Chapter 6
Surveying Illiterate Individuals: Are Audio Files in Computer-Assisted Self-Interviews a Useful Supportive Tool?

Florian Heinritz, Gisela Will, and Raffaela Gentile

6.1 Introduction

Due to the strong increase in the number of asylum seekers coming to Europe in the mid-2010s, several countries have started to survey new immigrants. Since new immigrants usually have insufficient competencies in the language of a receiving country, translations of questionnaires are essential if they are to participate in such surveys. With respect to refugees,[1] the available information on the general level of education in the main countries of origin shows that a considerable portion have poor or no reading skills in their native language. To avoid a systematic exclusion of this population, it is necessary to apply further strategies. This chapter presents strategies that enable the inclusion of illiterate immigrants in a survey: common personal interviews with native-speaking interviewers and computer-assisted self-interviews with audio files. First, we discuss the pros and cons of both approaches (Sect. 6.2). Since audio files are a relatively new opportunity made possible by modern technology, the subsequent section summarizes the methodological challenges of and first experiences with using audio files in surveys (Sect. 6.3). After this overview of the current state of research, we focus on the ReGES study (for "Refugees in the

[1] In this chapter, the term *refugee* is not used in the strict sense of the Geneva Convention, but rather it includes all asylum seekers looking for protection.

F. Heinritz (✉)
Universität Hamburg, Hamburg, Germany

Leibniz Institute for Educational Trajectories, Bamberg, Germany
e-mail: florian.heinritz@uni-hamburg.de

G. Will · R. Gentile
Leibniz Institute for Educational Trajectories, Bamberg, Germany
e-mail: gisela.will@lifbi.de; raffaela.gentile@lifbi.de

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Table 6.1 Literacy rates of different countries of origin compared to the EU (persons over 15 years, numbers in percentages)

Country	Total	Men	Women	Year of data
Afghanistan	31.74	45.42	17.61	2011
Eritrea	64.66	75.07	54.80	2008
Iraq	43.68	53.01	37.96	2013
Nigeria	51.08	61.25	41.39	2008
Pakistan	56.98	69.07	44.28	2014
Syria	80.84	87.76	73.63	2004
EU	99.13	99.33	98.93	2016

Source: UNESCO dataset (data.uis.unesco.org); Accessed 10 Sept 2019

German Educational System"),[2] in which both types of interview strategies to include illiterate participants were offered as a combined approach to optimize response rates and minimize response errors, including social desirability bias. Using the data of the first wave, the effectiveness and practicability of these strategies are considered in more detail (Sect. 6.4). In the discussion (Sect. 6.5), based on the experience from this study, we make recommendations for future research. In this context, we also highlight limitations, and identify additional methodological research desiderata.

6.2 Problem Statement and Status Quo

Generally, attempts are made to interview new immigrants as soon as possible after they arrive in their destination country. This fact makes it essential to translate questionnaires into the immigrants' languages of origin because they rarely have sufficient language skills to complete a questionnaire in the language of the destination country (on the challenge of translating survey instruments, see Behr, this volume). In addition, when interviewing a specific group of refugees, it is important to take into account the presumed proportion of illiterate individuals within this group. An inspection of the available data on literacy rates in the top six countries of origin of refugees in the EU in the mid-2010s shows that despite country-specific differences, the percentage of illiterate people is considerable (see Table 6.1).[3]

The literacy rate in Syria is relatively high at 80.8%, whereas in countries such as Afghanistan or Iraq, over half of the population over the age of 15 cannot participate in all activities of their community that require reading, writing, and calculating.

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[3]UNESCO generally refers to functional illiteracy in its data. According to this data, persons are *functionally illiterate* if they cannot participate in all the activities of their community that require reading, writing, and calculating (see UNESCO, 2006). For our subsequent analyses with the ReGES data, we defined people who claim to be able to read very poorly or not at all in their native language as *illiterate*.

Clear differences also exist between the genders, since all countries have lower literacy rates among women. Thus, an assumption can be made that a relatively high proportion of illiterate people can be found among those coming to the EU from these countries of origin. Initial findings on the education of refugees support this assumption, at least regarding the example of immigration of refugees to Germany. Surveys on the formal education of asylum seekers in Germany (Rich, 2016; Neske & Rich, 2016) have shown that in the first half of 2016, 27% of Afghans seeking asylum in Germany did not have any formal education (Neske & Rich, 2016). If the distortion of educational selectivity is to be avoided when doing research on new immigrants, those who have minimal or no reading and writing skills must also be able to participate in surveys.

One way to include illiterate persons and those with low reading and writing skills is to interview them personally (e.g., Grotlüschen & Riekmann, 2012; Nienkemper, 2015); a second, more modern strategy is to carry out computer-assisted interviews with supplemental audio files (e.g., Jacobsen, 2018; Kühne et al., 2019; Schroder et al., 2003; Turner et al., 1998a). Such audio files sometimes are used in personal interviews (see Jacobsen, 2018; Kühne et al., 2019)—so interviewers do not have to speak the relevant language—but predominantly, they are used in computer-assisted self-interviewing (CASI).

When surveying illiterate individuals, both strategies can be beneficial, but their disadvantages also must be considered, especially if these strategies are to be used to complement each other. Thus, in the next two subsections, we discuss the pros and cons of these two interview modes, in particular regarding illiterate individuals, before we present empirical experiences with audio files in Sect. 6.3, and then focus on our empirical experiences as researchers offering a study with audio files (Sect. 6.4).

6.2.1 Personal Interviews as a Solution to Survey Illiterate Individuals

The most common way to include illiterate individuals and those with low reading and writing skills in a survey is to interview them personally. When surveying newly arrived immigrants, personal face-to-face interviews require the employment of native-speaking interviewers or interviewers who have at least a sufficient command of the immigrants' language of origin.[4] Face-to-face interviews are especially

[4] In addition, previous research has shown that addressing migrants in their language of origin has positive effects, regardless of whether they are illiterate or not and whether the migrants also speak the language of the host country or not (e.g., Baykara-Krumme, 2010). Moreover, if an interviewer and a respondent speak the same language, the interviewee's possible questions or concerns can be answered adequately (see Allerbeck & Hoag, 1985), and a problem-free communication can be ensured. In addition, a less direct effect is that social proximity can be established by matching the mother tongue as an important ethnic characteristic (see Haarmann, 1983; Siegel, 2018), which can

beneficial because they avoid placing illiterate individuals in a situation in which written language plays a large role and which they might incorrectly perceive as a test (Nienkemper, 2015).

