

Overview

A bot, short for 'robot', is an automated software program or script that can perform repetitive or complex tasks which can mimic human behavior. These have been increasingly used in survey research with the intent to receive compensation or disrupt research efforts by providing fake data. This guide provides researchers with recommendations to mitigate exposure to bots or assist with identifying potentially fraudulent responses.

Researchers should consider the following tips when designing and implementing online research. Not all options will be applicable for every study so researchers may need to implement multiple strategies.

Survey Design Safeguards

- **Attention Checks:** These are questions used to make sure participants are reading the questions and not just clicking random responses to complete the survey. Researchers can design their survey, so that attention checks must be answered correctly for participants to receive compensation. Researchers can also use attention checks to gauge the validity of their data.
 - **Example Attention Check Questions**

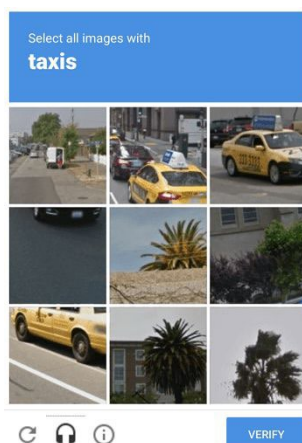
Which of the following is a living creature?

 - a) A boat
 - b) A balloon
 - c) A cat
 - d) A diamond ring

What is your favorite color?

Regardless of the actual answer, select B

 - a) Blue
 - b) Green
 - c) Yellow
 - d) Black
 - e) Purple
- **Captcha Tests:** CAPTCHA stands for *Completely Automated Public Turing Test to tell Computers and Humans Apart*. CAPTCHA tests are used to differentiate between human users and bots. These image- or text-based tests are often used to screen out bots at the beginning of a survey.
 - **Example CAPTCHA**



- **Example CAPTCHA**



- **Paragraph type/open-ended questions:** These questions require participants to provide specific or detailed text responses to prompts.
 - **Example Open-Ended Question/Prompt**
Within a few sentences, please describe what your favorite food is, when was the last time you had your favorite food, and why it is your favorite food.
- **Duplicate questions:** These are questions that require the same answer/response from a previous question in different parts of the survey. Additionally, these questions can be presented in different formats. For example, you may consider asking an open-ended question that requires the same answer/response as a previously asked multiple-choice question. Bots have a harder time realizing they are supposed to provide the same response multiple times for different questions.
 - **Example Prompt for Duplicate Question requiring same response**
In a previous multiple-choice question, you were asked to select your favorite season. Now, please tell us why the season you selected is your favorite season.
- **Trap Questions:** These are questions that seek to “trap” bad actors or bots, by providing false information in the selectable options. These questions utilize untrue options to screen out untrustworthy responses (e.g., asking how they heard about the study with incorrect choices).
 - **Example Trap Question**
How did you hear or learn about the research study?
 - a) Through the recruitment flyers posted at the mall
 - b) Through the recruitment flyer posted on Facebook (false information; researchers didn’t post the flyer on Facebook).
 - c) Through the QR code posted on the lab website
 - d) Through the flyer posted on Reddit.

Compensation Procedure Safeguards

Researchers can employ procedures that help screen for bots or fraudulent responses. These procedures can be designed to deny compensation upon receipt of fraudulent responses or can be set up to require member checks/validations prior to providing compensation.

A member check, also known as participant or respondent validation, is a process where researchers review the participant's data with the participant to ensure accuracy. If used, please note that researchers should have a means to re-contact participants for the member checks, and data should be linked to identifiable information. When member checks are necessary, payment to participants will likely not occur immediately after completing the survey, and participants should be explicitly informed of the schedule for receiving compensation.

Whether subjects are denied compensation outright or member checks are deemed necessary, these procedures must be detailed within the IRB Kuali protocol and disclosed to participants in the informed consent form.

- Scenarios where participants will **not** be compensated:
 - When surveys are completed too quickly (e.g., for a survey intended to take 30 minutes, submissions completed in 10 minutes or less will not be compensated, due to potential foul play)
 - Failure to correctly answer attention checks
 - Nonsensical / unrelated answers for open-ended questions (e.g., participant provides responses unrelated to the prompt)
- Scenarios where member checks with the participant may be necessary to validate responses and/or receive compensation:
 - If answers appear to be AI generated (e.g., ChatGPT used to complete open-ended responses)
 - If responses contradict each other (e.g., when using duplicate questions)

When utilizing member checks, describe in the consent form when and how researchers would contact subjects for these member checks/verification of the data.

Other Considerations / Tips

- If your population is going to be limited to students, researchers may require that participants use an "edu" email address as these are generated by education institutions and often require enrollment in a university to have.
- Consider not mentioning potential compensation within advertisements placed on social media/internet. Additionally, it must be specified in the Kuali protocol why the compensation amount is omitted from recruitment material. Please note, the full compensation amount must be listed in the consent form.
- Create unique survey links that are only accessible through study sites and can only be accessed once per participant.
- Be careful where you post recruitment messages. Posting on social media can be beneficial due to the potential number of people who may see your posting; however, it also opens the door for bad actors to see your post.

- Consider utilizing Qualtrics as the survey platform, who has fraud and bot detection capabilities that can be enabled into your survey settings with the appropriate license: <https://www.qualtrics.com/support/survey-platform/survey-module/survey-checker/fraud-detection/>

Template Text for Informed Consent Form

The texts below are provided as examples that can be included in informed consent forms when using some of the previously mentioned strategies.

What happens if I say yes, I want to be in this research?

If you decide to participate in this research study, the researchers will ask you to:

- *Complete an online survey about [research topic]*
- *The survey should take about 30 minutes to complete*
- *If the researcher has any follow up questions about your responses, they may contact you for a member check*
- *A member check is a meeting between you and the researcher where the researcher will ask you to clarify or confirm some information about your responses*
- *You will be asked to provide your contact information [specify which: email address / phone number] at the end of the consent form [within the survey]. This information will only be used to complete the member checks.*

Can I be removed from the study without my OK?

The person in charge of the research study or the sponsor can remove you from the research study without your approval. Possible reasons for removal include failure to submit the survey within 24 hours of starting this study, failure to pass check-in questions, straight lining (selecting the same option for most questions provided), submission of the survey in an unreasonably short amount of time (_ minutes or less). If removed from the study, you may not be able to receive compensation, and your data will not be used as part of the research. The researcher will notify you if this occurs.

Will I receive payment for being in this study? (member check example)

If you agree to take part in this research study, we will compensate you with a \$20 Amazon gift card for your time and effort. You will receive your gift card via email within 1 week after submitting your responses. Before sending you the gift card, the researcher may contact you to complete a member check if there are any questions about your responses.

Will I receive payment for being in this study? (failed attention checks example)

If you agree to take part in this research study, we will compensate you with a \$20 Amazon gift card for your time and effort. You will receive your gift card immediately after participation, unless you fail any of the attention checks. There are several attention check questions placed throughout the survey, and these questions must be answered correctly in order for you to receive compensation.