

# Study Protocol for Pre-Registering a Meta-Analysis

**Title:** Dynamics of participation in psychological studies. A meta-analysis.

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## Abstract

**Objectives:** The main question of the meta-analysis is, whether the initial participation rate in psychological studies has decreased over time. Moreover, possible moderators of this time effect will be addressed: The design of an invitation letter, the topic, the data collection mode (online survey, telephone survey, face-to-face-interview, experiment), the burden of participating in the study (length, complexity) and the incentives given to participants.

**Eligibility criteria:** Eligible studies for the meta-analysis have to report initial participation rates from empirical studies in psychology. Descriptives of the study design concerning the relevant moderators (invitation, data collection mode, burden, incentives) have to be given. Student samples will be excluded, because students are often obliged to participate for their studies and therefore, their motivation differs from other populations.

**Methods of synthesis:** The outcome of interest will be the response rate in percent. As there may be several different treatments per study report, the data are hierarchical. Using the metafor package in R, two-level mixed effects models will be used. On the one hand, to meet the needs of the hierarchical data structure and the dependencies in the data. On the other hand, to enable testing moderator variables on the level of the report (e.g. publication year) and on the level of the intervention (e.g. data collection mode). To test the time effect, the influence of the year of data collection on the average response rate is tested. Afterwards, the characteristics of the survey design are tested as moderators for the time effect.

# **Introduction**

## **Trends in nonresponse rates and nonresponse bias**

Nonresponse is one of the most severe problems in survey research (Hox & De Leeuw, 1994). If nonresponse is completely at random, it only reduces the amount of data collected. But in the case of nonrandom nonresponse, it can cause biased results, as the final respondents are no longer representative for the population of interest (Groves and Peytcheva 2008).

For example, Hobbins et al. (2013) examined predictors for the willingness to participate in a schizophrenia randomized clinical trial and found out, that the participation was associated with variables related to the treatment of schizophrenia. Thus, participants willing to change their medication were more likely to participate and the patients who agreed to participate in the trial were more satisfied with their treatment than those patients who rejected to participate. The participants in the study then are not representative for all patients, as they differ in characteristics relevant for the study conducted.

There is plenty of evidence on declining response rates in the last decades. This finding concerns household surveys in social sciences and politics (Brick and Williams 2013; Krosnick 1999), as well as surveys in counseling and clinical psychology (van Horn et al. 2009). This trend can aggravate the possible bias due to nonresponse. A similar trend for psychology in general can be expected. Moreover, it is of interest what factors may moderate this trend to be able to guide survey operations by empirical evidence to optimize survey response. Due to the change in the willingness to participate in scientific studies, the continuous updating of the cumulative evidence is of importance.

## **The decision to participate in the context of individualization**

Basically, participation in a scientific study is a decision problem. As such, there is plenty of theoretical perspectives to explain it. In the following, the focus will be on the cultural embeddedness and its influence on the success of the communication with potential participants. A major difference in cultural

orientation is the predominance of individualistic values, such as achievement or independence, versus collectivist values, such as harmony and solidarity. In cultures emphasizing individualism, individuals are mainly responsible for themselves and follow their personal goals, whereas in collectivist cultures, the welfare of the in-group is of greater importance. Thus, individuals behave solidarily within their group and distinguish more sharply from out-groups (Gudykunst et al 1996).

As participation is interrelated with culture and communication, changes of these factors over time can be treated as explanations for the decrease of participation in recent years. In western societies, a shift of cultural values towards individualism can be stated (Greenfield 2013). It can be expected, that this change lessens the feeling of social obligation and solidarity and rationalizes the decision to participate in a study. Thus, the first hypothesis stated is:

*H1: The initial participation rate in psychological studies has decreased over time.*

In individualistic cultures, decisions are rather based on an individual cost-benefit-calculus. Thus, the burden of the participation, incentives and interest in the topic are more important to convince potential participants to comply (Esser 1986). Above this economic rationality, social exchange also plays a role. The reciprocity norm (Gouldner 1960) can make people feel obliged to help others, if they think, that those others, for example as researchers, fulfill their part to contribute knowledge to society, which in the end is beneficial for the participant, too. To profit from this kind of social exchange in the sense of increasing study participation, giving information on the goals of the research, promising information on the results and giving incentives in advance are reasonable strategies.