In addition, another advantage of interviewers being present is that they can be generally helpful, since they can answer all respondents' questions about the interview, regardless of whether they can read or not. Moreover, the presence of an interviewer is even more important to illiterate individuals who cannot use survey-relevant documents (e.g., cover letters, information on data protection, study information) to gain relevant information. If the written documents of a survey cannot be read, only an interviewer can convince potential illiterate respondents to participate, e.g., by explaining the objectives of the study. Therefore, in certain situations, the presence of interviewers is especially important, particularly when respondents are first contacted during the recruitment process for a study. While interviewers always can affect an interviewee's willingness to participate (see Groves & Couper, 1998; Hox & de Leeuw, 2002), an assumption can be made that this effect is even more pronounced for illiterate individuals. The same assumption seems to hold in situations when interviewees have had little prior experience with scientific surveys. Especially in the case of people who cannot read well, it is extremely important that interviewers personally explain the aspects of data protection and anonymity. Some specific groups of refugees often are only familiar with an interview in the context of their asylum procedure, which in many countries entails interviews conducted by official migration authorities. Survey staff can be specially trained to explain the differences between a scientific survey, which is characterized by voluntariness and anonymity, and interviews conducted by official migration authorities.

Thus, the use of interviewers has great advantages when surveying illiterate individuals. However, conducting face-to-face interviews also has several disadvantages. The greatest drawback of this strategy is certainly the influence that an interviewer can have on an interviewee's response behavior, which is true not only for illiterate individuals and immigrants, but generally for all respondents. In all the steps of the interview process, interviewer effects may appear, starting with increased coverage errors and unit nonresponse, and ending with outright measurement error (see West & Blom, 2017). The mere presence of interviewers and their characteristics such as gender, ethnicity, or age can impact response behavior (e.g., Glantz & Michael, 2014; Groves et al., 2009; Loosveldt, 2008).

Especially with respect to newly arrived refugees, an assumption can be made that in the presence of interviewers, they will show a response behavior adapted to the standards of their host country so to demonstrate their willingness to integrate, among other things (see Haug et al., 2017). This effect may be stronger if the interviewer visibly belongs to the host country's main ethnic group. However, even when an interviewer has the same ethnic origin as the interviewee (e.g.,

positively impact the migrant's willingness to participate (see Feskens et al., 2006). The willingness to cooperate also can be influenced strongly by mechanisms such as the motive of helping or liking (see Groves et al., 1992), a more pleasant atmosphere and a stronger basis of trust (see Dotinga et al., 2005), and through an awareness of solidarity based on common origin and collective identity (see Heckmann, 1992).

Kappelhof, 2014; van Heelsum, 2013), it is possible to observe different response behaviors.

Depending on the refugees' cultural background, an interviewer's gender may have a very strong influence on response behavior and the willingness to cooperate (see Baykara-Krumme, 2012; Blohm & Diehl, 2001). Furthermore, experts have argued that especially in countries with many dialects, the dialect of a person—the interviewer's or the interviewee's—could be used to draw conclusions about a person's political orientation (see Feskens et al., 2006).

Even if these theoretical considerations should be decisive when choosing a strategy for interviewing illiterate people, it also is important to consider that personal interviews with illiterate people who speak a foreign language can be successful only if it is possible to recruit foreign-language-speaking interviewers. Furthermore, it should not be underestimated that personal interviews usually are associated with higher costs.

6.2.2 Computer-Assisted Self-Interviewing with Audio Files as a Solution to Survey Illiterate Individuals

CASI with audio files is an alternative to the personal interview of illiterate individuals, and they can be performed in two ways. On the one hand, audio files can be used as an additional option to help these respondents understand the CASI questions. The additional audio files support the wording of the survey question, which is always displayed as text on the computer screen. On the other hand, a specific version of CASI with audio files—audio computer-assisted self-interviewing (ACASI)—can be used, which focuses more on the audio files than the written text. When using ACASI, sometimes the text is not even displayed. In research with ethnic minorities, this no-text strategy can be especially useful if they do not have a written language (see Cooley et al., 2001; Falb et al., 2016), since this avoids ambiguous transcriptions. Another technical feature in most multilingual ACASI approaches is that interviewees can switch to any other survey language at any time. This is useful, for example, if an interviewee speaks two native languages or understands some terms better in another language (e.g., in the language of the host country).

Compared to a face-to-face interview, CASI with audio files reduces interviewer effects to a minimum and still enables illiterate individuals to participate in a survey. Especially with regard to sensitive questions such as those about religion or health, CASI does not, in principle, produce any distortions (e.g., Couper et al., 2002). This is all the more important given that the presence of other people (e.g., family members) also can influence response behavior (e.g., Aquilino et al., 2000; Chadi, 2013). Since studies with refugees often include interviews in collective accommodations or in constricted living conditions, CASI offers interviewees the possibility of answering questions without other residents or family members influencing their

response behavior. CASI provides a significantly greater anonymity and privacy than personal interviews in which questions and answers are spoken aloud. Also, if headphones are used to listen to the audio files, a feeling of isolation from the surroundings and more privacy are created (see Tourangeau & Smith, 1998). Therefore, when interviewing illiterate individuals, CASI with additional audio files is a less reactive alternative to personal interviews with native-speaking interviewers.

Furthermore, audio files are intended not only to help functionally illiterate people, but also to provide all respondents with an additional aid to understanding that helps to facilitate their completion of a questionnaire (see Tourangeau & Smith, 1996). Previous studies have assumed that the use of audio files could increase the motivation to complete even long self-administered questionnaires (see Edwards et al., 2007). With respect to the practical implementation of a survey, one advantage is that an interviewer does not have to be present, which reduces the costs enormously.

However, as shown in Sect. 6.2.1, the willingness to participate in CASI surveys is lower than in personal interviews. Especially when questioning newcomers and illiterate people for the first time, personal contact seems indispensable. Furthermore, in a self-administered interview, it is usually not possible to query complex facts, especially for illiterate people if they rely only on audio files. The presence of an experienced interviewer can be very helpful, particularly in regard to dealing with difficult parts of a questionnaire. In summary, although a CASI survey can be a good way to interview illiterate people, especially on sensitive issues, its questions must not be too complex, and interviewees must be able to understand them by listening to audio files.

