst form of reimbursement for an experiment of five minutes. Donation (0.80€) is significantly preferred over a chance to win one voucher of high value (80€) ($p = .003$) and over one voucher out of five vouchers of medium value (16€) ($p = .03$). Participants' preference regarding the three types of raffles did not differ significantly ($p$s = .22 - .60). Descriptively, donation ($Mdn = 4$) was the most preferred form of reimbursement over all types, as can be seen in Figure 1. Out of all comparisons with donation, only the comparison between donation and a chance to win one out of ten vouch-

ers of low value (8€) did not reach significance ($p$ = .10).

**Experiment of 15 Minutes** In experiments of 15 minutes, participants' preferred type of reimbursement varied significantly $\chi^2(5) = 656.55$, $p < .001$. This effect was rather small (*Kendall's W* = 0.17, CI = [0.15, 0.19]). Again, no reimbursement was the least preferred reimbursement ($p$s < .001). This time, the second-to-worst option was the raffle with a 1% chance to win a voucher of high value (250€) $p$s < .001. There was no clear favorite between the other forms of reimbursement. Except for the ten vouchers worth 25€ being preferred over five vouchers worth 50€ ($p$ = .01) and over a 2,50€ Payment via PayPal ($p$ = .04), all other comparisons were non-significant ($p$s = .18 - .68). Descriptively, the probability of participating was higher for the raffle with ten vouchers (*Mdn* = 4) than all other forms of reimbursement, as shown again in Figure 1.

**Experiment of 30 Minutes** In experiments of 30 minutes, participants' preferred type of reimbursement varied significantly $\chi^2(5) = 914.74$, $p < .001$. This effect was rather small (*Kendall's W* = 0.24, CI = [0.22, 0.27]). Dunn's tests provided us with a rather clear ranking of preferred reimbursements for this duration. The worst reimbursement was again no reimbursement ($p$s < .001), followed by a raffle with a chance to win only one voucher of high value (500€) with $p$ = .02 for the comparison to a raffle of five vouchers worth 100€, all other comparisons to the raffle for one voucher were highly significant ($p$s < .001). In turn, a raffle with five vouchers was preferred over those options with $p$s < .001. Comparisons to a raffle with ten vouchers worth 50€ and to donation (5€) were significant, with $p$ = .03 and $p$ = .001, respectively. Only the comparison between a raffle including ten vouchers and donation did not reach significance ($p$ = .26), making these forms of reimbursement the second-best choice (all other $p$s < .001). Payment via PayPal (5€) was the reimbursement where participants reported the highest likelihood to partake in this experiment ($p$s < .001), with *Mdn* = 4 compare with all other forms of reimbursement. For illustrations, see Figure 1.

**Experiment of 60 Minutes** In experiments of 60 minutes, participants' preferred type of reimbursement varied significantly $\chi^2(5) = 1107.10$, $p < .001$. This effect was small to moderate in size (*Kendall's W* = 0.29, CI = [0.26, 0.32]). Looking at the pairwise comparisons, the pattern seen in the 30-minute experiment with payment via PayPal being the best and no reimbursement being the worst form of reimbursement was the same for this duration. Again, the comparison between a raffle with ten vouchers and one voucher was highly significant ($p$ < .001). However, the order of preferences between all three raffles and donation was less clear: The comparisons between ten 100€-vouchers and five 200€-vouchers and the comparison between one voucher worth 1000€ and donation (10€) was significant ($p$ = .004 and $p$ = .02, respectively). The other three comparisons were non-significant ($p$s = .14 - .27).

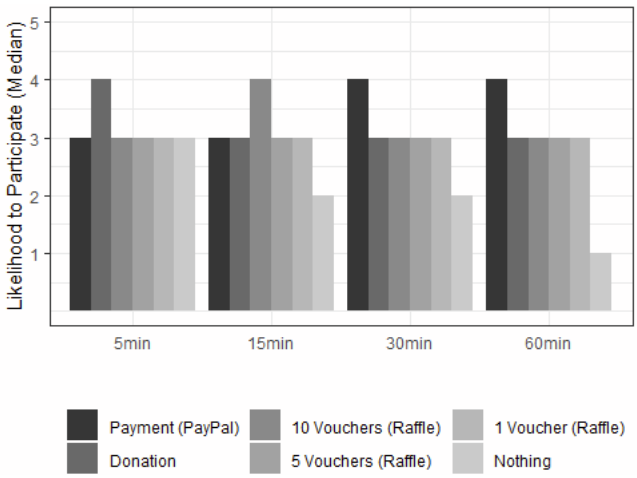


Figure 1: Reported likelihood to take part in a study of given duration and reimbursement on a five-point Likert scale.