To evaluate costs and benefits of a study participation, the most important factors are the actual burden for the participant, that is the costs of participation, and the incentives given for participation, which is the benefit.

The influence of the length of surveys on response rates has already been examined meta-analytically by Rolstad, Adler, & Rydén (2011). They find a clear association between questionnaire length and response rates. But the heterogeneity between the studies suggests, that other factors than length could have caused this association. Thus, it is not clear, that the difference in response rates is directly attributable to the length of the questionnaires. For the association between questionnaire length and experienced response burden only weak support is found. In the meta-analysis of Mercer et al. (2015) multiple criteria were used to classify a survey as burdensome. A survey classified as burdensome then leads to response rates more than 20 percent lower than for low burden surveys.

Galesic & Bosnjak (2009) conducted an experiment, where the announced length of the survey, incentives and the order of thematic blocks is randomly assigned to participants. The experiment showed, that the respondents were more likely to start the survey, the shorter the stated length was. Independent of the incentives, the participants in the shorter survey also had a higher overall completion rate than in the longer surveys. Next to this strong effect on participation, the length of the survey also influenced data quality, such that questions later in the survey were answered faster and the variability of answers to questions in grids decreased during the survey.

In the context of the higher importance of the cost-benefit-calculus due to cultural individualization, over time it can be expected that longer studies suffer more from the decrease in participation than shorter ones. Thus:

*H2: A higher announced time duration of the study aggravates the decline in response rates.*

An intensively researched topic in the area of survey participation is the effect of incentives. An early meta-analysis of Church (1993) showed, that prepaid monetary incentives were the most effective with an average increase of 19,1 percentage points. The meta-analysis moreover revealed, that only initial incentives had an effect on response rates. Incentives contingent on the return of the questionnaire did not

provide significant benefits, independent of the type of incentive. In general, cash incentives have a stronger effect on response rates than lottery tickets or other non-monetary incentives (Pforr et al., 2015). The difference between prepaid and promised incentives was also discovered by Mercer et al. (2015), but only for telephone and mail surveys. In the case of in-person interviews, the timing of the incentive had no significant impact on the response rates. These findings from cross-sectional research indicate, that monetary incentives and higher incentives should lessen the decrease in response rates due to the higher effectiveness of this kind of incentives.

*H3: The decrease in participation rates is less pronounced for monetary incentives relative to other kinds of incentives.*

*H4: The higher the incentive, the smaller the decrease in participation over time.*

### **The decision to participate in the context of changing communication patterns**

Also relevant for requests of study participation are communication patterns, as the participants have to be contacted somehow. As the amount of communication has increased in total, more information has to be processed and thus, the attention to a single communication request, as well as the stimulative nature of communication requests, has decreased, what has direct implications for the reaction to study participation requests. As the amount of communication in total, the amount of scientific studies has also increased. This leads to a lower interest in a single study, as the possibility of study participation is not scarce (Groves et al 1992). It also may influence the perception of social exchange, in the sense of giving participants the feeling to have done their part after having participated in a few studies, reducing the willingness to participate in the following (Groves and Magilavy 1981).

There are several factors known to influence participation in surveys. Depending on the content and style of an invitation letter, there is considerable variation of the effect on response rates. A reciprocity

argument, such as offering information on the study, increases the positive effect of the invitation letter (De Leeuw et al., 2007). A method to get more attention is the personalization of the invitation letter. Due to the higher amount of communication and the resulting scarcity of information, this measure should have become more important to reduce nonresponse.

*H5: The personalization of the invitation letter reduces the decrease of participation rates.*

Another method to get more attention and to make the participation in a study more attractive, is the salience of the topic.

