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On Selecting an Appropriate Customizable Electronic Self-Report Survey Research Technology

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Abstract

This paper will discuss relevant electronic survey technologies to consider when collecting self-report data in the contexts of humanitarian settings, social science research and global public health research. Many public health and epidemiology research efforts require the collection of survey data, particularly using self-report strategies. These strategies make it possible for a survey respondent to use technology such as a tablet or smartphone on her own/ independently, so that privacy is afforded to complete the questionnaires, particularly those that include sensitive or culturally taboo questions. We will outline two self-report technology tools that were developed by Population Council Information Technology specialists and may be considered by scientists and researchers when planning studies. The tools have been used in actual clinical-trial protocols and research-based settings in the developing world, such as clinic environments, field-based surveys, and refugee camps, as well as in developed environments.

1. Introduction

In the animated children's television program Handy Manny, the main character provides basic repair services to homeowners using a variety of tools. These tools include many of the basic devices found in any home repair or carpenter's bag (pliers, screwdrivers, wrench, hammer, etc.). In essence Handy Manny will pick the right tool for the environment and job. A similar association can be made when technologists are approached to assist research scientists in undertaking self-report data collection. Some of the following questions are likely to be raised: Will the physical environment allow for privacy? Will the participants be able to read? Will the participants be able to recognize Hindu-Arabic numerals? Will the participants be able to understand the audio that is played while the questionnaire text is displayed? Will the participants remain engaged long enough to complete the survey? Will the participants prefer to do the survey away from the structured clinic, community centre, or refugee camp? Will there be uninterrupted Internet connectivity in the local environment? These are just some of the basic questions the authors will often raise when beginning to discuss or consider on how to address the technology needs for a research project involving self-report data collection.

Face-to-face (FTF), interviewing is often considered the gold standard for survey research. This mode generally has higher response rates and allows researchers to probe respondents' views in more depth, because interviewers can ask follow-up questions and press for more detail if responses are deemed incomplete [1]. On the other hand, this mode is considerably more expensive (due to interviewer training and travel expenses, among other things), especially for large, geographically distributed

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samples. FTF can also be more susceptible to social desirability biases and other interviewer effects. For instance, in some cultures, male respondents might be hesitant to reveal their beliefs and behaviours to a female interviewer [2][3]. These are some of the reasons we have continued to see expanded use of self-report technology such as ACASI (Audio-Computer Assisted Self-Interviewing), CASI (Computer-Assisted Self-Interviewing), CAPI (Computer-Assisted Personal-Interviewing) and web-based self-report surveys.

Although we will report on several different technology options to consider in particular contexts, this is not a comprehensive list. We have chosen to focus on the ones that the Population Council has custom developed and helped to implement with research scientists, epidemiologists, clinicians and demographers. The shape and technology methods that involve self-report quantitative surveying can also include many different strategies. Some of these include Computer-Assisted Telephone Interviews (CATI), Interactive Voice Response (IVR), Paper and Pencil(PAP), Video Audio Computer-Assisted Self Interviews (VACASI), and Short Message Service (SMS) to name a few.

2. Methods (Tools)

As organizations begin committing their resources and energy towards the United Nations Sustainable Development Goals, or SDGs, it is hard to imagine that technology will not play a part in the broad agenda. There are likely to be many different entry points for technology solutions and several SDGs could benefit from the specific tools we will outline. Of the SDGs main goals, the use of these self-reporting tools is most relevant for the following goals: Good Health; Gender Equality; Innovation and Infrastructure; Reduced Inequalities. In addition, several of the tools could be useful for self-report data collection in HIV, reproductive health and humanitarian research settings. Tools that apply to all of these issues are as follows:

2.1. PopCouncil ACASI/CAPI

Audio-Computer Assisted Self-Interview/Computer-Assisted Personal Interview technology is integrated into the Population Council custom developed electronic survey solution. Computer assisted surveys are particularly valuable tools when there are concerns regarding privacy for recipients or of response, given the often sensitive nature of the questions. ACASI surveys include audio versions of the questions, which are recorded locally in the survey locations (country and village), and include both the question and response options. ACASI technology is useful in situations when the participant population is semi-literate and participants may not be able to read and understand the questions. ACASI/CAPI technology has been used primarily in public health research efforts, particularly in HIV prevention clinical trials and in social science research. The latest version of the PC ACASI/CAPI solution functions on lower-priced Android devices, which have become more available in the developing world with ample technology support in reach [4] [5]. An earlier Population Council Windows-based tablet version is available and has been implemented in over 19 distinct research studies including clinical and non-clinical efforts and in over 10 countries and 21 languages, but it is not referenced below as we have focused on the latest Android-based software in use.

In addition to concerns over levels of literacy and privacy, a recent project in Ethiopia demonstrated that in some cases the audio component is an absolute necessity, as the researchers discovered that several languages spoken in the refugee camps were not documented, and therefore human surveyors lacked the language skills to communicate, potentially biasing sample results. In these environments the research focus was on violence to adolescents, particularly girls, in a refugee camp setting. Table 1 below outlines the PC ACASI/CAPI projects which used the Android version of the survey solution.

Table 1. Android PC ACASI/CAPI

Project Name	Research Focus	Countries	Languages	Year(s)	Number of data records
Randomized Evaluation of HIV/FP Service Models (REaCH)	HIV and Family Planning	Kenya; Zambia	Swahili; English; Bemba; Nyanja	2013; 2014	>12,000
Adolescent Girls Empowerment Program (AGEP)	HIV; Gender-based violence; Adolescent Girls	Zambia	Bemba; Nyanja	2013; 2014	>400,000
Social and Economic Assets for Vulnerable Adolescent Girls (SEAVAG) study in Kenya.	HIV; Gender-based violence; Adolescent Girls	Kenya	Swahili	2013; 2014	>300,000
COMPASS (Creating Opportunities through	Adolescent girls in refugee camps – humanitarian setting	Democratic Republic of Congo (DRC) and Sudan-	Mashi; Swahili; Meban; Regarig;	2014-2015	>1,800