Memorandum

Date: 3 March 2021

To: Margo Schwab, Desk Officer
Office of Management and Budget

From: Emilda B. Rivers, Director
National Center for Science and Engineering Statistics
National Science Foundation

Via: Suzanne Plimpton, Reports Clearance Officer
National Science Foundation

Subject: Request for approval to conduct participatory design workshops for smartphone app development for the Survey of Doctorate Recipients (SDR)

Background

The National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation (NSF) plans to conduct qualitative research exploring the feasibility of using smartphone apps for survey data collection purposes. The research outlined in this memorandum is conducted under the generic clearance for survey improvement projects (OMB number 3145-0174) and is designed to lay the groundwork for the possible future use of smartphone apps within NCSES data collection efforts.

This research request includes three participatory design workshops to collect feedback related to developing a data collection app. The workshops will include a total of 18 participants (6 participants per workshop), most likely in a virtual format using the Zoom software. Each workshop will last no more than 90 minutes. The participants will be recent doctorate recipients and will receive an incentive of $50 for their participation in this study.

Purpose of research

The goal for the three workshops is to engage participants in co-designing a potential data collection app that administers short modularized surveys. In each workshop, participants will be asked to identify the design features or functionality that would be most important to them, develop a plan for encouraging respondents to download and use an app, discuss their ideas about the optimal length and timing of survey modules, and work in small groups (via Zoom's "Breakout Rooms") to design their own prototypes of an app and then have them evaluated by other participants.

Participants

A diverse set of 18 participants will be recruited for these workshops from a set of respondents to a previous NCSES survey. These previous survey respondents are eligible to participate in the workshops if they earned their degree between 2015 and 2017 in a science, engineering, or health (SEH) field, are age 18 and older, indicate in a screener survey that they use a smartphone on a daily basis, and are at least "a little familiar" with the Zoom video conferencing platform.

Data Collection Methodology

NCSES will send recruitment emails in batches of 100 to randomly selected individuals from the eligible respondent sample to request participation in the workshops. To minimize the number of individuals that are contacted, responses will be closely monitored before sending an additional batch of 100 emails and recruitment will stop when the target sample size is reached.

The recruitment email will provide a hyperlink to a short web-based screener survey (expected length: 3 minutes) hosted by the University of Maryland. The email message will notify the recipients that the information they provide in the screener survey is not protected by NCSES, but instead falls under the University of Michigan and University of Maryland data protections. The content of this recruitment email can be found in Attachment A. The screener survey questions can be found in Attachment B.

Individuals that complete the screener survey, meet the eligibility criteria, and are interested in participating will be invited to one of the three workshops. Approximately one week before the date of their assigned workshop, the prospective participants will be asked to complete and return a digital copy of the consent document. Those who do so will receive a Zoom meeting invitation via email. One day before the scheduled workshop, participants will receive a reminder email. If necessary, additional invitations will be sent until 6 participants for each workshop have signed the consent document. The content of this invitation and reminder emails can be found in Attachment C. The consent form can be found in Attachment D.

The participatory design workshops will have three parts:

- Focus group: Participants will discuss their survey taking experience and thoughts about modular and survey data collection design.
- Participatory design activities: Participants will be randomly divided into two groups (of three people) to work on an implementation approach for the survey app using a digital whiteboard ("Google Jamboard"). They will be directed to identify the design features or functionality that would be most important to them, discuss their ideas about the optimal length and timing of survey modules, and design their own prototypes of an app.

- Debrief after group activities: Participants will present their ideas and prototypes and discussion with the group will follow.

A moderator will lead each workshop. The full moderator guide is provided in Appendix E. All three meetings will be conducted in the same way. Moderator discussion topics will be determined through research conducted prior to the workshops. First, the workshop team will gather information about best practices for using smartphone apps in large-scale surveys. Secondly, the workshop team will conduct a systematic literature review of research that has evaluated the effects of app design features on survey outcomes (e.g., response rates and indicators of response quality) and will organize the design features into groups (e.g., modular design, survey invitations, visual design, and passive measurements) for use in the workshop discussions.

Analysis Plan

Using notes from the workshops, a qualitative analysis will be performed to classify the major ideas or themes that emerged throughout the discussion (e.g., perceived burden of different data collection approaches).

The summary report will focus on general themes, frequent and unexpected categories of responses for each part of the workshop, and an interpretation of how the results might be used to inform the design of a smartphone app for data collection in the SDR.

Burden Hours

The study has an estimated total burden of 35 hours. This is comprised of four components.

1. Contact burden – initial recruitment: Selected cases will receive a brief recruitment invitation that should take no more than 15 seconds to read. It is expected that no more than 300 sample members will receive the email. This results in a maximum of 1.25 burden hours ((300 * 0.25)/60).

2. Screener survey burden: On average the screener survey will take 3 minutes to complete. Recruitment activities will continue until we have 36 participants who are approximately balanced on age, field of study, race/ethnicity, and smartphone familiarity. It is anticipated that recruitment can stop after about 72 individuals have completed the screener (under the assumption that we will select approximately 50% of those who express willingness to participate (n=36) and that approximately 50% of the selected respondents (n=18) will provide consent to participate in the workshops). This results in 3.60 burden hours ((72 * 3)/60).

3. Contact burden – invitation to workshops: The invited cases will receive one invitation email with a consent form that may take approximately 5 minutes to read and sign and those who provide consent will receive one reminder email that should take no more than 15 seconds to read. The total burden is estimated at 3.08 hours ((36* 5)+(18*0.25))/60).

4. Contact burden – workshops: The workshop will take 90 minutes to complete, resulting in 27 contact hours ((18 * 90)/60).

Total Burden estimate (hours): 34.93 (= 1.25 + 3.60 + 3.08 + 27) – rounded to 35 total hours.

Payment to Participants

After the workshops, each participant completing the full 90-minute workshop will receive an email containing an electronic Amazon gift card loaded with $50.

Informed Consent

The consent form and project plan were approved by Institutional Review Board at the University of Michigan on December 18, 2020 and by the Institutional Review Board at the University of Maryland on January 11, 2021. The workshop is being organized by researchers from the University of Michigan and the University of Maryland on behalf of NCSES.

Participatory design meetings schedule

The tentative schedule for the participatory design meetings is as follows:

Proposed Date	Activity/Deliverable
April 5, 2021	Start recruiting
April 12, 2021	Start conducting participatory design meetings
June 14, 2021	Final report and recommendations

Contact Person

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Attachments

Attachment A: Recruitment email
Attachment B: Screener survey questions
Attachment C: Invitation and reminder emails
Attachment D: Digital consent form
Attachment E: Moderator guide