## Responses to Explorative Questions

Of 762 participants who submitted full datasets, 7.61% preferred course credits over all forms of reimbursement. An additional 9.45% stated that all options of reimbursement in the questionnaire were too low. The majority of participants reported to 'sometimes' take part in web-based studies, as can be seen in Table 1. Taken together with those who take part 'often' and 'very often', they make up 85% of our sample.

Table 1: Reported Frequency on Likert Scale (in Percent) of Partaking in Online Studies

| never | seldom | sometimes | often | very often |
|---|---|---|---|---|
| 0.92% | 13.52% | 58.14% | 22.44% | 4.99% |

Figure 2 shows how much participants believe that their decision to take part in any web-based experiment or not is influenced by the five factors 'Type' of reimbursement, 'Duration' of the study, 'Topic' (what the study is about), 'Voucher: Company' (which company the vouchers they stand to win are from) and 'Who profits?' in a sense of which institution or research group participants help with their participation. A Friedman test revealed that the influence of these factors differs significantly ($\chi^2(4) = 746.67$, $p < .001$), but with a rather small effect size (*Kendall's W* = 0.25, CI = [0.22, 0.27]). Pairwise comparisons via Dunn's tests revealed that eight out of ten comparisons were highly significant ($p$s < .001), the two exceptions being 'Voucher: Company' and 'Who profits' with $p$ = .47 as well as 'Topic' and 'Type' ($p$ = .14). Therefore, duration was clearly the most influential factor on participants' decision of whether to partake in a web-based study. This was followed by both type and topic. Which company a voucher is from and whom they help with by participating influenced participants the least.

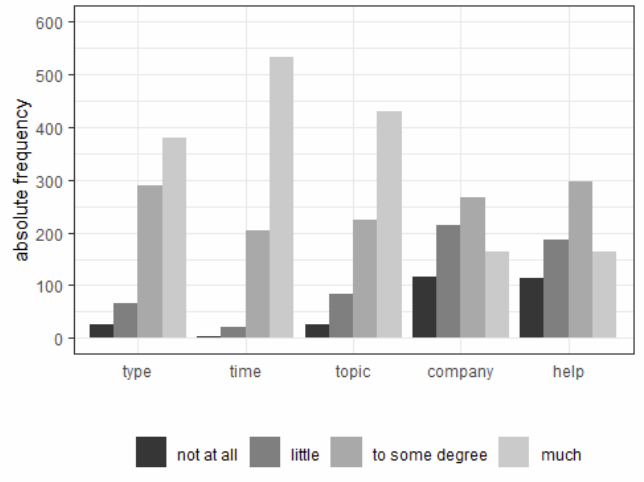


Figure 2: Participants rated on a Likert Scale (1-4) how much each factor influenced their likelihood to take part in a study.

## Discussion

In short experiments, participants liked donations significantly better than all other forms of reimbursement except for the ten voucher raffle, which they only descriptively preferred less than donation. Participants showed no clear preference for any reimbursement in 15-minute experiments. For experiments of 30 and 60 minutes, payment via PayPal is the preferred option. All options lead to a higher likelihood of participating than no reimbursement. If analyzing the data of the 75% of participants who have a PayPal account, payment via PayPal turns out to be the preferred form of reimbursement for experiments lasting 15 minutes and longer. Regarding raffles, we found that participants generally preferred raffles with higher odds of winning a lower-value voucher.

