Are Respondents Ready for Audio and Voice Communication Channels in Online Surveys?

Jan Karem Höhne

University of Duisburg-Essen (Germany)
Universitat Pompeu Fabra (Spain)

Abstract

Technological advancements and changes in online survey participation pave the way for new data collection methods. Particularly, the increasing smartphone rate in online surveys facilitates a re-consideration of prevailing communication channels to, for instance, naturalize the communication process between researchers and respondents and to collect more in-depth and high-quality data. However, so far, there is a lack of information on whether respondents are willing to undergo a change in communication channels. In this study, I therefore investigate respondents' willingness to participate in online surveys with a smartphone to have the survey questions read out loud (audio channel) and to give oral answers via voice input (voice channel). For this purpose, I employed two willingness questions – one on audio and one on voice channels – in the probability-based German Internet Panel (N = 4,426). The results reveal that a substantial minority of respondents is willing to participate in online surveys with a smartphone to have the survey questions read out loud and to give oral answers via voice input. They also show that the device used for survey participation and personality traits, such as conscientiousness and extraversion, play a role when it comes to respondents' willingness.

Keywords: Automatic question reading; Probability-based online panel; Respondent willingness; Smartphone; Voice answers

Introduction and Research Questions

Self-administered online surveys have become increasingly popular and thus a prevailing research method in social science research and many adjacent research fields. One reason for their popularity is that online surveys offer several benefits, including cost-effectiveness and timeliness (Callegaro, Lozar Manfreda, & Vehovar, 2015). An additional benefit, compared to other established survey modes, is that online surveys are highly amenable to technological advancements that have the great potential to improve or augment them (Struminskaya, Keusch, Lugtig, & Höhne, 2020). This is accompanied by a continuous increase of mobile device use in online surveys, particularly smartphone use. For instance, the smartphone rate in the probability-based German Internet Panel increased from 4% in September 2012 (first regular wave) to 12% in July 2016 (first wave with a mobile optimized survey design) and further to 35% in January 2021 (last wave available). This finding is in line with findings reported by Gummer, Quoß, and Roßmann (2019). The authors investigate smartphone use in web surveys over time using data from a German online access panel. In addition, Peterson, Griffin,

LaFrance, and Li (2017) report similar trends for a diverse set of commercial and academic surveys in the US and several other countries, such as the Netherlands and Spain. Revilla et al. (2016) use data from the Netquest online access panel and report an increase in smartphone use for Argentina, Brazil, Chile, Colombia, Spain, Mexico, and Portugal. The increasing smartphone rate, coupled with the technological amenability of online surveys, permits researchers to consider new communication channels in online surveys.

The majority of contemporary online surveys is based on visual communication channels. Most commonly, researchers ask survey questions in text-form by providing a question stem and answer options (closed answer format) or text fields (open answer format). However, such visual communication channels restrict online survey participation to literate respondents. Grotlüschen, Buddeberg, Dutz, Heilmann, and Stammer (2019), for instance, estimate that in 2018 about 6 million (or 12%) of the adult population in Germany could not sufficiently read and write and another 11 million (or 21%) showed misspellings even with commonly used words. Data from the UNESCO Institute for Statistics (2017) estimate that in 2016 about 750 million (or 14%) of the global population was illiterate. However, there are substantial variations across countries. Thus, incorporating audio and voice communication channels in online surveys would help to include respondents with literacy issues.

An incorporation of audio and voice communication channels would also naturalize the communication process between researchers and respondents (Tourangeau, Rips, & Rasinski, 2000). The automatic survey question reading using pre-recorded audio files and answer recording simulates daily conversation and allows respondents to engage in open and in-depth narrations. More specifically, respondents are exposed to an identical online survey setting including an audio play function for reading survey questions and a recording function for gathering respondents' oral answers. It resembles the audio and voice functions of popular Instant-Messaging Services, such as WhatsApp and WeChat.

Audio and voice communication channels are associated with several methodological benefits that have the great potential to facilitate online survey participation and to improve data quality. For instance, the automatic reading of survey questions decreases respondent burden (Tourangeau et al., 2000). This particularly applies to respondents with literacy issues. Furthermore, survey questions with requests for oral answers may allow researchers to collect rich and nuanced information by triggering open narrations (Gavras & Höhne, 2020). Advancements in Automatic Speech Recognition (ASR) technology, Natural Language Processing (NLP), and Text-as-Data methods also facilitate a proper handling and analysis of voice data obtained via smartphones. This also applies to large-scale online surveys.