6.3 General Experience from the Field: Implementation and Usage of Computer-Assisted Self-Interviewing with Audio Files

To date, the number of migration studies that use CASI with audio files is rather limited (e.g., Mierzwa et al., 2013; Falb et al., 2016; Turner et al., 1996; Wong et al., 2007). Nevertheless, some fieldwork experiences are available, which we review in the following subsections. The implementation of audio files in a CASI survey depends strongly on the sample, research design, and software used, so it is not always possible to extract general points. First, we discuss the practical experiences of implementing audio files (Sect. 6.3.1) and then devote more attention to the results of extant methodological research on the effects of audio files (Sect. 6.3.2).

6.3.1 Implementation of Audio Files

Since using ACASI is a relatively new technical solution, many studies had to develop their own software for conducting ACASI (e.g., Beier et al., 2014; Mierzwa et al., 2013; Morina et al., 2017). Each of these studies implemented their ACASI, depending on whether the questions were to be answered via audio files only or via audio files supported by written text. In its simplest form, ACASI using only audio files should be kept very simple, with colored buttons or symbols as labels to indicate the available options (see Falb et al., 2016; Mierzwa et al., 2013).

Regarding CASI with written text and supporting audio files, several issues need to be considered when implementing the additional audio files. First, to ensure that the questions also are comprehensible for persons with reading difficulties, all the question texts, completion notes, and answer options—e.g., all the texts that the respondents see—should also be provided as audio files. Ideally, the currently read text would be highlighted, and then the program would automatically scroll to the next text to be read (see Beier et al., 2014).

The possibility exists that the audio files could play automatically on each new questionnaire page or that a respondent could actively start the audio file. An audio file can be read out loud when an interviewee presses the corresponding icon; and each text module (e.g., each answer category, question text, and completion note) can have its own audio file, or several text modules can be combined into one audio file. Each of these approaches has its own advantages and disadvantages. If each text module is provided with an audio file, the interviewee can have each text module (e.g., each answer category) individually read aloud. If interviewees do not understand one answer category, they can have that answer category read to them, rather than all the answer categories or even the entire item read again. For interviewees, this saves time and can have a positive effect on their motivation. However, providing a single track for each text module is technically complex, since considerably more audio files have to be recorded and implemented. If several text modules are combined in one audio file (e.g., question texts with completion instructions as one audio file, and all answer options as one audio file), all the modules are read to the interviewee in the same order as they appear on the screen. The most important argument for including questions and hint texts in one file is that this strategy guarantees that all the interviewees receive all the necessary information. Thus, this procedure contributes significantly to the standardization of the questionnaire and is especially important for answer categories. The recording of all answer categories in one audio file ensures that respondents listen to all the answer categories and do not simply choose the first somewhat suitable one. However, to ensure that the interviewee who does not have reading and writing skills knows which answer to click, all the answer options must also be marked in a way they can understand.

Regardless of how the audio files are implemented, one important requirement is that interviewees have the possibility to repeat the audio files and to hear the text

again, in case they did not understand it the first time (see Beier & Schulz, 2015; Gatward, 2002).

Finally, depending on the target group, it sometimes may be necessary to give an interviewee precise instructions on how to use a tablet or computer in general, and audio files in particular (see Falb et al., 2016). Some experience with regard to the technical requirements of the computers used in the surveys is available, for example, the memory size of the audio files used can slow down the interview (see Couper et al., 2009) or lead to problems with using certain computers in general (see Beier & Schulz, 2015).

6.3.2 Research on Effects of Using Audio Files

Several studies that compared CASI questionnaires with audio files to face-to-face interviews have been consistent in their theoretical assumptions that CASI questionnaires with audio files should be preferred when measuring sensitive topics (see Hewett et al., 2004; Le et al., 2006; Newman et al., 2002), which is in line with prior methodological research on surveying sensitive topics (for an overview, see Couper et al., 2002). Van de Wijgert et al. (2000) conducted a survey in Zimbabwe with a combination of face-to-face interviews and ACASI. They found that more than four-fifths of the surveyed women preferred the ACASI questionnaire. Better privacy was mentioned as a reason. Evidence also exists that ACASI leads to a greater openness to sensitive questions, when compared to other self-administered interviews without audio files (see Turner et al., 1995, 1998b), even if mode effects cannot be clearly distinguished from the effect of additionally offering audio files (for this criticism, see Couper et al., 2009). In theory, ACASI without additional text can be particularly relevant when other people are present who are believed to be able to read the text presented on the screen (see Couper et al., 2003). For situations in which other people are not present, an assumption can be made that CASI without additional audio files is more suitable for querying sensitive information, since ACASI "introduces the presence of a 'virtual' interviewer into the situation" (Couper et al., 2003: 386; for a review of different studies, see Couper et al., 2009).

Nass et al. (1997) found evidence that virtual interviewers also can have an effect on respondents. Their experimental study with students found that answering questions about gender roles is affected by whether the questions in the audio files are read by a male or a female voice. However, the use of genderless computer voices does not seem to be an optimal solution because it extremely increases the rate of item nonresponse (Nass et al., 2003).

Regarding the necessary support from interviewers, previous studies have shown that, compared to paper-based self-filled-in questionnaires, ACASI could be completed more often without the help of the interviewer (see Lessler et al., 2000; Turner et al., 1998a). Also, an important finding is that respondents rated audio files to be more and more helpful to the degree that their reading skills were poor (Lessler et al., 2000). However, when respondents had a choice, the percentage of their usage of

audio files appeared not to be very high, and was significantly reduced by their having more education (e.g., Couper et al., 2009).

6.4 The ReGES Study—Practical Experiences

One study that used both audio files and face-to-face interviews to survey immigrants, and which included illiterate people, is the Refugees in the German Educational System (ReGES) study. Therefore, the focus of the following section is on the experiences of this study with respect to conducting CASI with audio files and computer-assisted personal interviewing (CAPI) with native-speaking interviewers.

6.4.1 Basic Information on the ReGES Study

The ReGES study aimed at describing the situation of young refugees in the German educational system and at presenting their educational pathways in more detail. For that purpose, adolescents (aged 14–16) and parents of young children (from the age of 4 who had not yet entered elementary school) were interviewed at different points from 2018 to 2020. The results discussed here relate to the first wave in 2018 (for more details on the study, see Will et al., 2021).