# Experiment 2: Behavioral Study

In Experiment 2, we examined whether the pattern of participants' preferences can be replicated in a naturalistic use case. We invited participants via email to a psycholinguistic web-based experiment and let them choose among different study durations and reimbursements before starting the experiment. With this approach, we intended to examine if the observed pattern of participants' preferences reported in Experiment 1 can be found in participants' actual behavior, too. We hypothesized that participants' preference for studies differs based on study duration. Further, we expected participants' preference for reimbursement options to differ within each study duration. Specifically, we expected the same pattern as in Experiment 1 regarding studies of 30 and 60 minutes, where participants clearly preferred to be paid directly.

## Method

This work was preregistered (https://osf.io/zgrau) and approved by the Ethics Committee for Psychological Research at the University of Tübingen (Identifier: 2022_0118_245).

**Sample** A total of 219 participants of the University of Tübingen took part in this experiment ($M_{\text{age}}$ = 24.17, $SD_{\text{age}}$ = 6.5, female 78.30%, male 18.51%, non-binary or not specified 3.17%). All participants gave informed consent prior to their participation. The participation criteria were a minimum age of 18 and German language proficiency at native speaker level.

**Procedure** An email with an invitation to a psycholinguistic web-based experiment was sent via mass-mailing to all students of the University of Tübingen. For web-based experiments, it is a highly effective and common approach to send study invitations to mailing lists (Reips, 2009). The email was sent on January 13, 2023. This was the first week after Christmas break and it marked the beginning of the final third of the fall term. Data collection was closed on January 30, 2023. The email contained an invitation to a psycholinguistic study, with the vague description that the study investigates how people understand and process language. Participants were informed that they can choose the study duration among four options (5 minutes, 15 minutes, 30 minutes or 60 minutes) and that they can choose among different kinds of reimbursements (10€ per hour are offered for the respective duration).

After clicking on the link, participants had to give their informed consent and state their age and gender. Thereafter, participants had to choose a study duration. On the next page, the reimbursement options were shown for the selected duration. We decided to offer the same duration and reimbursement options as in Experiment 1 (except for the option to receive no reimbursement, as this option was barely chosen in Experiment 1). Since this would have resulted in an extraordinary high amount of experimental costs, we decided to use the 'psycholinguistic' experiment as a cover study, so participants thought they were applying for a real experiment, while there was no actual experiment. Once participants had chosen the reimbursement option, the experiment ended and participants were informed about the true purpose of this study and why the psycholinguistic study was used as a cover story. They were asked to give their informed consent once again and to indicate whether they had suspected the true intention of this study beforehand.

## Step 1:

We are looking for participants for different psycholinguistic studies, which differ mainly in their duration. Please select the study you would like to participate in now:

- ❍ 5 minutes
- ❍ 15 minutes
- ❍ 30 minutes
- ❍ 60 minutes

## Step 2:

You have chosen the study with a duration of **5 minutes**. What should your reimbursement look like?

- ❍ Donation of 0.80€ to a charity organization
- ❍ Payout of 0.80€ via PayPal or bank transfer
- ❍ Participation in a raffle with a 10-percent chance of winning a voucher worth 8€
- ❍ Participation in a raffle with a 5-percent chance of winning a voucher worth 16€
- ❍ Participation in a raffle with a 1-percent chance of winning a voucher worth 80€

You have chosen the study with a duration of **15 minutes**. What should your reimbursement look like?

- ❍ Donation of 2.50€ to a charity organization
- ❍ Payout of 2.50€ via PayPal or bank transfer
- ❍ Participation in a raffle with a 10-percent chance of winning a voucher worth 25€
- ❍ Participation in a raffle with a 5-percent chance of winning a voucher worth 50€
- ❍ Participation in a raffle with a 1-percent chance of winning a voucher worth 250€

You have chosen the study with a duration of **30 minutes**. What should your reimbursement look like?

- ❍ Donation of 5€ to a charity organization
- ❍ Payout of 5€ via PayPal or bank transfer
- ❍ Participation in a raffle with a 10-percent chance of winning a voucher worth 50€
- ❍ Participation in a raffle with a 5-percent chance of winning a voucher worth 100€
- ❍ Participation in a raffle with a 1-percent chance of winning a voucher worth 500€

You have chosen the study with a duration of **60 minutes**. What should your reimbursement look like?

