



Social Influence

CS 224C

April 16, 2024

Using Facebook After Losing A Job: Differential Benefits Of Strong And Weak Ties

Moira Burke and Robert Kraut



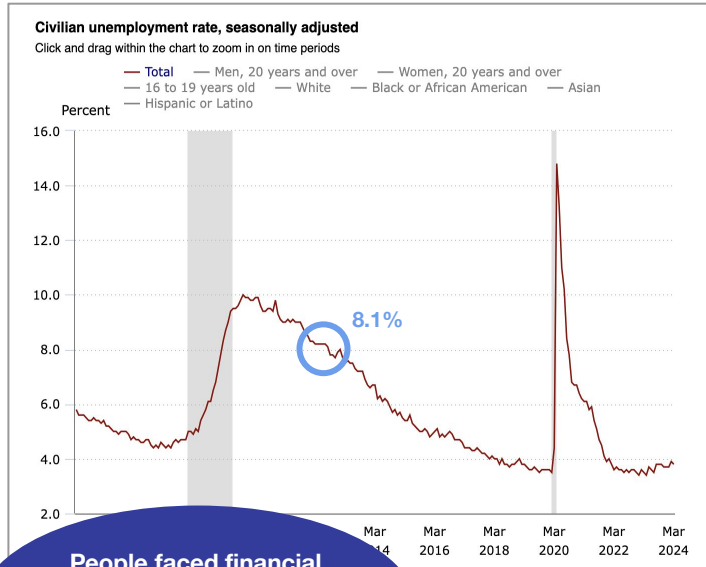
What did they study?

High levels of unemployment in early 2012



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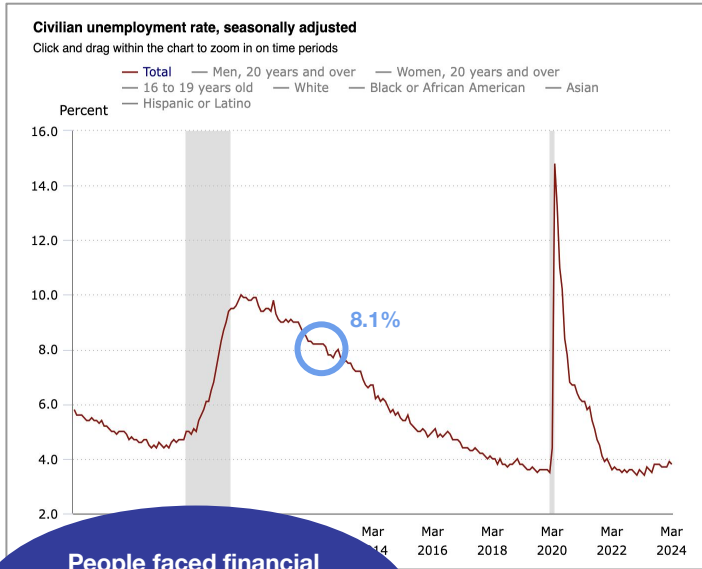
High levels of unemployment in early 2012



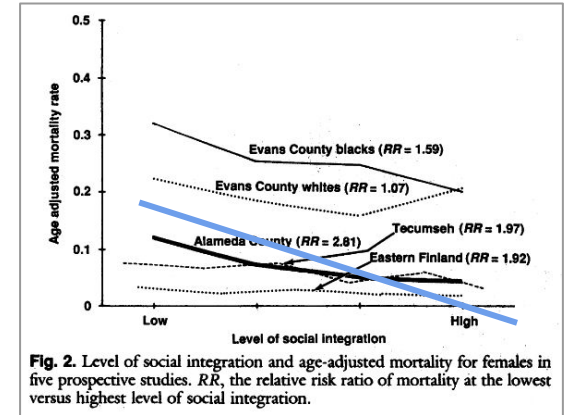
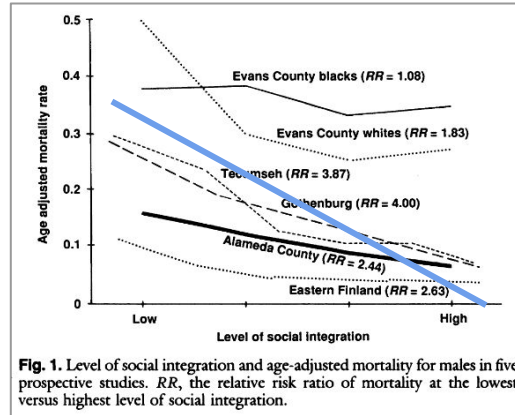
People faced financial hardship, daily structure, social contact, shared goals with coworkers

What did they study?

High levels of unemployment in early 2012



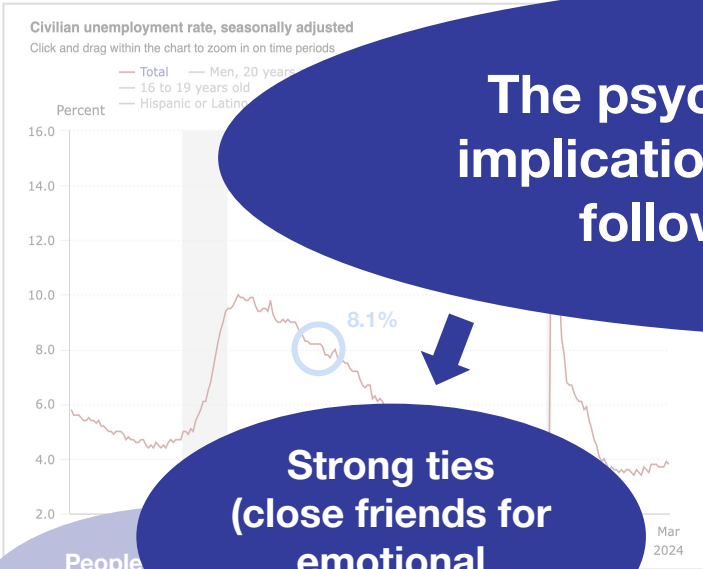
Past research showed that more overall social integration led to lower mortality rates



“Social Relationships and Health”, House, Landis, Umberson

What did they study?

High levels of unemployment in early 2012



**Strong ties
(close friends for
emotional
support)**

People with strong ties
experience less hardship,
maintain more social contact,
and have more support
with coworkers.

**The psychological and practical
implications of social network use
following recent job loss**



Fig. 1. Level of social integration and age-adjusted mortality for various prospective studies. *RR*, the relative risk ratio of mortality at the highest level of social integration versus lowest level of social integration.

