Pushing Respondents from the Paper Mode to the Web in a Mixed-Mode Panel Survey

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Introduction

Mixed-mode panel studies with a web mode and a paper mode aim to reduce coverage- and nonresponse-errors by including respondents without access to the internet or who are not willing to participate in a web survey (Blom et al., 2016). Although a mixed-mode design can cause negative consequences for data quality and survey costs, the balance of survey error and budget can make such a approach to the best "affordable design" compared to a unimode survey (De Leeuw, 2005).

Such a mixed-mode panel design is applied by the GESIS Panel, a probability-based access panel infrastructure in Germany. In order to achieve an optimal trade-off between costs and survey errors in the GESIS Panel, the interviewers of the face-to-face recruitment procedure are adviced to present the web-mode as the default mode. However, respondents who declined the web mode participation were given the opportunity to become a paper mode panel member. 22 percent of all internet using respondents in the recruitment interview 2013 chose this option, resulting in a three-fold increase in survey costs compared to online participation for each of these persons per wave.

When thinking about optimizing such a mixed-mode survey design, there seems to be a way to reduce survey costs by persuading paper mode respondents to switch to the web mode instead. If design elements can be implemented that convince more respondents to choose the paper mode in the recruitment of a panel survey or to switch to the web mode after they have chosen the paper mode before, there is a chance to decrease survey costs.[1]

. Such a web-push intervention can be implemented at two phases in the GESIS Panel process: in the recruitment of new panelists and in the ongoing panel process.[2] This paper focuses on a web-push intervention in the ongoing panel. Therefore, chapter 2 gives an overview about some details of the GESIS Panel survey design. Chapter 3 presents data about the potential of panelists who meet the requirements of a mode-switch to the web as well as information on their mode preferences. In chapter 4, we introduce the conditions and ideas of an experimental design to test how these offline participants can be persuaded to switch their survey mode to the web. This design is intended to answer following questions:

- How to generate salience for the option to change the mode?
- How to prevent a drop-out of panelists caused by the web-push intervention?
- How to create a positive leverage that offline respondents take the efforts of a web participation?

Chapter 5 lists some open questions about how to design a web-push intervention in the GESIS panel.

The Survey Design of the GESIS Panel

The GESIS Panel provides a probability-based omnibus mixed-mode access panel infrastructure located at GESIS Leibniz Institute for the Social Sciences in Mannheim, Germany (Bosnjak et al., 2017). It applies a multi-step, sequentially mixed-mode recruitment strategy, starting with a face-to-face recruitment-interview followed by a self-administered profile survey. The web mode was presented as the default option at the end of the face-to-face interview after respondents agreed to receive an invitation to the profile survey. Internet-using respondents that were not willing to participate online, were given the opportunity to participate in the paper mode. Respondents without web access were assigned to the offline mode automatically. All participants of the profile survey are considered members of the panel and invited to the regular waves. The initial sample that was recruited in 2013 encompasses the German speaking population aged between 18 and 70 years (at the time of

[1] To assess all the consequences of a web-push on a panel design, we need to learn more about the impact of an intervention on the different sources of the total survey error. Even when survey costs can be reduced, the total survey error could increase due to mode-effects and panel attrition. Further studies have to examine the entire effect of a web-push in a mixed-mode panel study.

[2] The recruitment procedure of the GESIS Panel offers opportunities to test web-push methods in the face-to-face recruitment interview and in a self-administered profile survey.

recruitment) and permanently residing in Germany. In 2016 a second cohort was recruited using the General Social Survey (ALLBUS) interview as vehicle. The second cohort is not restricted regarding the age. Hence, it encompasses German speaking respondents that permanently reside in Germany from the age of 18. Panel members were recruited in a multi-stage procedure,

The survey waves of the GESIS Panel take place on a bimonthly basis, each taking about 20 minutes and split up into the two self-administered survey modes: 65% of the panelists participate online, 35% of the panelists attend the surveys by mail. Each survey wave consists of studies submitted by external researches as well as core studies developed by the GESIS institute. Every panelist receives a survey invitation sent by mail including a prepaid cash incentive of €5. In addition, the offline panelists obtain the paper-and-pencil questionnaire as well as a prepaid return envelope. The cover letter for the online respondents includes access data for the web survey. Furthermore, they receive an invitation e-mail and two reminder e-mails at intervals of two weeks.