- ❍ Donation of 10€ to a charity organization
- ❍ Payout of 10€ via PayPal or bank transfer
- ❍ Participation in a raffle with a 10-percent chance of winning a voucher worth 100€
- ❍ Participation in a raffle with a 5-percent chance of winning a voucher worth 200€
- ❍ Participation in a raffle with a 1-percent chance of winning a voucher worth 1000€

Figure 3: Information presented to the participants (translated into English). Each participant only saw the reimbursement options for the duration selected in the first step. The reimbursement options were depicted in randomized order, and there was no back button.

**Conditions** First, all participants chose the duration of the experiment in which they wanted to participate in. Second, participants selected their preferred type of reimbursement. The monetary compensation varied depending on the selected duration of the experiment. Five options were offered. 1: donation to a charity organization, 2: direct payment (e.g. via PayPal or bank transfer), 3: participating in a raffle with a high chance of winning (10%) a low value prize, 4: participating in a raffle with a 5% chance of winning, 5: participating in a raffle with a low chance of winning (1%) a high value prize. The relative monetary compensation was the same for each duration with payment being worth 10€/hour per participant. Figure 3 shows what was displayed to the participants.

### Results

30 participants suspected the true intention of the study and were excluded from the analysis, which reduced our sample size to $N$ = 189. Each participant chose one combination of duration and reimbursement, absolute frequencies are shown in Figure 4. To analyze participants' preferences, the Poisson distribution was used for all generalized linear models.

First, it was investigated whether participants' preference for studies differs depending on the duration of the study. A likelihood-ratio test indicated that the model including duration provided a better fit for the data than a model without it ($\chi^2(3) = 131.82,\ p < .001$).

The second question was whether participants' preference for reimbursement options differs within each study duration. A likelihood-ratio test indicated that the data is significantly better explained by the model including an interaction between reimbursement and duration than a model without it ($\chi^2(12) = 72.24,\ p < .001$).

Thirdly, for taking part in longer studies of 30 or 60 minutes, we expected that participants prefer to be paid directly over other forms of reimbursement. Therefore, we analyzed the subset of data for 30 minutes and 60 minutes, by using the model count $\sim$ reimbursement, family = poisson and contrast coding, setting 'direct payment' as the reference level. For the duration of 30 minutes, direct payment was significantly preferred over all other options of reimbursement (donation: $z = -2.53,\ p = .01$; raffle 10%: $z = -2.53,\ p = .01$; raffle 5%: $z = -2.81,\ p = .005$; raffle 1%: $z = -2.81,\ p = .005$). This was also the case for a study duration of 60 minutes. Direct payment was significantly preferred over all other options for reimbursement (donation: $z = -6.47,\ p < .001$; raffle 10%: $z = -6.47,\ p < .001$; raffle 5%: $z = -4.66,\ p < .001$; raffle 1%: $z = -6.12,\ p < .001$).

### Discussion

Overall, the most preferred option was the combination of getting paid directly in a web-based experiment with a duration of 60 minutes (57% of all participants chose this option). The results show that the preferred option of reimbursement differs depending on study duration. For longer studies, direct payment is the preferred form of reimbursement.

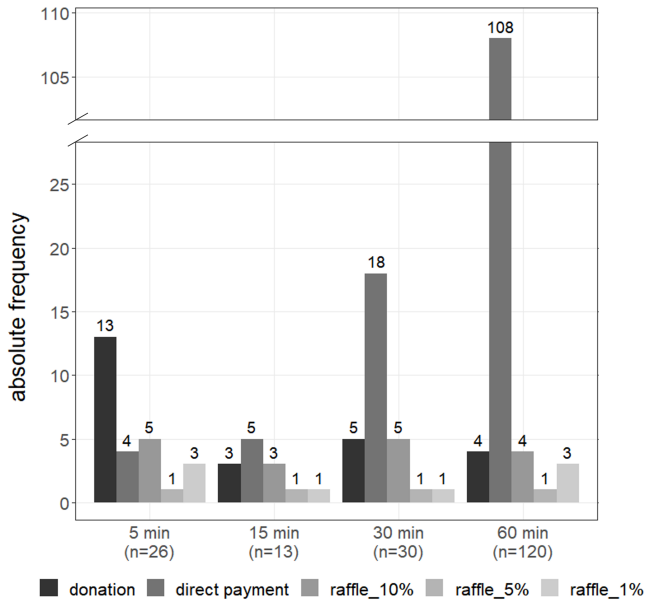


Figure 4: Participants' choice in Experiment 2. Absolute frequencies are provided for each combination.