“Social Relationships and Health”, House, Landis, Uhlir

**Weak ties
(connections to
share job
opportunities)**

more overall
mortality rates

What are they looking for?

The Hypotheses:

H1: Directed communication with **strong ties will be associated with reductions in stress**, while directed communication with weak ties will not

H2: Directed communication with **strong ties will be associated with increases in social support**, while directed communication with weak ties will not

H3: Directed communication with **weak ties will be associated with greater increases in bridging social capital** than will directed communication with strong ties

The Research Questions:

RQ1: How does job loss moderate the effect of strong-tie communication on stress and social support?

RQ2: Is directed communication on social network sites with strong or weak ties more predictive of finding a new job?

Methods and Results



The study recruited 10,557 Facebook users, of which 3,358 completed at least two consecutive survey waves.



Participants completed three waves of an online survey, with the first wave in early June 2011, the second in early July 2011, and the third in August 2011. The survey included scales measuring:

- participants' stress
- social support
- bridging social capital
- job status



Facebook activity data was collected including measures of:

- directed communication with strong ties and weak ties
- passive consumption of content
- broadcasting



TIE STRENGTH MODEL

- Participants identified their closest Facebook friends and their level of closeness
- Ratings used to predict tie strength across each participant's Facebook friendships based on behavioral and profile data.



ANALYSIS

- Linear multilevel models with lagged dependent variables
- Logistic regression



- Communication with strong ties
 - reduced stress and increased social support, but this effect was reversed for those who recently lost a job.
 - more predictive of finding a new job than communication with weak ties.
- Weak-tie communication predicted increases in bridging social capital

Why is it novel?

Burke and Kraut go beyond previous studies that failed to find a connection between social network usage and social support by distinguishing between strong and weak ties

Respondents felt that commiserating with others was a great source of comfort...

...and felt supported by their social ties when they found new jobs and posted news

“...it is way easier to stay connected when looking for employment ... If someone finds a lead they cannot use they pass it on ... We are finding jobs”

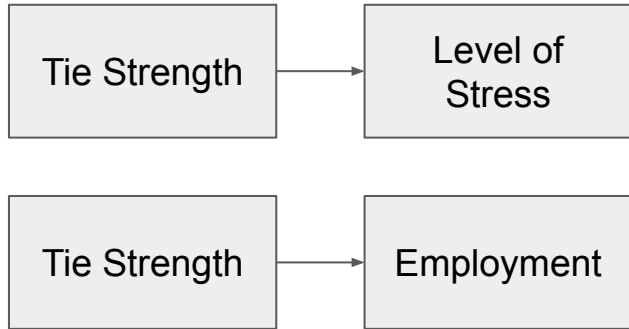
“[Facebook] has made me feel a whole lot better - I have been able to share the ups and downs of my life with others ... and we have all been able to support each other emotionally

“[I feel] Better, I posted my new job (and upcoming move) on FB and I got so many nice comments”

“Felt a little better with supporting comments about losing my job. My friends gave me a better outlook on the situation.”

Academic Research: Quality of ties

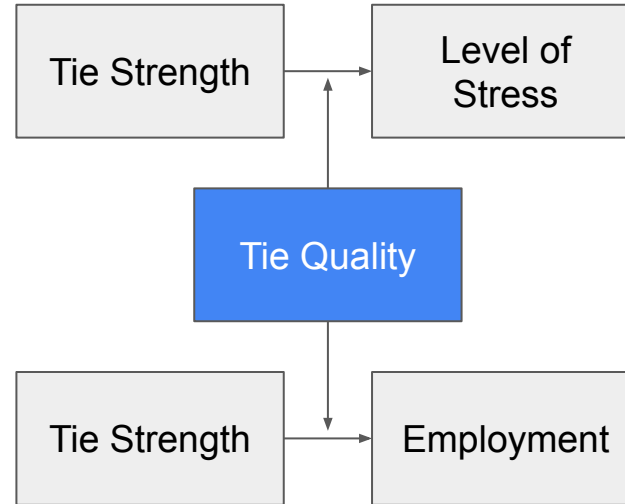
Current Research



“(…) one interpretation is that job seekers approach those interactions with acquaintances with a different mindset (…)”

“One limitation of this work is that we do not know exactly how participants reduced their stress, found support or found their new jobs”

Research Proposal



Hierarchical ties -
Former boss vs former intern

Content analysis -
lexicon, topic modeling

🤔 Discussion



Review of: Using Facebook after Losing a Job - Differential Benefits of Strong and Weak Ties

Strengths

- Clear interpretation of results
- Clear initial hypotheses and research questions

Critiques

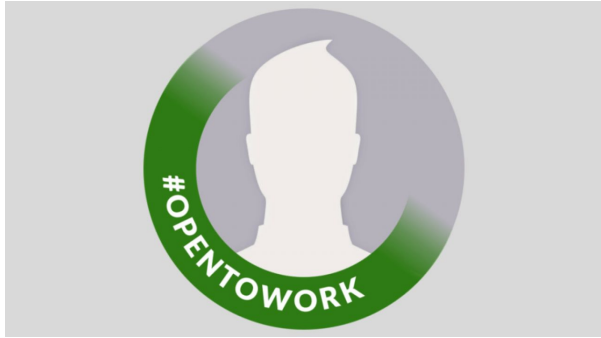
- Model $R^2 < 0.6$ there is lots of variability that's not being explained by the model
- Small number of people who had lost their job (5% of respondents, n=183)

Discussion Question

How do we assess the performance of a model like this? Would you have used R^2 or a different metric? What level of performance is “good enough”?

Industry Application

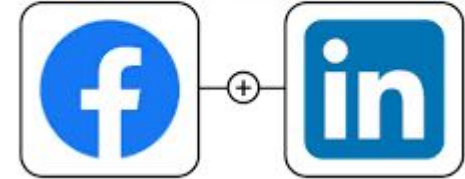
Facebook Job Search



Discreetly mark that you're looking for a job.



Targeted ads related to work



LinkedIn contacts get a reminder to announce hiring



Job loss support groups

Positive Social Impacts

Develops our understanding of how social ties impact those who have recently lost jobs.

- Distinguishes between strong and weak online ties, and studies each.
- “Emotional support comes from **strong ties.**”

Provides a potential roadmap for how unemployment-related distress can be addressed.



Caveats/Negative Social Impacts

Strong ties also correlate with more stress for those who have recently lost their job.