Considering the online survey literature, it is to observe that there is a variety of studies dealing with respondents' willingness to share digital data or to engage in additional tasks (see, for instance, Keusch, Struminskaya, Antoun, Couper, & Kreuter, 2019; Revilla, Couper, & Ochoa, 2019; Wenz, Jäckle, & Couper, 2019). However, these studies do not directly consider respondents' willingness to participate in online surveys using audio and voice communication channels. One notable exception is the study by Revilla, Couper, and Ochoa (2018) revealing that more than 50% of their respondents are willing to answer survey questions with a request for oral answers via their smartphone (voice channel). However, the study does not consider respondents' willingness to have the survey questions read out loud (audio channel) and it is based on data from a non-probability online access panel in Spain. In this study, I attempt to

fill this research gap by investigating respondents' willingness for audio as well as voice channels using data from the probability-based German Internet Panel. I address the following two research questions:

1) To what extent are respondents willing to participate in online surveys with a smartphone to have the survey questions read out loud (audio channel) and to give oral answers via voice input (voice channel)?

2) What drives respondents' willingness to participate in online surveys with a smartphone to have the survey questions read out loud (audio channel) and to give oral answers via voice input (voice channel)?

Method

Data Source

Data were collected in the German Internet Panel, which is part of the Collaborative Research Center 884 "Political Economy of Reforms" at the University of Mannheim. The German Internet Panel is based on an initial recruitment in 2012 and two refresher recruitments in 2014 and 2018. While the recruitments in 2012 and 2014 are based on a three-stage stratified probability sample, the recruitment in 2018 is based on a two-stage stratified probability sample of the German population aged from 16 to 75 years. For a detailed methodological description of the German Internet Panel, I refer interested readers to Blom, Gathmann, and Krieger (2015).

The German Internet Panel invites all panel members every two months to participate in a self-administered online survey that deals with a variety of economic, political, and social topics. At the beginning of each wave, panelists are directed to a short welcome page announcing the approximate length of the online survey (about 20 minutes) and informing them that the compensation for their participation (in the amount of 4€) will be credited to their study account after survey completion.

Questions on Respondents' Willingness

I employed the following two questions on respondents' willingness to participate in upcoming online surveys using audio and voice communication channels:

1) Question on audio channel: In general, are you willing to participate in upcoming surveys with your smartphone to have the questions read out loud to you?

2) Question on voice channel: In general, are you willing to participate in upcoming surveys with your smartphone to give oral answers via voice input?

The questions were presented on two online survey pages (single-question presentation) with the following vertically aligned answer options: 1 'Definitely yes', 2 'Probably yes', 3 'Probably no', 4 'Definitely no', 5 'Don't use a smartphone', and 6 'Don't know how it works'.

The last two options were visually separated by a space from the remaining options (see Appendix for screenshots of the two questions).[1]

Sample

For this study, I use data from wave 51 (January 2021) of the German Internet Panel (see Blom et al., 2021). In total, 4,468 respondents started wave 51. Of these respondents, 42 (0.9%) broke off before being asked one of the two willingness questions. As a result, 4,426 respondents remain for statistical analysis.[2] The median age category is '51 to 55'[3] and 48.4% of them were female. In terms of education, 13.8% had graduated from a lower secondary school or less (low educational level), 30.7% from an intermediate secondary school (medium educational level), and 53.1% from a college preparatory secondary school or university (high educational level). Another 2.4% reported having a different degree from those mentioned above.

Results

In order to investigate my first research question, I inspect the answer distributions of the two questions on respondents' willingness to participate in web surveys with a smartphone to have the survey questions read out loud to them and to give oral answers. More specifically, I report percentages for all six answer options.

