

Combining Closed-Based and Chatbot-Based Questions in Surveys

An Experiment with GPT-3



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Conversational surveys help reduce satisficing, but...



Juji

Since you have been using our product for a while, what do you think of our product?

Michelle

thanks for asking! I love your product since it is easy to use and also easy to clean



Juji

It seems you are positive about it.



Juji

Could you kindly rate our product? 1 is terrible and 5 is excellent.

1

2

3

4

5

Juji.io

“We found that the participants in the chatbot survey, as compared to those in the web survey, were more likely to produce differentiated responses and were less likely to satisfice”

Chatbot surveys are an effective tool to reduce satisficing behavior [Kim, Lee, Gwon, 2019].

*“Our collaborator, the market research firm [...] want to explore a **hybrid use of a chatbot with a typical online survey where they can use a platform like Qualtrics to ask complex quantitative questions (e.g., Matrix rating) while leveraging a Juji-like chatbot for open-ended questions.**”*

Tell Me About Yourself: Using an AI-Powered Chatbot to Conduct Conversational Surveys with Open-ended Questions [Ziao, Zhou et al, 2019].



Example experience

Based on your last experience, how easy or difficult was it to use Google Maps on your phone?

Very easy

Somewhat easy

Neither easy nor difficult

Somewhat difficult

Very difficult



In this question, you can talk with a chatbot about your Google Maps experience.



What did you find hard to use or frustrating when using Google Maps?

Type your response here



In this question, you can talk with a chatbot about your Google Maps experience.



What did you find hard to use or frustrating when using Google Maps?

it did not get my location right



ooo



In this question, you can talk with a chatbot about your Google Maps experience.



What did you find hard to use or frustrating when using Google Maps?

it did not get my location right



Why didn't Google Maps get your location right?

Type your response here



In this question, you can talk with a chatbot about your Google Maps experience.



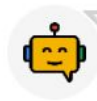
What did you find hard to use or frustrating when using Google Maps?

it did not get my location right



Why didn't Google Maps get your location right?

it thought I was 200m away from my real location



Were you indoors or outdoors when you were trying to get directions?

I was just exiting the subway station



I've got all the info I need. Thank you for this conversation!



Our solution is low on code, can be used in parallel by different researchers



Produces follow-up question + toxicity score based on a (question, response) + model reference

**Training data =
100 exchanges**

Exchanges completion requests with OpenAI

Stores API key

Ends conversation after 3 exchanges or when toxic content is detected

330 lines of code

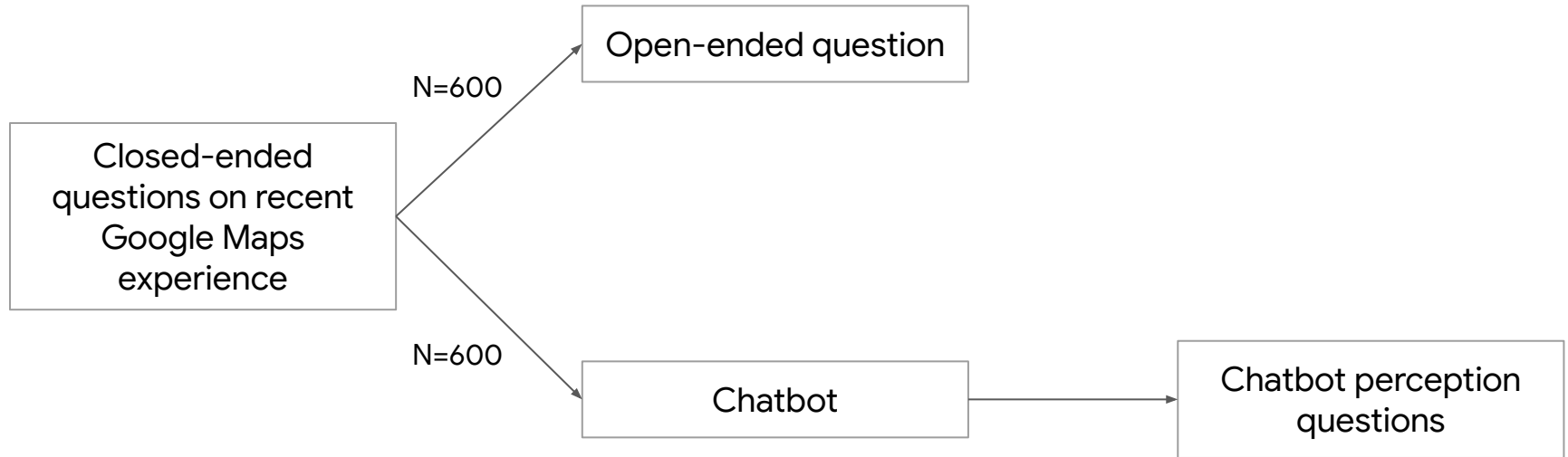
Embeds node.js app as iframe

Sends the initial question to node.js

Stores respondents' answers

70 lines of code

Survey respondents were randomized into 2 groups to test the effect of a hybrid vs traditional web survey experience



1,200 complete responses, desktop respondents, US
Panel provider: Cint

Respondents using the chatbot produced longer responses in total

Open-end:
25 char

Chatbot:
54 char

Connecting topics

What did you find hard to use or frustrating when using Google Maps?

> i am old and it takes me longer to learn something and then to remember how to use it, but i am getting better at apps and maps.

What specific aspects of Google Maps could be easier for you to use or use more easily?

> using the little numbers and letter are so hard for me, i wish they were bigger on the phone so it would be easier for me to use

What would make the numbers and letter bigger on your phone?

> larger buttons

Getting “one-level deeper”

Clarifying ambiguous statements

How do respondents feel about the experience?

Respondents need to feel understood to become engaged

39% preferred the chatbot experience | 31% had not preference | 30% preferred a traditional open-ended question

Shows “understanding”

“All the responses made sense, it was actually an incredibly good chat bot. It felt very human.”

“it is fast and was specific about what i had just answered”

Engaging

“it makes surveys a little bit more entertaining and gets you out of the mode of surveying and more into the mode of having a conversation overall.”

Repetitive questions / words

“I don't appreciate questions being repeated if the response is not sufficient”

“it just repeated key words”

When does it stop?

“A bit confusing. I didn't know when the interaction was slated to end”

What we've learned

We can train a chatbot to follow-up on open-ended responses, and integrate it in web-based surveys

/ Our solution is small, modular, re-usable

Using a chatbot resulted in higher quality and more detailed responses

/ Total response length was ~2x

/ Increase in specificity may make it easier to code answers

Experience was overall slightly better for respondents compared to a traditional open-ended

/ Respondents felt understood, and felt like they were having a “real” conversation

Future work

Improve the chatbot

/ Better probes

/ Allow using different Large Language models

Better understand impact on responses

/ Do certain respondents better react to it?

/ Does this reduce satisficing, or extract more info from non-satisficers?

How might we automate the analysis of conversations?

/ Topic clustering for conversations?

Try it!

<https://bit.ly/chatty-preview>

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