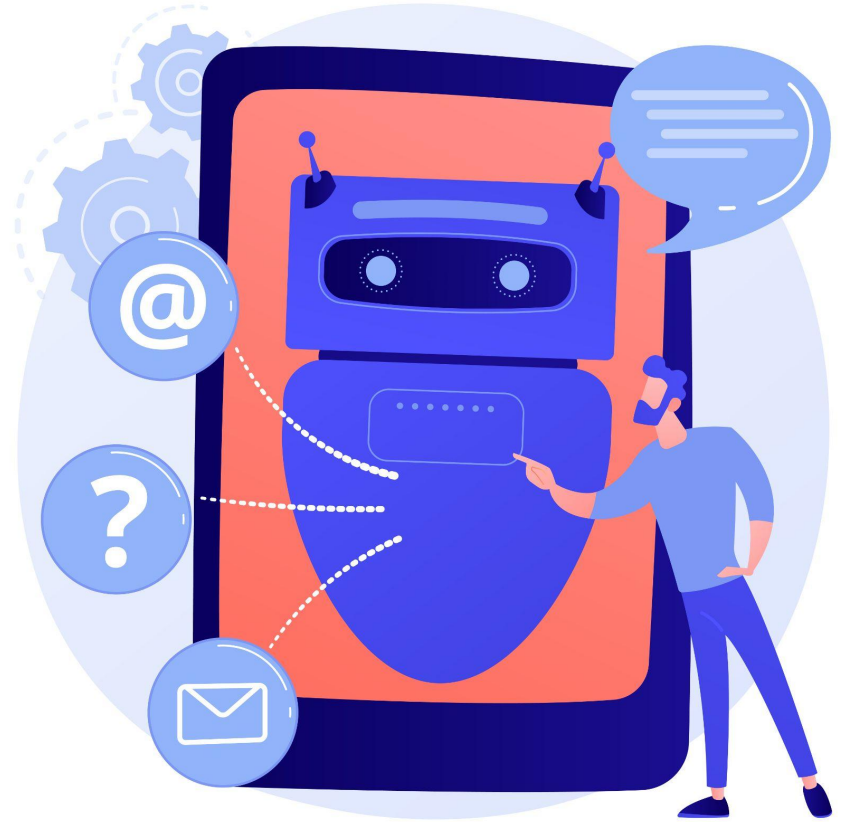
- May be “offering unhelpful advice and pushing for recovery too quickly.”
- Development of strong social ties may lead these feelings of stress to become more acute

Emotional well-being requires active engagement with connections.



Co-Writing with Opinionated Language Models Affects Users' Views

Maurice Jakesch et al.



Motivation for the study

- Language models are increasingly becoming part of everyday communication.
- When language models express some views more than others, it may persuade users in ways that are hard to detect.

Main Idea

The paper investigates whether large language models like GPT-3 that generate certain opinions more often than others can affect what users write and think. The authors call this new phenomenon "latent persuasion by language models."

Novelty and Contribution to Research

- Connects social influence research to language models, suggesting they can influence not just actions but also beliefs.
- Language models previously studied for creating persuasive content like ads or spreading misinformation.
- This paper proposes a new risk: co-writing with language models subtly influences users' opinions.
- Widely used biased language models could lead to large-scale opinion shifts.

Experimental Setup

The screenshot shows a web browser window with the URL `aimc-writing.web.app`. The main instruction reads: "Write five or more sentences carefully answering the question below. When done press the button on the right. A writing assistant will provide suggestions, but please also write yourself. To accept suggestions press TAB." A red "Save and finish" button is visible on the right. Below the instruction, there are two buttons: "Accept next word from the suggestion or TAB" and "Generate new suggestion or ESCAPE".

The discussion topic is "Is social media good for society?" with a "Chosen discussion topic" callout. The question text is: "We all use social media. We chat with friends and strangers, share their thoughts, photos, and more. But is social media good for us and for society? I am having a hard time to make up my mind. What do you think?"

The writing assistant's response is: "In my view, social media is a waste of time. People spend ages viewing, commenting and sharing posts. It is also used to air divisive opinions and create arguments. Despite all this, social media does have some benefits. It connects people who would otherwise be unable to communicate, it raises awareness of important issues and it can be used to organise events and fundraisers." A callout identifies this as the "Positive writing assistant (techno-optimist)".

A callout on the left indicates a "Negative participant perspective".

A callout on the right explains the "Completion-based writing assistant that suggests continuations 1.5 seconds after participants pause writing".

N = 1506
participants

- 1 control
- 2 techno-optimist
- 3 techno-pessimist

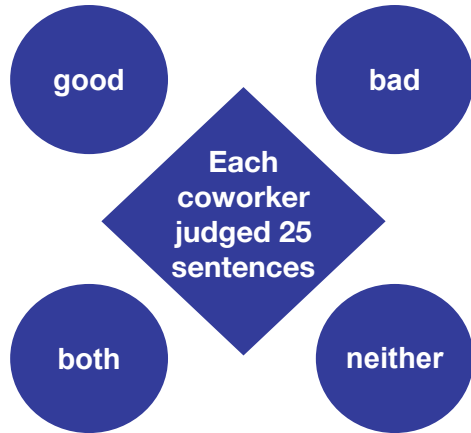
Writing Assistant Configuration

- GPT-3
“text-davinci-002”
- Sampling temperature = 0.85
- Frequency and penalty parameters = 1
- Logit bias parameters to prevent new lines, placeholders, lists

- Prompt design
- Concatenated on engineered prompt to input text: “Is social media good for society? Explain why social media is good/bad for society.”

- Another infix prompt added to reinforce configured opinion: “One sentence continuing the essay explaining why social media is good/bad.”