In order to address my second research question, I investigate a variety of independent variables associated with respondents' willingness for audio and voice channels (dependent variables) by running two separate OLS regressions. The two dependent variables are coded as follow: 1 'definitely no', 2 'probably no', 3 'probably yes', and 4 'definitely yes'. The (non-substantive) answer options 'don't use a smartphone' and 'don't know how it works' are excluded from the regression analyses. I use the following independent variables that were suggested by previous research to be associated with respondent behavior (see Revilla et al., 2018; van Vaerenbergh & Thomas, 2013): smartphone use in this survey (1 = 'yes'), internet use (7 ascending options), survey evaluation: difficulty (4 ascending options), survey evaluation: enjoyment (5 ascending options), survey evaluation: length (4 ascending options), openness (10 ascending options), conscientiousness (10 ascending options), extraversion (10 ascending options), agreeableness (10 ascending options), and neuroticism (10 ascending options).[4] In addition, I control for the following socio-demographic variables: age (14 ascending options), female (1 = 'yes'), and education with low as reference: medium (1 = 'yes') and high (1 = 'yes').

In this article, I follow the analytical strategy used by Revilla et al. (2018). In doing so, I try to increase the comparability of the results. All data preparations and analyses were conducted with Stata (version 14).

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[1] The questionnaire of wave 51 of the German Internet Panel can be found here: https://www.uni-mannheim.de/en/gip/for-data-users/questionnaires-and-documentation/. The two willingness questions were placed close to the end.

[2] Item-nonresponse is 1 for the question on audio channel and 2 for the question on voice channel.

[3] Age was calculated based on a birthyear variable with 14 categories. Age varies from '20 and younger' (1.3%) to '81 to 85' (0.7%).

[4] Openness, conscientiousness, extraversion, agreeableness, and neuroticism were measured with the Big5 inventory by Rammstedt, Kemper, Klein, Beierlein, & Kovaleva (2013). Each trait was measured with two questions, the answers to which I sum up to produce each respondent's final score across each trait.

Research Question 1

Regarding my first research question, I investigate how many respondents indicated their willingness to participate with their smartphone to have the survey questions read out loud (audio channel) and to give oral answers via voice input (voice channel). Table 1 presents the results. The results indicate that about 25% of the respondents would be willing to take part in online surveys using audio channels. For voice channels, respondents' willingness is somewhat lower (about 16%). The larger part of respondents is not willing to participate in online surveys using audio (about 64%) and voice channels (about 76%). In addition, about 11% (audio channel) and about 9% (voice channel) of the respondents do not use a smartphone or do not know how it works. The results on the voice channel vary substantially from those reported by Revilla et al. (2018).

Table 1. Respondents' willingness to participate with their smartphone in online surveys to have the survey questions read out loud (audio channel) and to give oral answers via voice input (voice channel)

Answer options	Willingness for audio channel (%)	Willingness for voice channel (%)
Definitely no	25.5	34.4
Probably no	38.5	41.4
Probably yes	19.1	12.6
Definitely yes	6.0	3.0
Don't use a smartphone	6.3	6.2
Don't know how it works	4.5	2.5
N	4,425	4,424

Note. The last two options were visually separated by a space from the remaining options (see Appendix for screenshots of the two questions).

Research Question 2

In a next step, I investigate variables associated with respondents' willingness for audio and voice channels (dependent variables: 1 'definitely no', 2 'probably no', 3 'probably yes', and 4 'definitely yes', respectively) by running two separate OLS regressions. I use several independent variables that were suggested by previous research to have an impact on respondent behavior (see Revilla et al., 2018; van Vaerenbergh & Thomas, 2013). Table 2 presents the results. The regression models on audio [$F(14,3767) = 70.66$, $p < 0.001$, adjusted-$R^2 = 0.21$] and voice channels [$F(14,3858) = 29.18$, $p < 0.001$, adjusted-$R^2 = 0.09$] are statistically significant. Interestingly, the coefficients in both models show identical patterns. Respondents participating with a smartphone and using the Internet more frequently show a higher willingness. Enjoying the participation in the online survey also increases willingness. Respondents with a higher extraversion and agreeableness show a higher willingness, whereas respondents with a higher conscientiousness show a lower willingness. In addition, younger and male respondents are more willing to participate in online surveys using audio and voice channels. In contrast, education is not statistically associated with willingness.

