The Effects of Monetary and Non-Monetary Incentives on Respondents of Longitudinal Surveys

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Abstract

Longitudinal data collection is fundamental for research, NGOs, governments and the private sector as it permits for the measurement of stability and instability in addition to the measurement of unit and gross level change, all of which provide overview of organizational practices that may require change. Human-computer interaction (HCI), for example, is constantly changing and thus longitudinal data collection is essential to document this fluctuation.

Longitudinal surveys, however, often have high rate of attrition of participants during the research process, despite incentives aimed to encourage participation. Common practice today in some fields is to provide compensation in the form of mobile phone credit or cash for participation in research. Token payments are often seen as the low transaction cost option as researchers often find it costly to provide feedback directly to participants. We investigate the effects of providing direct feedback to participants and how people react to the mechanism of delivery. Specifically, we evaluate a survey conducted with 3 groups of participants given varying incentives and the degree to which attrition occurs over 16 weeks, giving feedback once per fortnight.

Author Keywords
Attrition; Automated voice calls; Compensation; Incentives; Participant Feedback;

Introduction

Longitudinal surveys are research tools that allow for repeated data collection from the same set of participants over a period. Longitudinal data plays a key role in decision making and so repeated surveys with the same participant(s) are an essential research method. This makes longitudinal surveys favorable when compared to other survey methods [1]. Longitudinal surveys help in the analysis of unit and gross change. They are also used to measure behavior change and stability. These benefits make longitudinal surveys ideal for data driven decision making, evaluating success, identifying challenging areas and helping assess the effectiveness of current practices [2]. Studies of User Experience are in themselves examples of the importance of longitudinal research in HCI. User Experience does not remain stable over time and has been shown to fluctuate significantly. As such longitudinal surveys are required to capture such fluctuations [14].

Attrition of survey participants is a key limiting factor of longitudinal surveys; "the Achilles heel" of this form of survey [3]. Curbing the rate of attrition for longitudinal studies has proved to be an obstacle for researchers who typically offer small monetary incentives for participation. Financial incentives have had mixed results [5]. There is a real need to explore non-monetary forms of compensation within the longitudinal research process as monetary compensation has negative effects for current and future research mainly due to the expectation that is built in participants as well as the introduction of bias [5,14].

Our study aims to analyze how participants react to the mechanism we use to deliver the direct feedback and quantify whether the use of direct feedback may influence a reduced rate of attrition. We will therefore discuss longitudinal surveys, the problem of attrition, reasons why we believe that feedback is a suitable incentive to keep participants in a study as well as briefly discuss our research design.

Background

A study conducted by Kjeldskov et al. that tested the usability of a patient record system using novice users, concluded that longitudinal studies must be conducted to monitor the usability of interactive systems over time [15]. Thus, we believe that to conduct an effective HCI study, one should employ a longitudinal study for evaluation. Despite this importance, longitudinal surveys are limited by high rates of attrition, which in some cases, can render the survey not useful.

Attrition is defined as the action of dropping out of a study, refraining from picking up calls or verbally confirming the wish to withdraw from further participation at some point during the study [12]. Fumagalli et al. highlighted the three main causes of attrition: failure to locate participants, failure to contact participants and failure to gain co-operation on condition they are contactable [9]. Harte et al. conducted a survey to try rank the reasons for attrition. This survey contained 13 questions to establish the main reasons for attrition and revealed that no perceived benefit for participants, the lack of incentive attractiveness and low level of interest in the subject

were the leading reasons for attritions. These three reasons were classified under personal motivation and were in their top five [6]. As an example of attrition, we refer to the study *Usability over Time* by Mendoza and Novick. They recruited 48 participants in their usability study but only 32 completed and returned all surveys reports. Their participants were not compensated as Mendoza and Novick believed the fact that the participants were doing "on the job training" and were being evaluated on their technology proficiency was enough motivation for continued participation [16].

Incentives in longitudinal surveys are mainly comprised of money, mobile phone credit and gifts [10]. These kinds of incentives have negative implication as demonstrated by Gerken. His HCI study on longitudinal research incentivized participation with money and he states that there is a danger with monetary incentives as they create bias and may take away from the substance of the study [14]. Incentives are meant to increase participant motivation for continual participation in a study [10] and as such, Zimmerman et al. looked for ways to incentivize participants in a crowd sourcing project and found that incentives other than money can incentivize participants to contribute in surveys. These incentives include praise and increased reputation [7]. Dabalen et al and Fumagalli et al. added to Zimmerman's findings by stating the possibility of using feedback as an incentive for survey participation [8,9]. George et al. agrees with the above findings but goes on to claim that participants usually contribute voluntarily if they are being entertained, satisfying their curiosity or learning something that interests them [13]. Specifically targeting personal motivation may result in lower rates of attrition, as current forms of compensation do not cater for personal motivation.

The concept of providing feedback is relatively unexplored, despite research that acknowledges the importance of feedback [10,14]. Some research does not look at feedback as an incentive but as a means of increasing the strength of the bond between researcher and participant [14]. We believe the two are not mutually exclusive and that feedback can be used in both scenarios.