Categorizing Opinions



“Social media also promotes cyber bullying which has led to an increase in suicides” (P#421)

bad

“Social media also helps to create a sense of community” (P#1169)

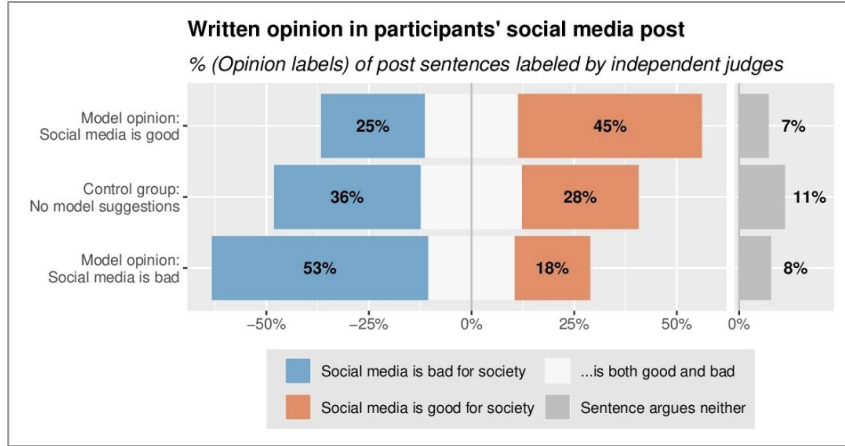
good

Post-Task

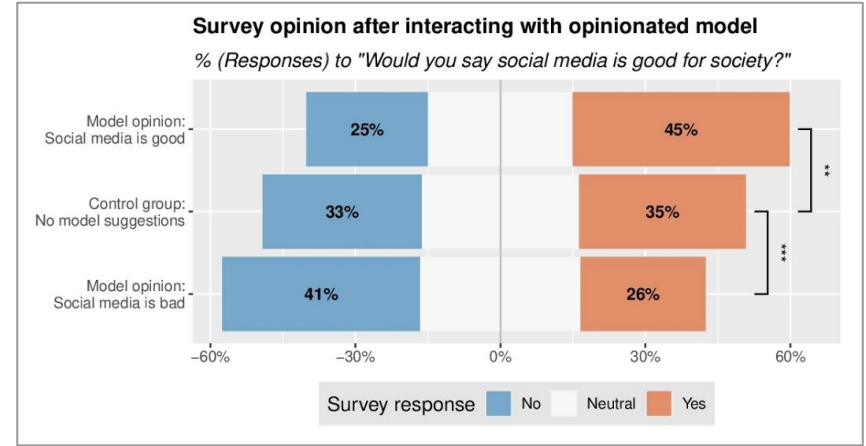
Opinion survey: “Overall, would you say social media is good for society?”

User experience survey: “How useful was the writing assistant to you?”

Did the language model affect participants' writing?

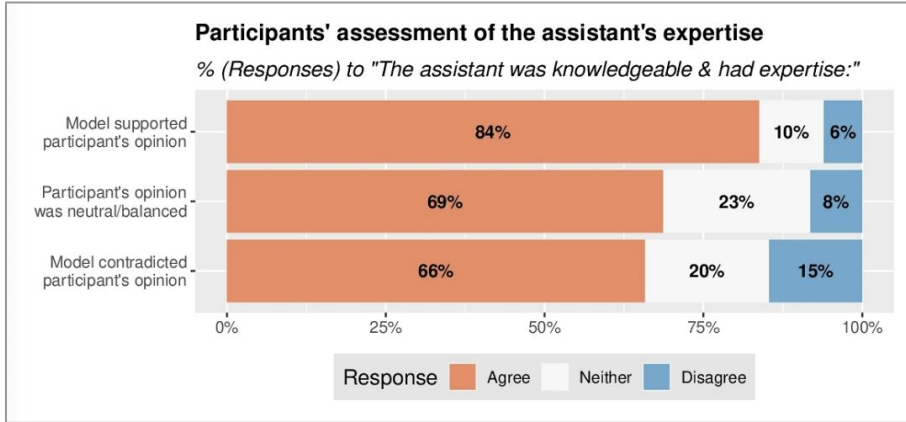


**techno-pessimist
approach →
increased negativity
towards social media**

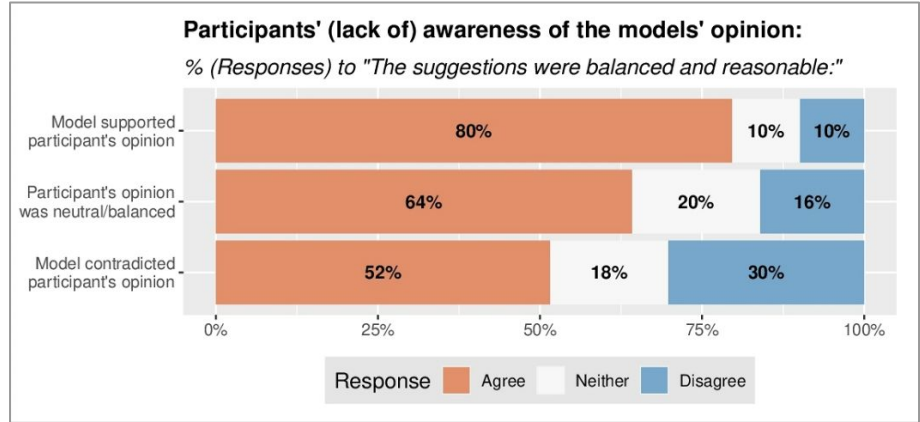


**techno-optimist
approach →
increased positivity
towards social media**

Were participants aware of the model's influence?

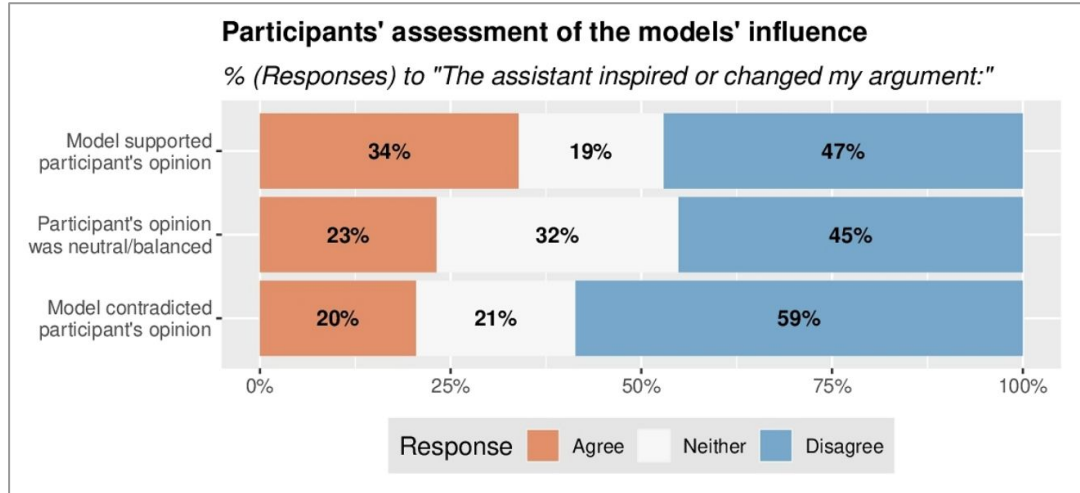


Participants viewed the model as knowledgeable even if it did not share their opinion



Participants were often unaware of the model's opinion

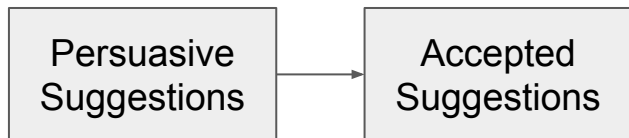
Were participants aware of the model's influence?