One of the prerequisites for participation in the study was that only refugees who came to Germany after January 1, 2014 were interviewed. Therefore, an assumption was made that many of the interviewees would not speak sufficient German to conduct a survey in German. As a consequence, all the documents and survey tools were offered in the following languages: Arabic, English, Farsi (Persian), French, German, Kurmanji, Pashto, and Tigrinya (for more details on the translation process and the selection of languages, see Gentile et al., 2019).[5]

6.4.2 Benefits of CASI with Audio Files and Personal Interviews Conducted by Native-Speaking Interviewers

For various reasons, it was not clear in advance whether respondents belonged to the target group of interest. This precondition of the contacting and recruiting strategy, the little-studied target group, and the expected number of illiterate people made the use of native-speaking interviewers mandatory. However, to gain the benefits of both the strategies of CAPI with native speaker interviewers and CASI with audio

[5] Due to time and financial reasons, unfortunately, it was not possible to offer more languages or different dialects.

files, while reducing their drawbacks, the ReGES study originally employed not only CAPI but also a combination of CAPI and CASI with audio files. To ensure that the respondents were part of the target population (see Steinhauer et al., 2019), a screening interview was initially conducted as CAPI. In addition to the screening questions, other factual information, such as the current educational situation of the children and adolescents, was collected using CAPI. The expectation was that all respondents—not only those who were illiterate—would need to depend on the help of an interviewer when answering questions about the complex educational system, and it also was expected that this would lead to only a slight distortion of the interviewee's responses to such factual questions. Ideally, each family should have been contacted by an interviewer who spoke the native language of the interviewee. Since the spoken language of the families could not be determined clearly in the run-up to the contact, teams of interviewers were formed to deliver all offered languages.

After the screening interview, the subsequent CASI with audio files was offered to reduce nonresponse and response errors, including social desirability. Within the CASI questionnaire, which was conducted on a tablet, more sensitive questions were asked on topics such as migration biography, origin, or attitudes.

CASI should keep the influence of interviewers as low as possible and guarantee a certain anonymity, which also seemed particularly relevant regarding young interviewees who might be influenced by the presence of their parents, as well as regarding interviews in collective accommodations. To avoid excluding illiterate people from using CASI and to enable them to participate, it was essential to provide them with audio files. These audio files had the added benefit of preventing illiterate people from having to identify themselves. In addition, the use of these files aimed to reduce the risk of interviewees with poor reading skills—who might not inform the interviewer of this limitation beforehand—having difficulty understanding questions and then guessing at the answers.

To ensure their privacy, all interviewees received headphones, so no one else could hear the interview questions. Ideally, audio files should substitute for the interviewer and lower the effects of socially desirable response behavior. Although an interviewer needed to be present at all times, his/her role had to be passive during the entire CASI process. Mainly, interviewers only were allowed to react to questions of understanding or technical problems, and had to refrain from intervening on their own initiative to maintain the interview situation as anonymous as possible. Moreover, the interviewer was not able to see the point at which the respondents were in the CASI questionnaire or how they answered the questions. In addition, the interviewers were not allowed to look at the tablet unless the respondents asked for support.

Implementing audio files, especially in combination with various foreign interview languages, poses several challenges, which are explained in more detail in the following subsections.

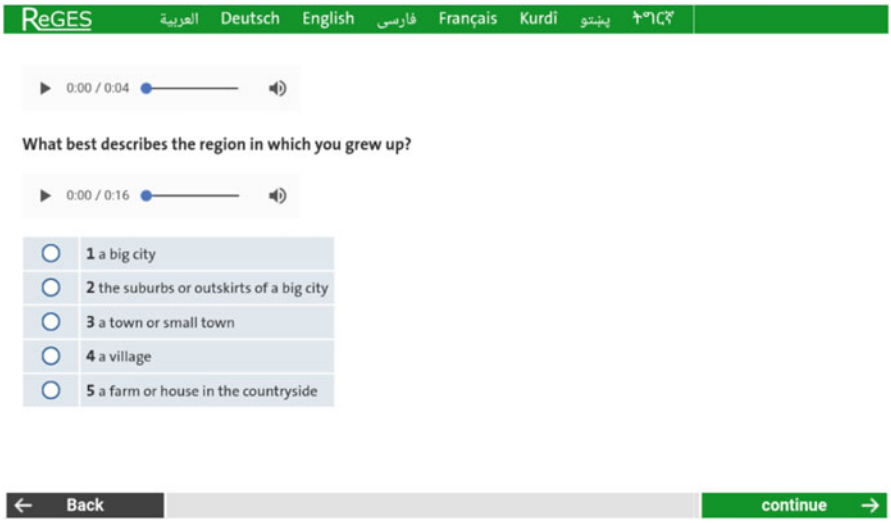

Fig. 6.1 Screenshot of an item from the CASI questionnaire with audio files (item adapted from the study Causes and Consequences of Socio-Cultural Integration Processes among New Immigrants in Europe [SCIP]; layout and programming of the CASI questionnaire provided by the infas Institute for Applied Social Sciences GmbH, Bonn, Germany)

6.4.3 Implementation of Audio Files in the ReGES Study

The ReGES study used an existing software solution (Gess Q) into which audio files were incorporated. The interviewee had to press a corresponding icon to listen to the audio files, and all questions and reference texts per item were recorded as one audio file. Following the same procedure, one audio file per item was recorded for all the response options of an item, and implemented so that the respondent usually had two audio files per item and per language available.

Indo-Arabic numerals were chosen to indicate the response options. They were all typed boldly and separated by a blank from the response options (e.g., "**1** yes; **2** no"; see Fig. 6.1 for an example of a screenshot from the CASI questionnaire). The corresponding numbers and answer options were then read out by the audio files, so the respondent could link the answer options they heard with the numbers preceding the options. In light of the respondents' daily use of mobile phones and computers, it was assumed that all respondents of different origins, and illiterate respondents as well, could easily read Indo-Arabic numbers. Prior to the study, this assumption was vetted in detail in expert discussions.

Recording one audio file for each question text and one audio file for all response options per item also reduced the effort involved with, and complexity of, making audio files by reducing the number of audio files that had to be recorded and implemented. Nevertheless, a total of approximately 40,000 audio files were integrated into the instrument. All the audio files were recorded by professional

speakers; five foreign languages were set to audio by female speakers; and Tigrinya, Pashto, and Kurmanji were spoken by male speakers.