## General Discussion

Experiment 1 and 2 showed that direct payment was clearly the preferred form of reimbursement for experiments of longer durations (30 and 60 minutes). For experiments of only five minutes, participants preferred all other forms of reimbursement over being paid directly. Participants may perceive the low payment as not worth the time to provide payment information. Additionally, Heyman and Ariely (2004) found that participants, who were promised a low compensation (0.50$), showed significantly lower effort in all tasks than participants in all other conditions (high compensation (5$), unspecified amount of compensation or none). Even though we kept the relative compensation in short experiments the same as in longer experiments, the absolute value of 0.80€ may not have served as an equally strong incentive for participants to complete short experiments of 5 minutes compared to higher absolute compensation for longer experiments. We chose a constant hourly rate of 10€/h (minimum wage) in our experiments, which is the recommended compensation for studies approved by the local Ethics Committee for Psychological Research at the University of Tübingen. However, based on our findings, investigating how different hourly compensation rates influence participation rate is of interest to future research.

In both experiments, lotteries were never the best choice to reimburse participants in experiments of all durations, though we found tendencies that participants may prefer raffles for multiple vouchers of low value over raffles for few vouchers of higher value. Literature provides mixed findings for lotteries. For example, one study measuring response rates to online panel invitations found that lotteries increased participation in a large sample (Pedersen & Nielsen, 2014). However, Göritz and Luthe (2013) showed that lotteries seem to work only as an incentive for people with low motivation. If the topic of an experiment is already highly salient and participants are intrinsically motivated, a lottery is unlikely to increase the response rate, according to Marcus, Bosnjak, Lindner, Pilischenko, and Schütz (2007). Besides that, raffles motivate people with lower incomes to participate, but not people with higher incomes. Given that we recruited participants via university mail, it is safe to assume that the majority of our samples were students and therefore with low or no income. However, in Experiment 1 participants reported a mean age of 28 years with $SD$ = 10 which might indicate that our sample also contains people who are already employed and draw a salary. This may explain our mixed findings regarding lotteries. Therefore, depending on the expected income of the population of interest, the suitability of lotteries may vary.

In Experiment 1, participants rated different motives to take part in web-based experiments. Duration was the most influential factor, followed closely by the type of reimbursement and the topic of the study. Bosnjak and Batinic (2002) identified key factors influencing participation in 1996, showing that curiosity and a general willingness to contribute to research were regarded as more important than material incentives. Whereas Buhrmester, Kwang, and Gosling (2011) reported Among MTurk participants that making money was a subordinate motive for participation, Litman et al. (2015) detected a shift in motivation and found that earning money became the primary motivator on MTurk and that working on MTurk is a primary source of income for some participants Litman et al. (2015). It is reasonable to assume that the sample in our study varies substantially from those participants on MTurk or other platforms. We sampled among university members, which showed their willingness to take part in Experiment 1 for getting no compensation for their contribution. While these characteristics of our sample are a limitation to keep in mind regarding the generalizability of our findings, it further completes the general picture of the increasing importance of monetary compensation. It is still up to future research to systematically investigate to which extent participation rate varies between different samples.

Another related point to consider is that different samples (along with varying motivations) may produce different data quality. Data quality of web-based experiments can be influenced by the type of reimbursement (Soratana et al., 2022a; Soratana, Liu, & Yang, 2022b) and by different compensation schemes (Ikeda & Bernstein, 2016; Mason & Watts, 2009).

Aside from the investigated influence of duration and reimbursement type, absolute compensation and compensation scheme are probably influencing participants' preference. Further studies are needed to systematically vary relative in addition to absolute monetary compensation, to investigate data quality in addition to participation rate and how the influence of these factors differs between different populations.