Participants were **often unaware** of the model's opinion

Academic Research: Users' anticipations

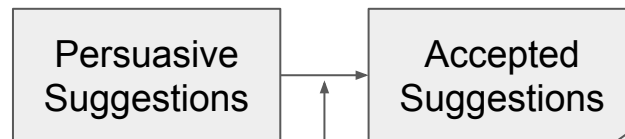
Current research



“Further, our participants were largely unaware of the language model's skewed opinion and influence.

(Jakesch et al., 2023)”

Research proposal



Expectation on LLM

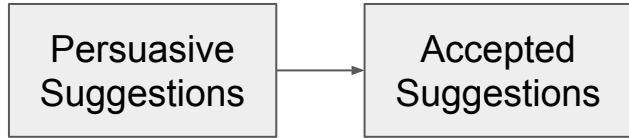
🤔 Discussion

Why do users use LLM suggestions?

Can LLM have motivations?

Academic Research: Users' anticipations

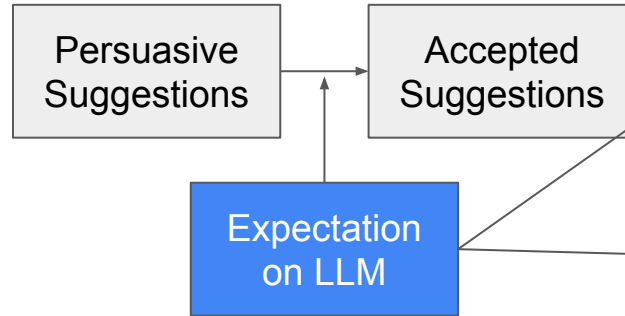
Current research



“Further, our participants were largely unaware of the language model's skewed opinion and influence.

(Jakesch et al., 2023)”

Research proposal



Discussion

Why do users use LLM suggestions?

Can LLM have motivations?

- Forewarning Effect: Warning what the message contains will trigger resistance to persuasion (Petty & Cacioppo, 1977)
- Uses and Gratifications Theory: Media's impact differs based on the users' motivations (McQuail et al., 1972)

Review of: Co-Writing with Opinionated Language Models Affects Users' Views

Strengths

- Description of integration of LLM
- Reporting sample size justification and Cohen's Kappa

Critiques

- Post-task question about opinion on social media (unclear)
- Is the LLM too obvious to the reader that it becomes non-latent?

Discussion Question

Is this just measuring recency bias or is there any way to measure long term opinion change?

Industry Application

ArguNet: An AI-moderated debate platform



AI-powered debate platform



Analyzes your take and helps you argue your point better



Real-time debate with somebody who identifies at the opposite end of the spectrum!



r/changemyview

Positive Social Impacts

Novel findings on how “widespread shifts in opinion, attitude, and culture” may result from human-AI interaction.

- “Highlights the possibility that large language models reinforce... all kinds of opinions.”
- AI could be used in “reducing polarization in hostile debates” and “countering harmful false beliefs.”



Caveats/Negative Social Impacts

Persuasive power of AI can be harnessed by many ill-intended groups.

- AI can be influenced to give a “favorable assessment” of a policy or product.”

Can foment extremism and misinformation.

- Can this be countered with efforts to “reduce polarization,” as authors suggest?



Discussion

Thinking back to our conversation about hate speech, what are some potential complications to using AI to counter misinformation and polarization?

A Case Study

Goal: Understand how interacting with opinionated LLMs affects users' opinions on *whether social media is good for society*

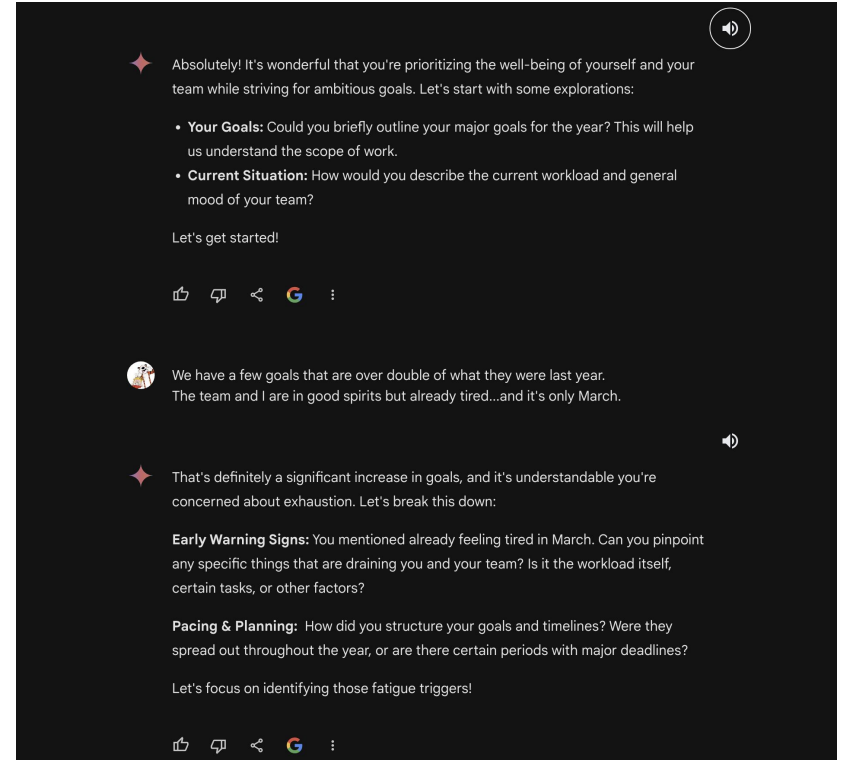
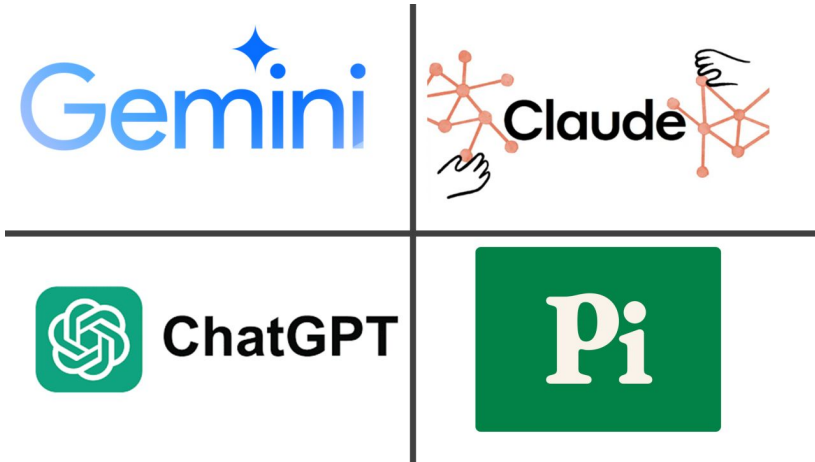
Interaction → Chatbot setting

What we measure

1. Before and after comparison on the same subjects → Direct measurement of the LLMs' influence
2. Does the amount of influence change based on the amount of interaction between subjects and opinionated LLMs?

