

## Open question formats: Comparing the suitability of requests for text and voice answers in smartphone surveys

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While surveys provide important standardized data about the population with large samples, they are limited regarding the depth of the data provided. Although surveys can offer open answer formats, the completeness of and detail provided in these formats is often limited, particularly in self-administered web surveys, for several reasons: On the one hand, respondents find it difficult to express their attitudes in open answer formats by keying in the answers. Respondents also keep their answers short or skip such questions altogether. On the other hand, survey designers seldom encourage respondents to elaborate on their open answers, because the ensuing coding and analysis have long been conducted manually. This makes the process time-consuming and expensive, reducing the attractiveness of such formats. However, technological developments for surveys on mobile devices, particularly smartphones, offer the collection of voice instead of text answers, which may facilitate answering questions with open answer formats and provide richer data. Additionally, new developments in automated speech-to-text transcription and text coding and analysis allow the proper handling of open answers from large-scale surveys. Given these new research opportunities, we address the following research question: How do requests for voice answers, compared to requests for text answers, affect response behavior and survey evaluations in smartphone surveys?

We conducted an experiment in a smartphone survey (N = 2,400) using the opt-in Omninet Panel (Forsa) in Germany in December 2019 and January 2020. From their panel, Forsa drew a quota sample based on age, education, gender, and region (East and West Germany) to match the German population on these demographic characteristics. To collect respondents' voice answers, we developed the JavaScript- and PHP-based "SurveyVoice (Svoice)" tool that records voice answers via the microphone of smartphones. We randomly assign respondents to answer format conditions (i.e., text or voice) and ask them six questions dealing with the perception of the most important problem in Germany as well as attitudes towards the current German Chancellor and several German political parties.

In this study, we compare requests for text and voice answers in smartphone surveys with respect to several aspects: First, we investigate item nonresponse (i.e., item missing data) as an indicator of primarily low data quality. Second, we investigate response times (i.e., the time elapsing between question presentation on the screen and the time until the survey page was submitted) as an indicator of respondent burden. Finally, we investigate respondents' survey evaluations (i.e., level of interest and level of difficulty stated by respondents) as an indicator of survey satisfaction. This experiment aims to test the feasibility of collecting voice answers for open-ended questions as an alternative data source in contemporary smartphone surveys. In addition, it explores whether and to what extent voice answers collected through the built-in microphones, compared to open answers entered via the keyboard of smartphones, represent a sound methodological substitute.