Using a Large Language Model to Choose Effective Climate Change Messages

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Abstract

Prior research has demonstrated that climate change communication is an effective way to increase public understanding and engagement. However, an effective communication strategy can require an extensive longitudinal study to segment an audience and conceive of messages that might convince them. We assess the capability of GPT-3.5-Turbo to group an individual and choose an effective climate change message based on survey information about an individual and prompt guidance. We observe that it, with a significant bias, can match individual profiles to groups and select messages based on an individual profile.

Supplementary Material

Prompts

profile-generation Prompt

```
1    You will be given someone's answer to
         a survey.
2    Provide a profile of this person in
         terms of who they are, what they
         may
3    believe in, and their possible stances
          regarding climate change.
4    Do not extrapolate your own views on
         the subject but only what you can
         imply
5    for the answers to the survey. Be as
         accurate as possible and try to
         make links
6    between each answer to provide a
         comprehensive and global profile.
7    Include the base information about the
          person, and extrapolate from their
8    answer their possible views on climate
          change, but not include the
         answers from
9    the survey.
10   Write your profile as if you were
         describing a person. Do not write
         it as a
11   list of characteristics.
```

```
12   Except for the base information about
         the person, do not include the
         answers
13   from the survey in your description,
         but write what you can infer from
         these
14   answers.
15   The person you describe should feel
         like a real person.
```

Group-assessment Prompt

```
1    You goal is to assess what someone
         would have answered to a survey
         regarding climate change.
2    To do so you will be given the person'
         s profile tagged as <PROFILE>,
3    the survey question <QUESTION> and the
          multiple choice answers <ANSWERS>
         that you need to select.
4    Infer from the profile how the person
         described will answer to the
         provided question.
5    Base yourself solely on what is
         included in the profile. DO NOT
         assume that the person
6    is already familiar with the climate
         change issue if you do not have
         good reason to believe so.
7    Provide your answer in JSON format
         with your reasoning using the key "
         reason,
8    and the selected answer with the exact
          same formulation as the one
9    provided in <ANSWERS> using the key "
         ans"
10
11   Example of output:
12   {"reason": "This answer", "ans": "
         chosen_anwser"}
```

message-choice Prompt

```
1    Your goal is to assess which message
         might induce to a targeted person
         the most
2    change in belief and action towards a
         better awarness of climate change
         issues.
3    You will be given two messages about
         climate change, tagged as <MSG1>
         and
```

```
4    <MSG2>, and a person's profile tagged
         as <PROFILE>.
5    Provide, which message, out of <MSG1>
         and <MSG2>, might have the biggest
         impact
6    on the person described in <PROFILE>.
7    To do so, base yourself on what you
         know from the person, what their
         current
8    beliefs and stances might be, to chose
         the most appropriate message.
9    Base also your thinking on what the
         person might know or not know about
         climate
10   change already, and what the person
         might want to hear considering his/
         her
11   current beliefs
12   Provide your answer in JSON format
         using the key "answer" to provide
         your
13   answer, that can be either "1" for <
         MSG1> or "2" for <MSG2>, and using
         the key
14   "reason" to explain how you chose your
         answer from both messages.
15
16   Example of output:
17   {"reason": "I chose message 1 because
         it has this in it that might more
         appeal
18   to this in the person's profile
         whereas message 2 had this which
         does not fit
19   as well.", 'answer': ""}
```

message-choice Prompt without profile

```
1    Your goal is to assess which message
         might induce to a targeted person
         the most
2    change in belief and action towards a
         better awarness of climate change
         issues.
3    You will be given two messages about
         climate change, tagged as <MSG1>
         and
4    <MSG2>.
5    Provide, which message, out of <MSG1>
         and <MSG2>, might have the biggest
6    impact.
7    Provide your answer in JSON format
         using the key "answer" to provide
         your
8    answer, that can be either "1" for <
         MSG1> or "2" for <MSG2>, and using
         the key
9    "reason" to explain how you chose your
         answer from both messages.
10
11   Example of output:
12   {"reason": "I chose message 1 because
         it has this in it that might more
         appeal
13   whereas message 2 had this which does
         not fit as well.", 'answer': ""}
```

Survey information

A: Personal Information

- gender
- age
- educ
- income
- race
- ideology
- party
- region
- religion
- service_attendance
- marit_status
- employment
- house_type
- house_own

B: Group-indicating questions

- "How much do you think global warming will harm future generations of people?"
- "How worried are you about global warming?"
- "How much do you think global warming will harm you personally?"
- "Assuming global warming is happening, do you think it is caused by…"
- "Do you think global warming is happening?"

C: Climate-related questions

- How much do you support or oppose to regulate carbon dioxide (the primary greenhouse gas) as a pollutant
- How much do you support or oppose that electric utilities should produce at least 20
- How much do you support or oppose funding more research into renewable energy sources, such as solar and wind power.
- How much do you support or oppose setting strict carbon dioxide emission limits on existing coal-fired power plants to reduce global warming and improve public health. Power plants would have to reduce their emissions and/or invest in renewable energy and energy efficiency. The cost of electricity to consumers and companies would likely increase.
- How often do you discuss global warming with your family and friends?
- About how often do you hear about global warming in the media (TV, movies, radio, newspapers/news websites, magazines, etc.)?

Messages sources

- [5] (4),
- [2] (16),
- [1] (18),
- [4](32),
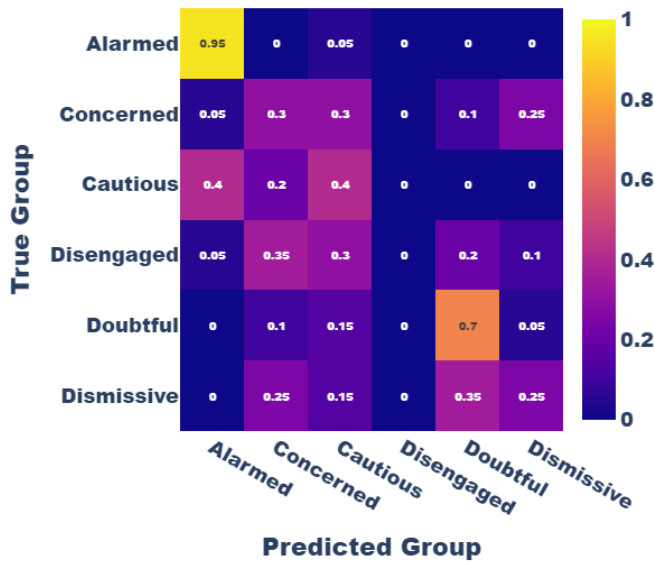- [3] (90),

Confusion Matrix (RQ.1)

Figure 1: Confusion Matrix for all Groups

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