6.4.4 Adaption of the Originally Planned Design

In the run-up to the field phase, the audio files were tested intensively after their implementation in the quality inspection phase. In a few cases, the audio files were assigned incorrectly to the items, and some audio files were completely missing. Even though the error rate was very low at less than 0.5% of all audio files, due to the complexity of the instrument and the upcoming field start, the faulty and missing audio files could not be recorded and implemented again. Instead, all the faulty and missing audio files were replaced with a standard audio file, prompting the respondent to pass the tablet to the interviewer for this question. Then, the interviewer would read the questions with the missing or faulty audio files, so the respondents who could not read sufficiently would not skip any relevant questions or randomly choose their answers.

In addition, due to this faulty implementation of some audio files, it was discussed that the interviewer could possibly conduct the CASI questionnaire together with an illiterate interviewee, who, otherwise, would have had to rely only on the incomplete CASI audio files. This measure would also ensure that all question texts and answers were read out correctly to illiterate interviewees. Therefore, the interviewers were instructed to actively offer the option of reading out loud the CASI text in whole or in part, and conducting the CASI questionnaire together with the interviewee.[6] Interviewers should offer this option to interviewees before they provide them with a tablet. This offer should be made especially if an interviewer noticed signs that an interviewee had reading and comprehension difficulties. Thus, the modes described in Fig. 6.2 were used.

6.4.5 Description of the Practical Experience of the ReGES Study

At the beginning of this section, we must emphasize that we cannot make any statements based on data concerning how illiterate interviewees would have behaved if native speakers were not available. Also, respondents were not assigned randomly to the above-mentioned two strategies for completing the CASI questionnaire: both self-selection and the interviewer's influence may have played a role when

[6] Even if, from a technical point of view, the CASI is no longer a self-interview when an interviewer reads questions aloud to an interviewee, it must be taken into account in the following analyses that we continued to speak of CASI even when parts of the interviews were read out loud.

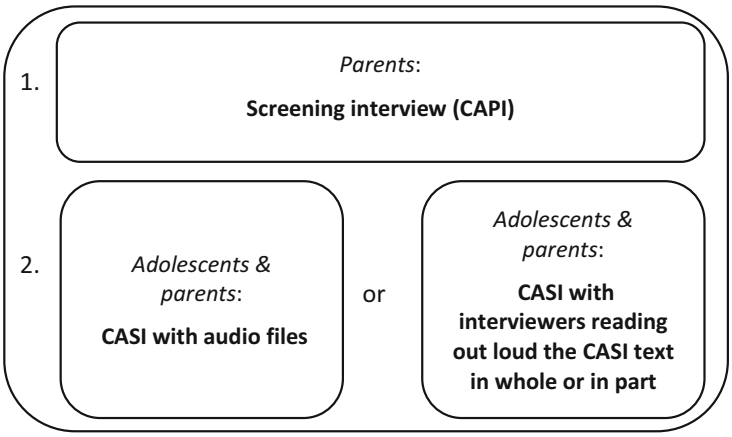

Fig. 6.2 Modes used in the ReGES study in wave 1

Table 6.2 Literacy rate of the ReGES sample's four most frequent countries of origin and total, numbers in percentages

Literacy rate	Syria	Iraq	Afghanistan	Iran	Total
Parents ($n = 3292$)	92.29	84.40	85.77	92.45	90.86
Adolescents ($n = 2406$)	96.17	96.23	95.45	94.44	95.18

Source: ReGES data, parents- and adolescents-CASI, Wave 1

distributing interviewees across these two options. While these limitations must be taken into account, we believe that our results are useful for researchers who focus on immigrants with high rates of illiteracy.

We divide our description into three parts. First, we describe the extent to which illiterate people participated in the survey (Sect. 6.4.5.1). In addition, we discuss the influence of native-speaking interviewers on different aspects of the study (Sect. 6.4.5.2). Finally, we present practical experiences regarding audio files (Sect. 6.4.5.3).

6.4.5.1 Self-Rated Reading Skills of Interviewees

The data show that a significant proportion of interviewees said that they could not, or only poorly, read in their mother tongue. For example, almost one-tenth of the parents said that they could read their mother tongue either very poorly or not at all (see Table 6.2). As expected, the proportion of illiteracy among young people was lower, but in their case, 5% would have had considerable difficulty understanding the questions in a survey mode that required literacy skills.

Nevertheless, the proportion of presumable illiteracy in the ReGES sample was significantly lower compared to UNESCO data on their countries of origin. This difference suggests that participants in the study tended to be more educated than the

population in the country of origin (for the first indications that refugees in Germany are a positively selected group, see Spörlein et al., 2020). In addition, it cannot be ruled out that illiterate people participated less frequently or did not state their reading skills truthfully in the survey.

6.4.5.2 Native-Speaking Interviewers

To reach the specific target group of refugees and include illiterate people, two strategies were discussed in this contribution: native-speaking interviewers conducting CAPI, on one hand, and CASI with audio files, on the other. To evaluate the advantages and disadvantages of both strategies, we started by analyzing the use of native-speaking interviewers in the ReGES face-to-face screening interview.

Our evaluation of the data showed that 83% of the screening interviews succeeded in establishing a language match between the interviewee and the interviewer. The high cooperation rate (80%) and relatively low refusal rate (11%) showed that the use of native speaker interviewers appears to have been beneficial at first glance. Furthermore, the data showed that more than three-quarters of the interviewees asked the interviewer for help during the subsequent CASI questionnaire. This indicates that, in many cases, an interview could not have been carried out successfully without the presence of an interviewer.

When interviewing ethnic minorities in their mother tongues, the effect of social desirability—which is relevant in any survey, but especially when conducting CAPI—may vary according to language match and ethnic background. We studied this theoretical assumption by focusing on the response behavior regarding questions that addressed a sensitive topic—gender roles. Whereas traditional gender roles are still prevalent in many of the refugees' countries of origin, most may be well aware that gender equity is a high priority in their host country Germany. Thus, social desirability could play a significant role in how interviewees answer these questions. We expected that they would tend to give more liberal answers when the screening interview was carried out in the German language and when the interviewer was from Germany.