Currently, the GESIS Panel includes about 5000 panelists from the two samples: around 3400 panelists from the initial recruitment in 2013 and about 1600 panelists from a refreshment sample in 2016. A further refreshment of the panel is planned for 2018 following the same recruitment procedure as the refreshment sample 2016.

Web-Potential and Mode Preferences

Not every paper respondent of a mixed-mode panel fulfills the prerequisite for changing the mode to the web. It can be assumed that web access from their home is a necessary technical condition to become a web-survey panelists. The GESIS Panel asks all respondents about ownership and access to the internet over several devices once a year (GESIS, 2017). According to these data, 1137 paper mode panelists can access the internet from their home at the end of 2016 (see table 1).[3] Taking into account an attrition rate of around 10% per year in the GESIS Panel, we expect nearly 1,000 panelists meeting the technical requirements to switch to the web in the mid of 2018.

To develop a suitable push-to-web design, it might be helpful to learn more about the device usage and the mode preferences of the offline panelists with web access. Asked for the frequency of different device usage, the most of these respondents seems to use at least one web-enabled device quite often. Nearly 95% of the participants use at least one device more than 1-2 times per week. 80% of the panelists with access to the web even suggest to use at least one device once or several times a day (see table 2).[4]

However, when the panelists were asked about the likelihood of participation in different modes, many paper mode respondents indicate to refuse a participation in a web-enabled device. 61% of the offliner with web access reported that they would "in no case" participate in the survey by desktop computer, tablet-PC, or with a smartphone (see table 3). In contrast, only 10% of the these panelists considered "in any case" to take part with at least one device.[5] Offline panelists with web access at home also have a clear attitude regarding their mode preferences for participating in the GESIS Panel. Almost 95% of these respondents declare the paper mode as their preferred way of answering the GESIS Panel questions. Although we can assume that many respon-

Table 1
Offliner with web access at home

	cohort 2014	cohort 2016	Total
No web access	231	134	365
	22.67 %	27.74 %	24.30 %
Web access	788	349	1137
	77.33 %	72.26 %	75.70%
Total	1019	483	1502
	100 %	100 %	100 %

Fieldperiod: 14.12.2016 - 14.02.2017

Table 2
Offliner with web access: frequency of device use

	cohort 2013	cohort 2016	Total
All devices < 1-2 times PW	41	24	65
	5.20%	6.88%	5.72%
All devices > 1-2 times PW	747	325	1072
	94.80%	93.12%	94.28%
All devices < daily	160	76	236
	20.30%	21.78%	20.76%
At least one device daily	628	273	901
	79.70%	78.22%	79.24%
Total	788	349	1137
	100%	100%	100%

Fieldperiod: 14.12.2016 - 14.02.2017

[3] Respondents are asked about the ownership and usage of the following devices: Desktop computer/PC, Laptop, Tablet-PC, Smartphone

[4] We can not be sure whether the use of a device also means that the respondents also have the ability to use the internet. Nevertheless, all devices can be used for web activities or are even developed for this purpose.

[5] These are cumulative results of the following question with a six-point response scale: "If you were able to choose from different survey participation modes, would you use the following mode for participating in the GESIS GesellschaftsMonitor surveys?". The percentages reflect statements of the two endpoints of the scale.

dents do not take much effort to evaluate the consequences of the different mode options and would also admit a discrepancy between their behaviour and their attitudes, it is still an unambiguous signal.

Table 3
Offliner with web access: likelihood of mode participation

	cohort 2013	cohort 2016	Total
No complete web-devise rejection	301 38.20 %	136 38.97%	437 38.43%
Complete web-devise rejection	487 61.80%	213 61.03%	700 61.57%
Total	788 100%	349 100%	1137 100%

Fieldperiod: 14.12.2016 - 14.02.2017

This data indicate that many offline panelists are equipped with the technical requirements to switch to the web mode and a high proportion of them presumably have the knowledge which is required to do so. In such a case, the lack of computer or web skills does not appear to be the main barrier of a successful push-to-web intervention. However, there seems to exist a wide skepticism about a survey participation with web-enabled devices in the GESIS Panel. These respondents clearly express their paper mode preferences. We still know little about the reasons and the causation for this data. Therefore, further research is needed to explain these correlations. Nevertheless, it presumably needs a well thought out approach to convince respondents to move to the web. The following chapter introduces a method that intends to make a step in this direction.