*H6: The decrease in participation rates is less pronounced for more salient topics.*

The mode of the study conduction also plays a role for the survey response. Hox & De Leeuw (1994) found the highest response rate for face-to-face interviews with around 70 %, followed by telephone surveys (67 %). Mail surveys suffered from the lowest response rates (61 %). Yet, mail surveys were found to be preferred over web surveys by most respondents, as the meta-analysis of Shih & Fan (2007) showed. In the meta-analysis of Cook, Heath, & Thompson (2000) on response rates in web surveys, the average response rate was at approximately 40 %. Moreover, the representativeness of a web sample for the general population was still questionable. Special target groups, as college or university students, were more likely to have access to Internet technology and showed to be more responsive to online surveys (Shih & Fan, 2008).

More than ten years later now, it would be interesting, to what extent the further diffusion of the internet has reduced the reservation towards online surveys. The overall increase of communication increase the attractiveness of the easy access and fast processing of online surveys. This leads to the conclusion, that the preferences for study conduction modes, especially for online surveys, may have changed.

*H7: The decrease is less pronounced for online surveys due to the increased acceptance of online surveys relative to other survey modes.*

A multilevel meta-analysis will be conducted. The dependent outcome will be the participation rate. The relevant independent variable for all tests is the time of sampling. The moderating effects of the survey design will be tested using the characteristics of study conduction as moderator variables.

## **Method**

### **Inclusion and exclusion criteria**

Of interest are psychological studies reporting initial participation rates and at least one of the following study design characteristics: design of the invitation letter, data collection mode, burden of the participation, incentives. Student samples will be excluded due to differing motivation structure and incentives. In the case of panel studies, only the first wave is taken due to panel mortality in later waves. There is no restriction concerning the year of publication. Publication language has to be either English or German. Editorials or texts reviewing results of original articles will not be included.

### **Information sources and study selection**

Literature will be searched via ClicSearch, which is a very broad search interface comprising many databases from a variety of research fields.

The following keywords will be used to find relevant literature:

Any field contains (Participation rate OR Participation rates OR Response rate OR Response rates)

AND (Survey OR Study OR Experiment OR Intervention OR Trial)

AND (Mode OR Invitation OR Length OR Incentive\*)

AND Subject contains (Psychology OR psychological)

NOT (student sample OR student samples)

Literature will be screened for eligibility criteria. In the first step, literature that definitely does not meet the inclusion criteria will be identified via abstract screening. For the literature potentially relevant, a full-text screening will then be conducted in the second step to identify the eligible literature.

### **Data collection**

Included studies will be each coded by two coders. Reliability will be reported by agreement rates between pairs of coders. These will be calculated with the help of the irr-package in R and can be given for each question. Disagreements will be discussed and resolved.

Data is collected on two levels:

The highest level of information is the study report. Information retrieved at this level:

First author, publication year, publication type (Journal article, book or book chapter, dissertation or thesis, government report, conference paper, working paper), peer-reviewed (yes, no), Sponsorship (yes, no), Year of conduction, Country of conduction.

Within the study reports, there may be different characteristics of study conduction, for example to compare a group not offered an incentive with a group offered one. For each kind of treatment, there is one single initial participation rate. Thus, all the information on the treatment is retrieved at the level of the effect sizes:

Incentives (Monetary, Non-monetary, none), invitation letter (personalized, not personalized, none), data collection mode (online survey, telephone survey, f2f interview, experiment), duration of the study, complexity of participation, Topic, sensitivity of topic (yes, no), Sample size, Mean age in the sample, percentage of females in the sample, participation rate and corresponding standard deviation

### **Summary measures and methods of synthesis**

The outcome is the response rate in percent for each treatment. The response rate is given in percent and thus is standardized between 0 and 1.

Using the metafor package in R, two-level mixed effects models will be used. On the one hand, to meet the needs of the hierarchical data structure and the dependencies in the data. On the other hand, to enable testing moderator variables on the level of the report (e.g. publication year) and on the level of the treatment (e.g. data collection mode). To test the time effect, the influence of the year of data collection on the average response rate is tested. Afterwards, the characteristics of the survey design are tested as moderators for the time effect. As the effects of the study design characteristics on the time effect are of interest, random slopes models are used.

### **Publication bias and selective reporting**

As the response rate usually is not the principal outcome of the primary studies, the danger of selective reporting can be assumed to be relatively small. Therefore, no further attempts are made to test or control for publication bias.

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