On a scale ranging from 1 (*liberal*) to 4 (*conservative*), we found that interviewees gave more liberal answers to questions about gender roles when they performed the screening interview in the German language[7] (Table 6.3, Model 1). Controlling for interviewees' characteristics (gender, educational background of their family, age, country of origin), which also may influence gender role attitudes, exacerbates this effect (see Model 2). The characteristics of the interviewer (gender, age, migration background) also can have an effect on the interview language and the respondent's answering behavior. By keeping these characteristics constant, we

[7] We chose the screening interview language because we assumed that conducting the interview in German would frame the interview situation differently than conducting it in the interviewee's mother tongue.

Table 6.3 Attitude toward gender roles by language of screening interview, linear regression

	Model 1	Model 2	Model 3	Model 4
German in screening interview	−0.10** (0.03)	−0.11** (0.04)	−0.13*** (0.04)	−0.07+ (0.04)
Controls:				
Interviewee's gender, education, country of origin		✓	✓	✓
Interviewer's gender, age and migrant background			✓	✓
Interaction term: German in the screening-interview and reading out (= 1)				−0.43*** (0.10)
Constant	1.91*** (0.02)	2.08*** (0.07)	2.20*** (0.11)	2.21*** (0.12)
R^2	0.003	0.016	0.019	0.026
N	3175	3175	3175	3175

Source: ReGES data, own calculations, Wave 1
***Significant at $p < 0.001$, **significant at $p < 0.01$, *significant at $p < 0.05$, +significant at $p < 0.1$.
Standard deviations in parentheses

found that the effect of German as an interview language continues to increase both in terms of effect size and significance level (see Model 3).

Assuming that this effect would be enhanced when an interviewer read all the questions aloud (and therefore also the questions about gender roles) to the interviewee, we also looked at this interaction effect in our analysis. The significant interaction effect showed that interviewees gave even more liberal answers when an interviewer not only gave the screening interview in German, but also read aloud all questions to the interviewee (Table 6.3, Model 4).[8]

Interestingly, the migration background of the interviewer had no significant effects on the interviewee's response behavior. A plausible explanation for this finding may be that some interviewers in the ReGES study were born in Germany, even if they had a migration background, which made it more difficult for interviewees to identify their cultural affiliation, and so they may have seen them as representative of the majority, regardless of the interviewer's migration background.

In summary, using native-speaking interviewers may help to increase cooperation, and often during an interview, interviewers had to help interviewees. On the other hand, interviewers seemed to significantly influence interviewees' response behavior. Therefore, the additional possibility of using CASI with audio files to interview illiterate interviewees appears, at least, to be an alternative worth testing.

[8] However, it cannot be ruled out that interviewees who performed the interview in German might be a selective group (especially liberal, especially willing to integrate). Thus, the causal direction of our argument is by no means clear. Furthermore, as the low value of the R squared indicates, other factors exist that should be considered when explaining gender roles.

Table 6.4 Share of the sample that used audio files (in percentages) by the number of audio files used

Number audio files used	Illiterate	Not illiterate	Total
No audio file used	77.67	85.25	84.71
One audio file used	6.41	8.33	8.18
2–5 audio files used	5.70	3.83	3.96
6–20 audio files used	3.09	1.33	1.45
21–50 audio files used	3.33	0.53	0.74
More than 50 audio files used	3.80	0.74	0.96
N	*421*	*5281*	*5711*

Source: ReGES data, parents- and adolescents-CASI, Wave 1

6.4.5.3 Using Audio Files—Experiences from the Field

Only 873 ReGES interviewees used the opportunity to listen to the audio files on the CASI questionnaire. On average, the interviewees who used at least one audio file listened to 9.3 items. The rather high percentage of persons who used just one audio file, or listened to audio files just for the first few questions, may be explained by curiosity.

Almost 85% of interviewees did not use any audio files. Even more important, no interviewee answered the complete CASI solely by using audio files. Regarding a total length of 250–300 items per CASI, the maximum usage of audio files was 133 items. Our finding is in contrast to results of another German refugee study, the IAB-BAMF-SOEP study, where 7.5% of the respondents completed the entire questionnaire using audio files (see Kühne et al., 2019). However, the first wave of that study did not use any native-speaking interviewers. Therefore, if they wanted to participate in the survey, illiterate interviewees in the IAB-BAMF-SOEP had no alternative but to use the audio files. With regard to the ReGES study, Table 6.4 shows that illiterate interviewees used the audio files more often than those interviewees without reading difficulties.

The low usage of audio files in the ReGES study coincides with the feedback from the ReGES-interviewers involved during the fieldwork that indicated answering a CASI questionnaire of this length with audio files was cognitively demanding for illiterate people. Unlike in a personal interview, they had to choose the right answer and remember its corresponding option number when selecting it.

Nevertheless, even though the use of audio files did not seem to be as frequent as expected, the total number was less important than the fact that the interviewees with insufficient reading skills could use (some of) the audio files if they had problems with understanding. Examining the use of audio files in relation to self-assessed reading skills revealed a clear increase in audio file use when reading skills were low (see Fig. 6.3). However, by providing the interviewees with the opportunity to have the interviewers read the questions aloud, illiterate respondents did not have to rely solely on the audio files. The interviewees used this option far more often than they used the audio files. A total of 76.2% of the interviewees with no reading skills used

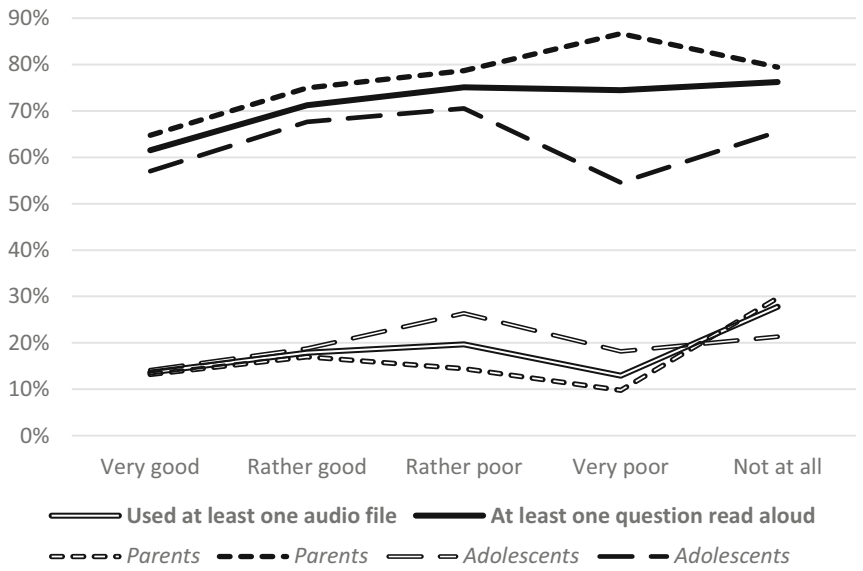

Fig. 6.3 Use of audio files and reading aloud by self-rated reading skills. (Source: ReGES data, wave 1; n = 5707 for the analysis of the audio files; n = 5665 for the analysis of whether the interviewer read out questions aloud; the lower number of cases in the second analysis was due to the fact that not all interviewers reported whether they read the questions out aloud)