Table 2. Unstandardized OLS regression coefficients of independent variables on respondents' willingness to participate in online surveys with audio and voice communication channels

Independent variables	Willingness for audio channel		Willingness for voice channel	
	Unstandardized coefficients	Standard errors	Unstandardized coefficients	Standard errors
Smartphone use in this survey	0.43***	0.03	0.31***	0.03
Internet use	0.06**	0.02	0.05**	0.02
Survey evaluation				
Difficulty	–0.01	0.02	–0.03	0.02
Enjoyment	0.18***	0.02	0.13***	0.02
Length	–0.01	0.02	–0.02	0.02
Personality traits				
Openness	0.00	0.01	–0.01	0.01
Conscientiousness	–0.03***	0.01	–0.02*	0.01
Extraversion	0.03***	0.01	0.05***	0.01
Agreeableness	0.02*	0.01	0.02*	0.01
Neuroticism	0.00	0.01	0.00	0.01
Age	–0.07***	0.01	–0.02***	0.01
Female	–0.11***	0.03	–0.11***	0.03
Education with low as reference				
Medium	–0.08	0.04	–0.05	0.04
High	–0.07	0.04	–0.04	0.04
N	3,782		3,873	

Note. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. Intercepts are statistically significant. Answers to the options 'don't use a smartphone' and 'don't know how it works' are excluded from the analyses. I used listwise deletion of missing values.

Discussion and Conclusion

The aim of this study was to investigate respondents' willingness to participate in online surveys using audio and voice communication channels. The overall results indicate that a substantial minority of respondents is willing to use their smartphone for having the survey questions read out loud (audio channel) and to give oral answers via voice input (voice channel). However, most respondents are not willing or do not have a smartphone or do not know how it works.

The findings indicate that respondents do not seem to be entirely ready for audio and voice channels in online surveys and thus an encompassing launch does not seem wise. However, the findings also indicate that some respondent groups might be more open than others. For instance, respondents already using a smartphone for survey participation and younger and more extraverted respondents seem to be more attached to these communication channels. To steer a middle course, it might be worthwhile to let respondents decide about the communication channels in future online surveys. This does not only help to include respondents with literacy issues but may also help to convince hard to recruit respondents, such as millennials (people born between 1982 and 2003), that are more reluctant to participate in online surveys (Revilla & Höhne, 2020, pp. 509–510).

Interestingly, I found that only about 16% of the respondents indicate their willingness for voice channels, whereas Revilla et al. (2018) found a willingness rate of more than 50%. In contrast to this study, the authors used data from the Netquest online access panel in Spain. This

indicates that the panel (probability or non-probability) and the country (Germany or Spain) matters. Thus, it seems worthwhile to systematically investigate respondents' willingness across different panels and countries in future studies. A related point is that respondents in the study by Revilla et al. (2018) are younger than those in this study. In addition, the authors specifically asked respondents whether they would be willing to provide oral answers to open questions. In this study, however, the two willingness questions asked about survey questions in general.

Even though this study provides some new insights on contributing factors, such as age and personality traits, for respondents' willingness for audio and voice channels, the main reasons for their willingness or unwillingness remain unclear. Thus, it might be worthwhile to ask respondents for their reasons by, for instance, employing follow-up probes. This may shed light on the pros and cons of audio and voice channels from a respondent perspective. In addition, this may help survey researchers and practitioners to properly design future online surveys using these communication channels.

Considering the continuous increase of smartphone use in online surveys and the increasing importance of audio and voice communication channels in everyday life, it is only a matter of time until these communication channels find their way in online surveys. In fact, there are already a couple of studies experimenting with audio and voice channels (see Couper, Singer, & Tourangeau, 2003; Gavras & Höhne, 2020; Revilla, & Couper, 2019; Revilla, Couper, Bosch, & Asensio, 2020; Schober et al., 2015). In addition, growing and powerful data processing and analysis capabilities, such as Automatic Speech Recognition (ASR), Natural Language Processing (NLP), and Text-as-Data Methods, enable a proper handling of audio and voice data. Even from large-scale online surveys. Thus, it seems wise to start thinking about these communication channels in online surveys and how to best incorporate them.

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Appendix

Figure A1. Screenshot of the question on audio channel (presentation on a PC)

Figure A2. Screenshot of the question on voice channel (presentation on a PC)