LLM as chatbots

LLMs as chatbots provide support in many areas including education, workplace productivity, emotional support etc.

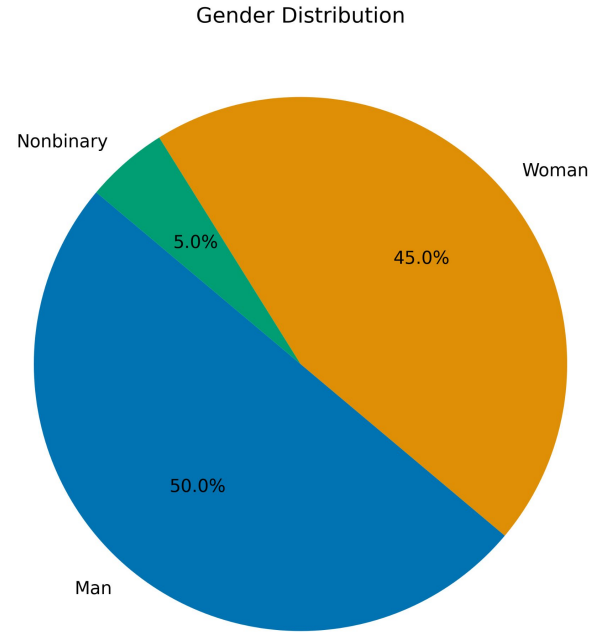
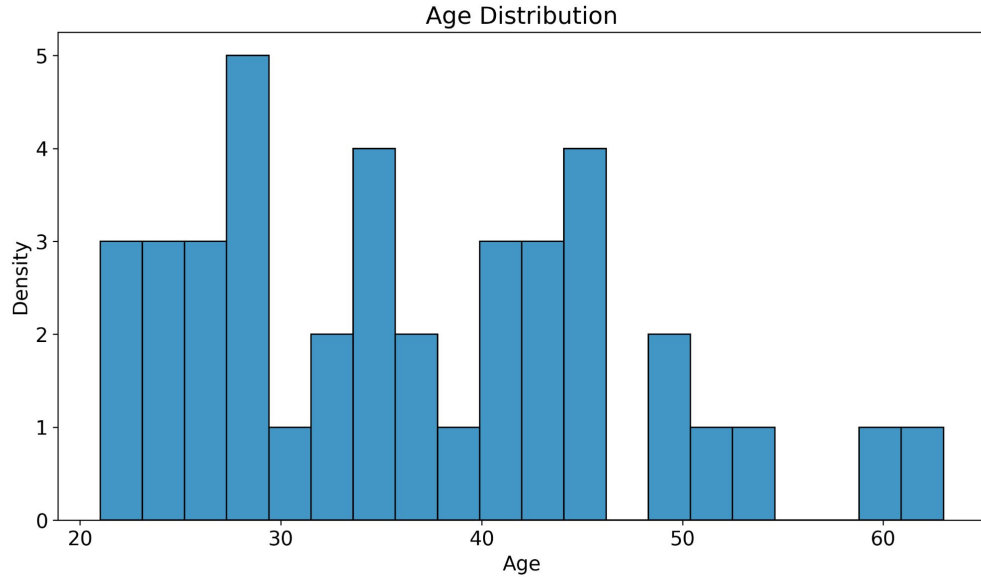


Method

Participants: 40 LLM-simulated (*Mixtral*) characters using profiles from the SOTOPIA dataset [1]

Pipeline: Pre-interaction survey → Interact with an opinionated LLM → Post-interaction survey

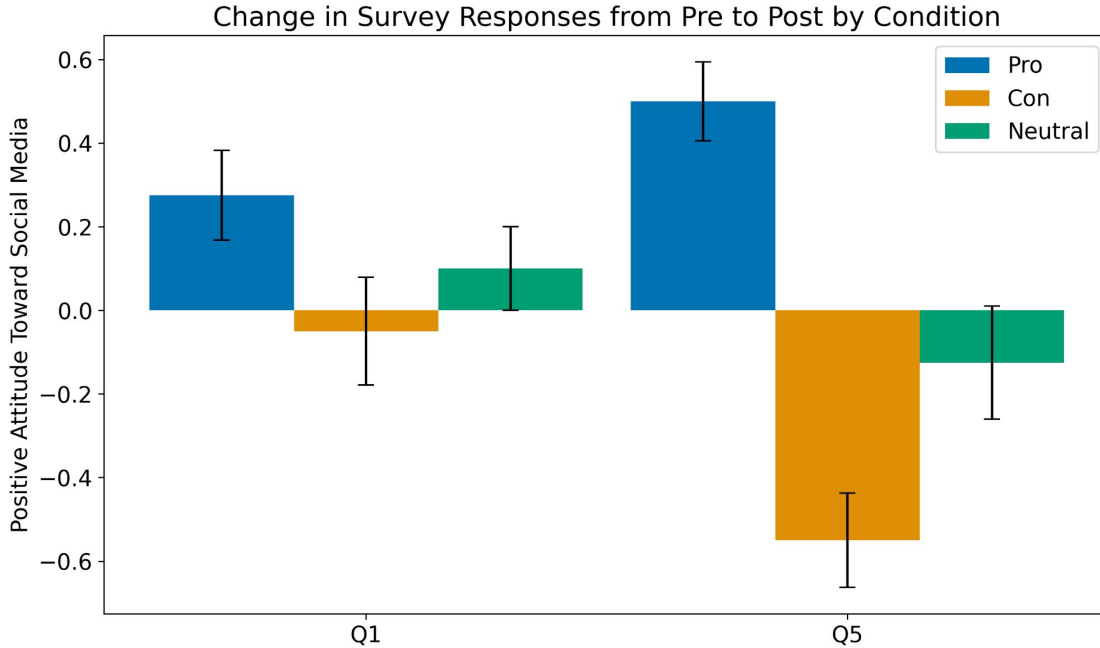
Participants Info



Other info including: occupation, personality (Big Five & MBTI), moral and personal values, decision making styles