## Acknowledgments

This research was supported by Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) 1422488154; 381713393, within Research Unit "FOR 2718: Modal and Amodal Cognition".

## References

Bosnjak, M., & Batinic, B. (2002). *Understanding the willingness to participate in online-surveys – the case of e- mail questionnaires* (M. B. Bernad Batinic Ulf-Dietrich Reips & A. Werner, Eds.). Seattle: Hogrefe & Huber.

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's mechanical turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, *6*(1). doi: 10.1177/1745691610393980

Göritz, A. S. (2006). Incentives in web studies: Methodological issues and a review. *International Journal of Internet Science*, *1*(1), 58–70.

Göritz, A. S., & Luthe, S. C. (2013). Effects of lotteries on response behavior in online panels. *Field Methods*, *25*, 219-237. doi: 10.1177/1525822X12472876

Heyman, J., & Ariely, D. (2004). Effort for payment - a tale of two markets. *Psychological Science*, *15*, 787-793. doi: 10.1111/J.0956-7976.2004.00757.X

Ikeda, K., & Bernstein, M. S. (2016, 5). Pay it backward: Per-task payments on crowdsourcing platforms reduce productivity. *Conference on Human Factors in Computing Systems - Proceedings*, 4111-4121. doi: 10.1145/2858036.2858327

Litman, L., Robinson, J., & Rosenzweig, C. (2015, 6). The relationship between motivation, monetary compensation, and data quality among us- and india-based workers on mechanical turk. *Behavior Research Methods*, *47*, 519-528. doi: 10.3758/S13428-014-0483-X/FIGURES/1

Lukács, G., Huber, N., Talypova, D., Miccoli, M., & Reips, U. (2023). Sample size trends in experimental psychology from 2003 to 2022: Soaring online samples and lagging offline samples. *PsyArXiv Preprints*. doi: 10.31234/osf.io/rebqd

Marcus, B., Bosnjak, M., Lindner, S., Pilischenko, S., & Schütz, A. (2007). Compensating for low topic interest and long surveys a field experiment on nonresponse in web surveys. *Social Science Computer Review*, *25*, 372-383. doi: 10.1177/0894439307297606

Mason, W., & Watts, D. J. (2009). Financial incentives and the "performance of crowds". *Proceedings of the ACM SIGKDD Workshop on Human Computation, HCOMP '09*, 77-85. doi: 10.1145/1600150.1600175

Pedersen, M. J., & Nielsen, C. V. (2014). Improving survey response rates in online panels. *Social Science Computer Review*, *34*, 229-243. doi: 10.1177/0894439314563916

Reips, U.-D. (2009). The methodology of internet-based experiments. In A. N. Joinson, K. Y. A. McKenna, T. Postmes, & U.-D. Reips (Eds.), *Oxford handbook of internet psychology.* Oxford: Oxford University Press.

Sassenberg, K., & Ditrich, L. (2019). Research in social psychology changed between 2011 and 2016: Larger sample sizes, more self-report measures, and more online studies. *Advances in Methods and Practices in Psychological Science*, *2*(2), 107–114. doi: 10.1177/2515245919838781

Sauter, M., Draschkow, D., & Mack, W. (2020). Building, hosting and recruiting: A brief introduction to running behavioral experiments online. *Brain Sciences*, *10*, 251. doi: 10.3390/brainsci10040251

Soratana, T., Liu, Y., & Yang, X. J. (2022a, 10). Effect of payment methods in crowdsourcing platforms. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, *66*, 1627-1631. doi: 10.1177/1071181322661135

Soratana, T., Liu, Y., & Yang, X. J. (2022b, 10). Effects of payment rate and country's income level on attitude toward a crowdsourcing task. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, *66*, 2220-2224. doi: 10.1177/1071181322661532

Stähli, M. E., & D., J. (2016). Incentives as possible measure to increase response rates. In C. Wolf, Y.-c. Fu, T. Smith, & D. Joye (Eds.), *The sage handbook of survey methodology.* London: SAGE Publications Ltd.