A Web-push Design for a Mixed-Mode Survey

When designing a push-to-web intervention in an ongoing panel, it is certainly helpful to consider the conditions of respondents when they are confronted with a switch option. On the one hand, we can expect common challenges and comparable mechanisms in the decision making process of survey participants in the transition from the paper to the web mode regardless of the study design. On the other hand, the basic conditions of a web-push in an ongoing mixed-mode panel study differentiate from cross sectional studies as well as from a web-push in the panel recruitment.

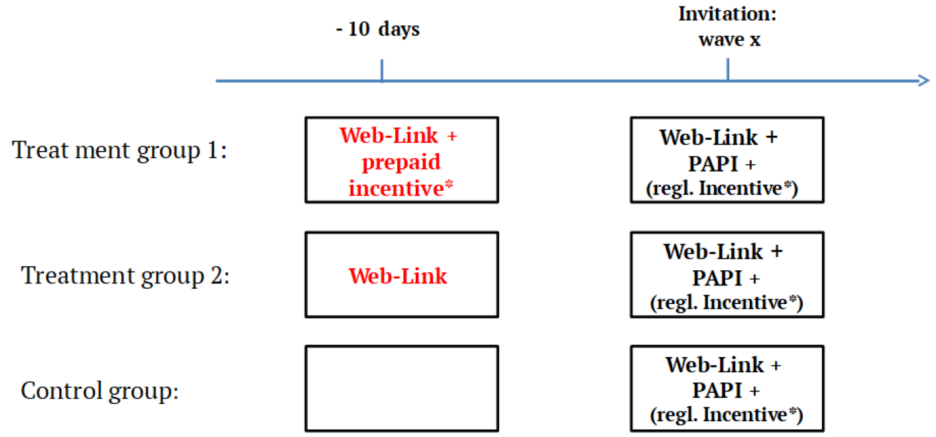
Since the panelists have remained in the survey until the time of the web-push, we can derive some hypotheses about their attitudes and behavior that might be related to determinants of the mode choice decision. There is an existing relationship between the panel infrastructure and the respondents who know the content and the procedure of the survey. Many panelists have to be interested in participating in the survey for some reasons, or at least they do not see any major reasons against a participation which likely includes data protection concerns in general. Another condition that might be important for a web-push design base on the hypothesis that panelists develop response habits after a certain time of participation (Lemay, 2009). According to this, panelists use repeated patterns of behavior when answering the different survey waves without questioning the purpose of the survey and without calculating benefits and costs as they might have at the beginning of their participation. These hypotheses can be useful for tailoring a web-push design, even though we have not evidence to prove them yet. Based on these assumptions we believe following criteria should be taken into account in an effective web-push intervention: a salience of the web option, a prevention of panel drop out and a leverage to use the web option.

First of all, the option should be salient to the respondents. It is trivial that panelists need to be aware of web option to be able to accept such an offer. However, it is not trivial to present the option in a visible way, given that respondents have developed an automatic response behaviour. Particular in the view of response habits, we can assume that some presentation canals will not attract the respondent's attention. For example, we cannot expect that the panelists read the cover letters of every survey invitation anymore. Many respondents would probably miss the message, if we will include the web-access data without further signals. It appears necessary to interrupt the response process in some way to generate attention and to bring respondents to consider the option of changing the mode.

However, such an interruption involves the risk of a "shock" among the respondents. Such a shock is seen as a reason for panel attrition and can be caused by a certain life event or by an unpleasant experience of the respondents in connection with the panel (Lemay, 2009; Lugtig, 2014). In contrast to cross sectional studies, the respondents of a mixed-mode panel must choose between three options when they are asked to change the mode: switch the mode, stay in the current mode or leave the panel at all. This is also the order of priority for the panel infrastructure, whereby it is very important to prevent panel attrition. Therefore, it could be quite risky to interrupt the response procedure too harsh and thus provoke a shock. For example, pushing respondents into the web mode by increasing the costs of the paper mode option would likely cause a drop out among respondents who do not want to participate in the web (e.g. by sending a survey invitation that does not initially include the regular paper-and-pencil questionnaire but only contains access data for the web mode). For this reason, it has to be found an optimal trade-off between pushing respondents to the web and avoiding a drop out of panelists.