the option of having an interviewer read the question aloud at least once. A comparison of adolescents and parents showed that parents used the interviewers' help of reading the questions aloud more often than adolescents. There may be different explanations for this finding. Especially in languages with many dialects, such as Arabic, the older generation often had not learned the written and standard language. Therefore, parents tended to have more problems understanding the standard language. In this case, the interviewers could explain question wording that the interviewees didn't understand in their own dialect, so the meaning of the question would be clearer. In addition, adolescents often are more familiar with using modern technologies.

Nevertheless, 84 participants with very poor or no reading skills used neither the audio files nor the opportunity to conduct the CASI questionnaire together with an interviewer. A more differentiated analysis showed that one-half of these interviewees received at least some help from bystanders present or an interviewer. The remaining cases need to be examined further.

The data indicate that, in principle, the use of audio files can be a functioning method to enable the participation of illiterate people. However, in our opinion, for a CASI survey of this length, offering audio files would not have been enough. First, the data show that the CASI duration increased enormously when an interviewee used the audio files. Model 1 in Table 6.5 shows that each question for which audio files were used prolonged the interview by 0.33 min. To clearly identify the effect of

Table 6.5 CASI duration in minutes by items using audio files, linear regression

	Model 1	Model 2
Number of items for which an audio file was used	0.33*** (0.05)	0.36*** (0.02)
Controls: (*age, starting language CASI, illiteracy*)		✓
Constant	34.84*** (0.43)	32.23*** (1.01)
R^2	0.021	0.036
N	1982	1982

Source: ReGES data, own calculations, Wave 1
***Significant at $p < 0.001$, **significant at $p < 0.01$, *significant at $p < 0.05$, +significant at $p < 0.1$.
Standard deviations in parentheses

Table 6.6 CASI duration in minutes depending on whether the interviewer read aloud some parts of the interview, linear regression

	Model 1	Model 2
Interviewer read aloud some parts	−3.31*** (0.56)	−3.49*** (0.56)
Controls: (*age, CASI starting language, illiteracy*)		✓
Constant	32.48*** (0.45)	29.72*** (1.01)
R^2	0.007	0.029
N	4794	4794

Source: ReGES data, own calculations, Wave 1
***Significant at $p < 0.001$, **significant at $p < 0.01$, *significant at $p < 0.05$, +significant at $p < 0.1$.
Standard deviations in parentheses

using audio files, Model 1 and Model 2 analyzed only the interviewees who did not use the read-aloud option. After controlling for age, the starting language of the CASI process, and reading skills, the effect of using audio files on the CASI duration increased and remained significant.

The increased CASI duration when using audio files became even clearer when analyzing only the cases in which the respondent used more than 10 audio files. For these cases, the CASI took on average 1 h to complete, almost twice as long as when audio files were not used.

In contrast to the use of audio files, CASI duration dropped by 3.31 min when an interviewer read aloud parts of the interview[9] (Table 6.6, Model 1). In this analysis, we included only persons who did not use any audio files. This effect also was significant after controlling for other variables (Model 2), which might also explain the high share of interviews in which the interviewers read aloud some questions (see Fig. 6.3). It may be possible that, to save time, the interviewers preferred to read the questions aloud. Unfortunately, we cannot test this presumption with the data.

Furthermore, during the fieldwork, interviewees evidently found it cognitively very challenging to answer such a long CASI questionnaire with just audio files, if

[9] By reading aloud parts of the interview, we mean, in all analyses, that the interviewer reported that he/she had read at least one question aloud to an interviewee. In 57.5% of the cases in which an interviewer read aloud parts of the CASI text, the interviewer reported having read aloud to the interviewee more than a quarter of all the questions.

they could not read sufficiently well. We observed that despite using the audio files, most of them still asked interviewers about their problems with comprehension. However, overall, when the interviewees used the audio files, interviewers had to read aloud fewer questions.

In the case of the ReGES study, the opportunity to ask interviewers about problems had one more practical benefit—when controlling the quality of the audio files, we found some bugs in their implementation (see Sect. 6.4.4). According to the interviewers, these problems appeared in 7.1% of the interviews. Even if this finding might not apply to other studies, surveying migrants in many different languages requires a vast quantity of audio files, and so a strong risk exists for such problems to occur. Therefore, the native-speaking interviewer who helped illiterate individuals by reading these questions aloud was also important in these cases.

Another explanation for the high percentage of interviewees who preferred to have an interviewer read the questions aloud could be that most interviewees thought the audio files were unnecessary given the interviewer's presence. Respondents might even have found it disrespectful to the interviewer to use the audio files instead of asking them for help.

However, even if most interviewees preferred to listen to the interviewer rather than using the audio files, a decisive reason for offering the latter was to minimize the interviewer's influence on response behavior and to ensure a high degree of anonymity. Therefore, we tested whether this goal had been achieved in the cases in which the audio files were used.

Since many interviewees avoided answering the CASI questionnaire on their own by asking an interviewer to read the questions aloud, we could compare whether a difference existed in the amount of item nonresponse to sensitive questions. As an indicator of sensitive questions, we took the 10 questions with the highest item nonresponse and built an index. These selected items included questions about religion, the asylum procedure, and migration history. This analysis showed that interviewees who used the opportunity to have an interviewer read aloud part of the CASI text refused fewer answers than the respondents who answered the whole CASI questionnaire on their own (Table 6.7, Model 1). After controlling for the match between the interviewer's and interviewee's language, and whether the interviewee's mother tongue was offered, the effect became slightly stronger and remained significant (Model 2). Of course, other aspects (e.g., more pressure when an interviewer read the question aloud) could explain this effect. Nevertheless, these results rebut the notion that the use of interviewers leads to higher item nonresponse.