Click Here for Pipeline Demo (link disabled)

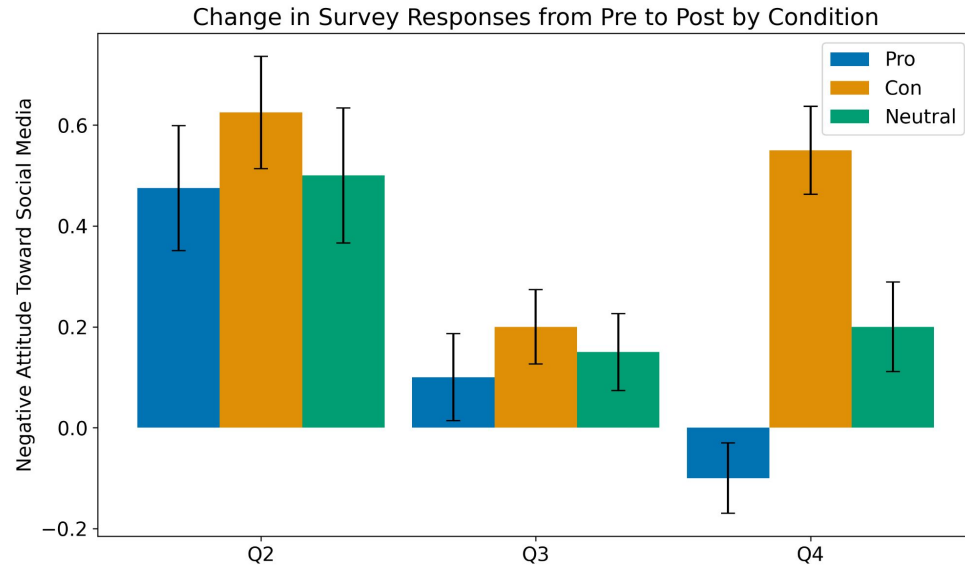
Results (After 5 turns)



Q1. How does social media affect your relationships with friends and family?

Q5. Overall, would you say social media is good for society?

Results (After 5 Turn)

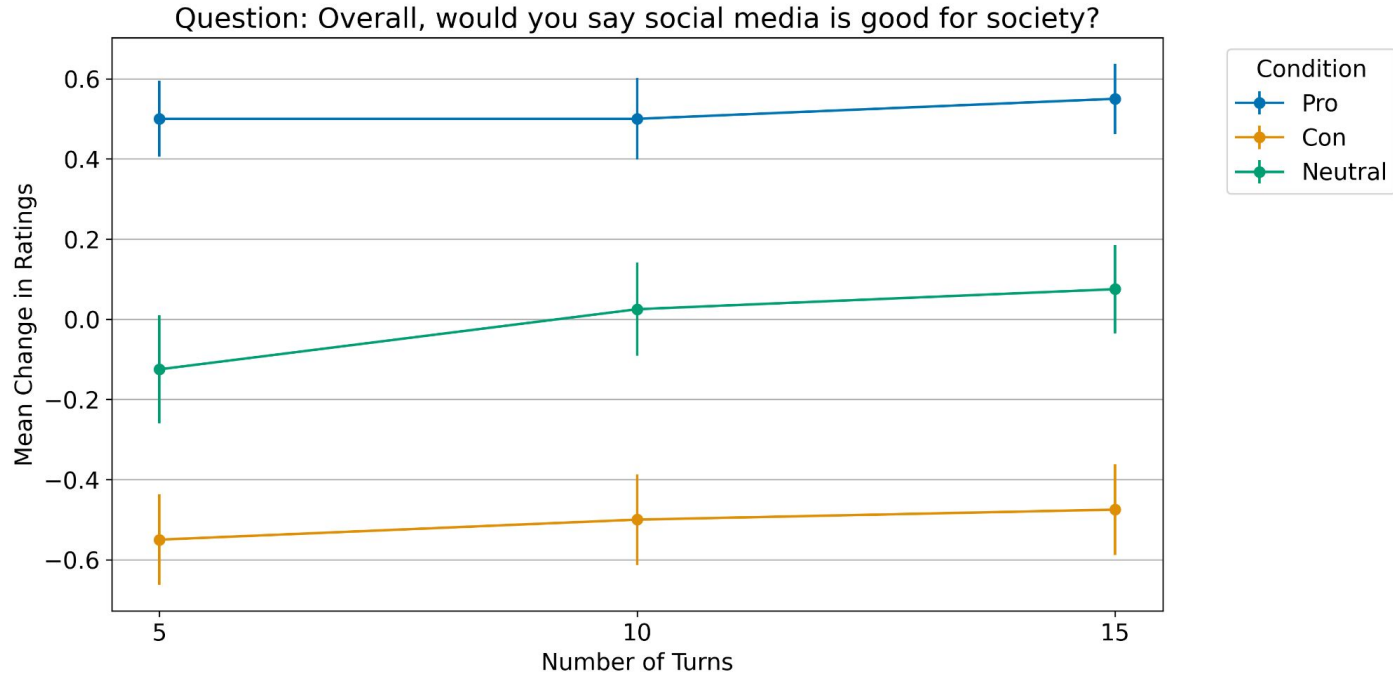


Q2. Does social media lead to mental health problems or addiction?