As a further important criterion, a web-push design should not only prevent panel attrition but also has to include a stim-

Figure 1. Experimental web-push design



*Note: Web-push-Incentive= € 2-10; regular incentive= € 5

ulus to convince respondents to change to the web mode. This seems to be quite challenging since we know from the offline participants of the GESIS Panel that they decided against the web mode in the first place and they are still willing to participate in the paper mode despite its efforts. In addition, the most offline respondents expressed their preferences for their current mode. So we need to find an inducement to convince respondents that they at least try out the web mode. Firstly, the web participation must be as easy as possible to reduce any participation costs of the mode. Furthermore, survey research has found evidence that monetary incentives can have a positive impact on survey response rates, which could also be demonstrated in a study with a web-push approach (Millar & Dillman, 2011). We assume that such incentives offers some advantages by triggering a reciprocity, building trust and attracting attention to the web option.

The following web-push design is built in consideration of these criteria. The implementation of experimental treatments is supposed to test the effect of two factors: the time of providing the web option and a prepaid incentive. Figure 1 depicts a design in which two treatment groups receive an invitation-letter including access data to the web survey (in the form of a web-link) of the next wave several days before the regular survey invitation.[6] The invitation-letter includes information about a web-mode participation as well as data to access the web survey. The cover letter also contains arguments why such a web-push is useful for panelists and the infrastructure. The framing of the letter has to make clear, that it is not the regular panel invitation which will be received in a few days at the regular time including the paper-and-pencil questionnaire and the obligatory € 5 incentive. It should be avoided, that panelists confuse such a letter with the regular survey invitation. In addition, one of the two treatment groups receive a prepaid cash incentive in a certain amount to test whether such an inducement has a positive effect.[7]

Both experimental groups will receive the regular survey invitation obtaining the paper and pencil questionnaire and the € 5 incentive. This invitation will also comprise access data to the web survey as a further try to nudge respondents to the web. To investigate whether a sequential web-push has a positive effect on the web response rate, a control group will not receive an early invitation letter with a web-access option nor obtain an additional incentive. However, the control group is given the opportunity to change the mode by receiving the same regular survey invitation, including access data to the web mode, such as the treatment groups.

We assume that a push-design with a preceded web option is able to gain attention from the panelists without pushing too hard. The respondents should regard the offer as a chance without raising the participation costs of the paper mode. Therefore, unwilling respondents have the low-threshold opportunity to stay in the paper mode. The cash incentive is seen as a stimulus to encourage participants to take the efforts of changing the mode to the web. At the end of the web-survey, respondents are asked whether they were willing to participate in the web mode again. If they agree, they

[6] In this paper such an approach is called a sequential design, following a web-push approach in cross sectional survey where respondents receive survey invitations with certain modes in sequence instead of a concurrent choice between different modes (Medway & Fulton, 2012; Messer & Dillman, 2011; Millar & Dillman, 2011)

[7] An amount of more than € 5 would have the advantage to differ from the regular € 5 prepaid incentive. As a result, the incentive would contribute to generate attention and to reduce the risk of a confusion with the regular invitation. On the other hand, the respondents could be skeptical and might suspect fraud if they receive an incentive that is too high.

are asked for their e-mail addresses to establish them as web-mode panelists. Only after respondents disclose a valid e-mail address, they can be counted as web-mode panelists. If respondents are not willing to share their email-address in the first place, they can do so later. In this case, they will receive access data for the web-mode in the invitation for next wave without sending them a paper-and-pencil questionnaire. If panelists do not agree to participate in the web survey again or do not wish to disclose a valid e-mail address, they will receive a regular paper mode invitation. The outcome variable is the proportion of respondents who switched to the web, stayed in the paper mode, or left the GESIS Panel after three following waves. If the respondents indicate a valid e-mail address and participate in two consecutive waves in the web-mode, we consider them as web-panelists. If the respondents do not participate in three consecutive waves, they will automatically removed as a panel member. Further research is needed to learn more about consequences of a web-push in a mixed-mode panel for survey costs, measurement errors and nonresponse errors. Therefore, this design is a first attempt to improve the balance between survey costs and survey errors in a mixed-mode panel while additionally providing more insight into the field of web-push methods.

Questions

The design of this paper is still in the development phase. Therefore, we have to find answers to following questions:

- Do we need a control group who is not confronted with a web-push to investigate measurement-and non-response error?
- Which approach has a better chance of success: first encourage respondents to participate in a web survey, then ask for their e-mail address, or vice versa (first ask for their e-mail address and encourage them later)?
- What is a promising amount of money as a prepaid incentive?
- Should a web-push includes all offliner regardless of their web-access status or should only panelists be pushed who had reported a web access at home?
- How many times can we push the respondents?
- Should we try to encourage respondents to answer with a smartphone?
- Should we consider phone calls to push the respondents, either as an announcement or as a reminder?

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