Thus far, all these findings seem to show that no major disadvantages exist when using interviewers instead of implementing audio files as a strategy to include illiterate respondents. However, the previous analyses do not show whether the interviewers affected the interviewees' tendency to answer questions in a more socially desirable way. Thus, we checked for such an effect by reanalyzing the attitude toward gender roles, but this time, contingent on whether an interviewer read all the questions aloud or the interviewees used the audio files for these gender role questions. Model 1 in Table 6.8 shows that the interviewees who used audio files to

Table 6.7 Impact of reading aloud on item nonresponse (10 items with the highest nonresponse rate), linear regression

	Model 1	Model 2
Interviewer read some parts aloud	−0.06** (0.02)	−0.07** (0.02)
Controls: (*language match between the mother tongue of the interviewee and the language used by interviewer, mother tongue of the interviewee offered in the survey*)		✓
Constant	0.25*** (0.01)	0.33*** (0.04)
R^2	0.002	0.003
N	5224	5224

Source: ReGES data, own calculations, Wave 1
***Significant at $p < 0.001$, **significant at $p < 0.01$, *significant at $p < 0.05$, +significant at $p < 0.1$.
Standard deviations in parentheses

Table 6.8 Impact of audio file use versus reading questions aloud on gender roles, linear regression

	Model 1	Model 2
Interviewee used audio files for all questions on gender roles (vs. interviewer reading aloud all items)	0.30+ (0.16)	0.27+ (0.16)
Controls: (*country of origin, education, age, language match with interviewer*)		✓
Constant	1.96*** (0.03)	2.12*** (0.12)
R^2	0.005	0.023
N	766	766

Source: ReGES data, own calculations, Wave 1
***Significant at $p < 0.001$, **significant at $p < 0.01$, *significant at $p < 0.05$, +significant at $p < 0.1$.
Standard deviations in parentheses

answer these questions tended to answer the questions about gender roles more conservatively than those who asked the interviewer to read all the questions aloud (including those about gender roles). Even though this effect was less significant, it was much stronger (see Table 6.8) than the effect of the influence of language on the response behavior, which we analyzed in Sect. 6.4.5.2 (see Table 6.3). This effect retained its significance after controlling for the country of origin, education, age, and the match between the interviewer's and interviewee's language. This result can be interpreted as an indication that using audio files provides a higher anonymity, so the interviewee is less susceptible to a social desirability effect.

These results indicate that it may be worth using CASI for sensitive content, even when this means having to implement additional audio files to include illiterate people.

6.5 Discussion

Surveys in the social sciences should ensure that illiterate individuals are not excluded from participating in these studies. This is even more true when studies focus on education. In this case, it would be devastating to lose the undereducated in a systematic way. The present study examined two options, with their advantages and disadvantages, for including illiterate migrants in social science surveys: personal interviewing by interviewers and the use of computer-assisted self-interviewing with additional audio files. Based on data from the ReGES study, practical experience showed the extent to which these two strategies work when interviewing newly immigrated refugees. In addition to the conventional challenges associated with surveying illiterate people, we also discussed issues concerning the integration of different languages of origin in the two interview modes.

The main results of our study are as follows. In many cases, the possibility that interviewers could help with technical and comprehension difficulties appeared to be an important prerequisite for interviewees to successfully complete the computer-assisted self-interview. Furthermore, the overall usage of audio files was less than expected, and none of our respondents conducted the CASI survey solely on the basis of using the audio files. The use of these files increased the survey duration, which seemed to be an issue for both interviewers and interviewees. This finding might help to explain why respondents preferred to have an interviewer read the questions aloud to them, as in a face-to-face interview. Our analyses of answers to sensitive questions suggest that interviewees in a face-to-face mode respond even more frequently than when using CASI, but also tend to give slightly more socially desirable responses.

Regarding the technical implementation of the audio files, we have to state that despite intensive testing of the implemented audio files, technical problems could not be ruled out. This may be partly due to the fact that the questionnaire was not primarily designed to interview illiterate people; therefore, certain features (e.g., short questionnaires, no complex content) that were helpful in the design of CASI with audio files were neglected.

We can offer the following recommendations for researchers who might want to interview newly arrived refugees and want to include illiterate people as well. In our experience, no alternative exists to using native-speaking interviewers to recruit participants in the first wave of a survey with immigrants. Interviewers who speak the mother tongue of respondents are essential with regard to contacting and motivating newly arrived refugees, including those who are illiterate, and to ensuring that they are able to complete their interview successfully. Nevertheless, the known problems of social desirability effects while carrying out face-to-face interviews must be taken into account. It can be assumed that using CASI with audio files is especially helpful when investigating sensitive topics because it seems to reduce social desirability. However, it cannot be determined assuredly whether all illiterate individuals could successfully complete a CASI survey without the support of an interviewer.

Thus, if a high proportion of illiterate people are suspected in a target group, a personal interview should always be preferred. CASI with additional audio files should only be carried out if sensitive content is recorded, and the interview should be as short and simple as possible. The selected software should be able to implement additional features (e.g., so the currently read text is highlighted, and symbols are used instead of numbers) to further support illiterate interviewees. Moreover, it is extremely important that CASI with additional audio files is cognitively pretested with illiterate people to ensure that the procedure is not too demanding for the target group. In addition, the implementation of the audio files in different foreign languages should be checked carefully, and time for any corrections should be scheduled.

Even if the interview by native-speaking interviewers is the preferred variant, the CASI with audio files enables a multilingual, standardized survey of people with reading difficulties, even without native-speaking interviewers. For logistical or financial reasons, it is not always possible to employ enough interviewers in all the required languages. The use of audio files is particularly worthwhile the more difficult it is to recruit interviewees for a language, the more interviews are to be carried out, the larger the spatial area that is to be covered by fieldwork, and also in cases in which the interview is to be conducted in languages that do not have a written form.

In view of the methodological limitations mentioned in the present study, all discussed questions need to be reinvestigated, ideally in a methodological experiment. Moreover, the effect of interviewers on the response behavior of refugees should be investigated in more detail: on the one hand, with regard to interviewer and respondent characteristics, as well as the characteristics of the audio files voice; and on the other hand, with regard to the different contents of questionnaires.

Finally, our results clearly show that the presence of interviewers is very important (at least for this specific target group). Therefore, it seems worthwhile to perform further research not only on the implementation and use of audio files, but also on how to minimize interviewer effects.

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