To make direct feedback an effective incentive, the choice of technology used when giving feedback to participants must balance the cost of implementation and the impact of the technology [11]. Feedback is known to be effective when it is given frequently, over a long period [11], which makes it ideal for longitudinal studies.

Most of the literature on providing direct feedback to participants as an incentive is in clinical trials although there is some early HCI work that mentioned the concept. Card et al. conducted a study in which four devices were evaluated to establish how rapidly they can be used to select text on a CRT display. In their tests, they would provide their participants with detailed feedback. They found the feedback to have played an important role in participant motivation [17]. A survey by Cox et al. discovered most research participants that had not received feedback were "overwhelmingly" in favor of receiving feedback, but researchers did not often provide it. This is mainly due to the perceived effort involved with this action [4].

Study Design

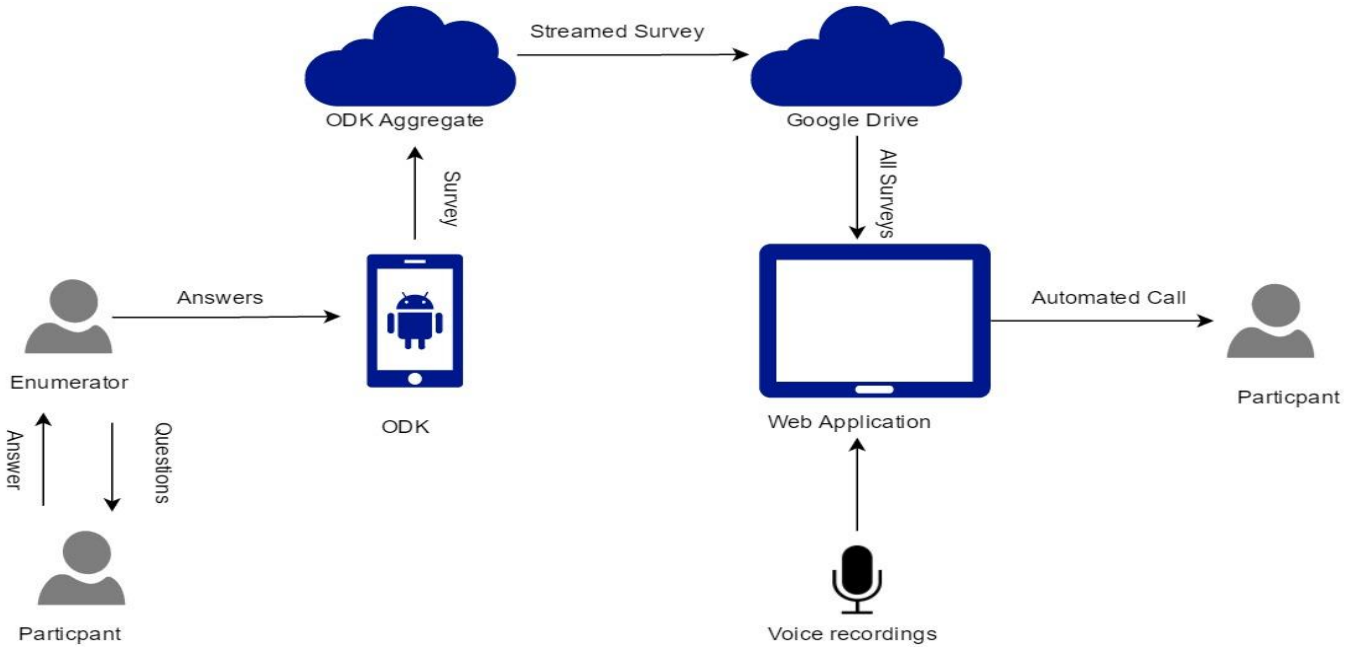

Figure 1: Detailed illustration of how the system works.

We will be exploring four treatment arms: the effect of automated versus live-operator feedback on a short longitudinal survey. Specifically, we will have a control group that will receive no incentives. Our second treatment group will be incentivized by the provision of mobile phone credit, the common incentive. We will have a third treatment group that will be incentivized by feedback given though an enumerator. The fourth and last treatment group will receive feedback through an automated voice call system that we developed. Our main measures for the four groups will be attrition and cost.

We will run the survey over 4 months, weekly or bi-weekly depending on the questions. The questions will be formulated by our partners and will be mainly on climate change, agriculture and nutrition. Participant feedback will be given after each survey iteration and will be based on the answers they provided.

Figure 1 shows a work flow of the automated voice call system. An enumerator calls a participant to conduct a survey. At the end of their question and answer session, recorded using ODK collect, the enumerator uploads the completed survey to ODK Aggregate. As soon as a new survey lands on ODK Aggregate it is automatically streamed to google drive. When all surveys have been completed, the system will deliver the automated voice calls.

Conclusion

The importance of longitudinal surveys remains a major motivator for further study. Attrition continues to be a problem in collecting useful data. With the realization that monetary incentives do not always work, we believe that providing feedback may be useful in the motivation of participants and ultimately in the lowering of attrition rates. Consequently, this would enrich the quality of HCI surveys that employ this method as well as research conducted in other fields of study.

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