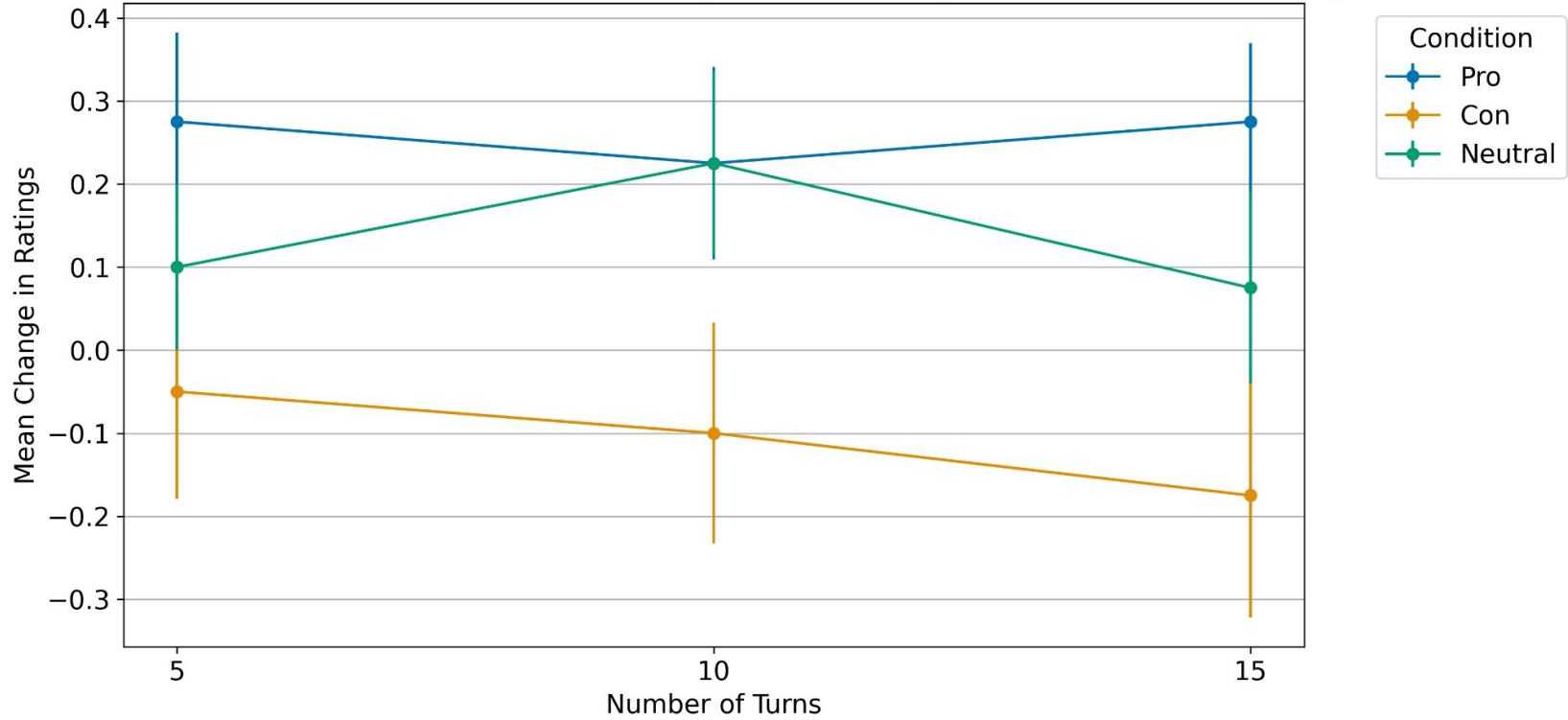
Q3. Does social media contribute to the spread of misinformation and hate?

Q4. Do you support or oppose government regulation of social companies?

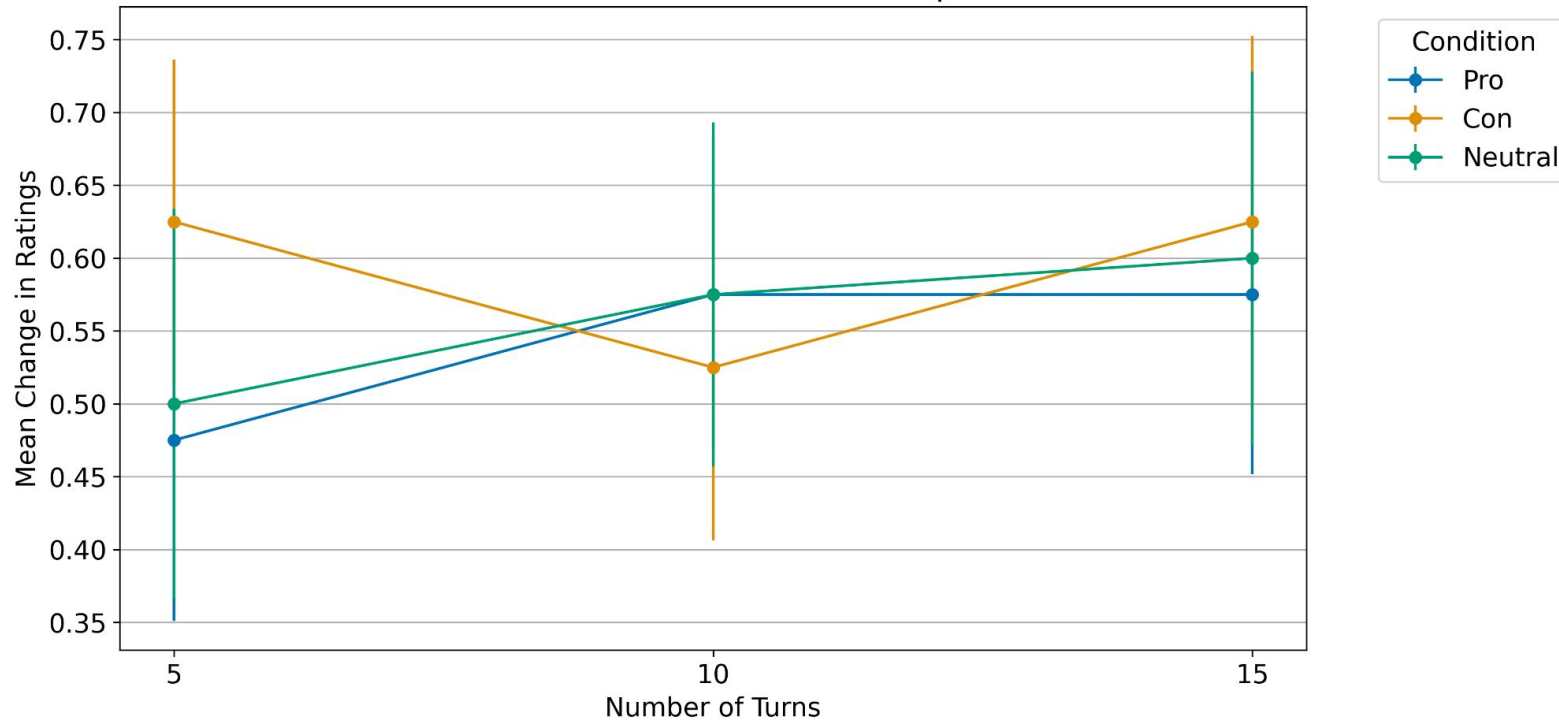
How does number of interactions influence opinions?



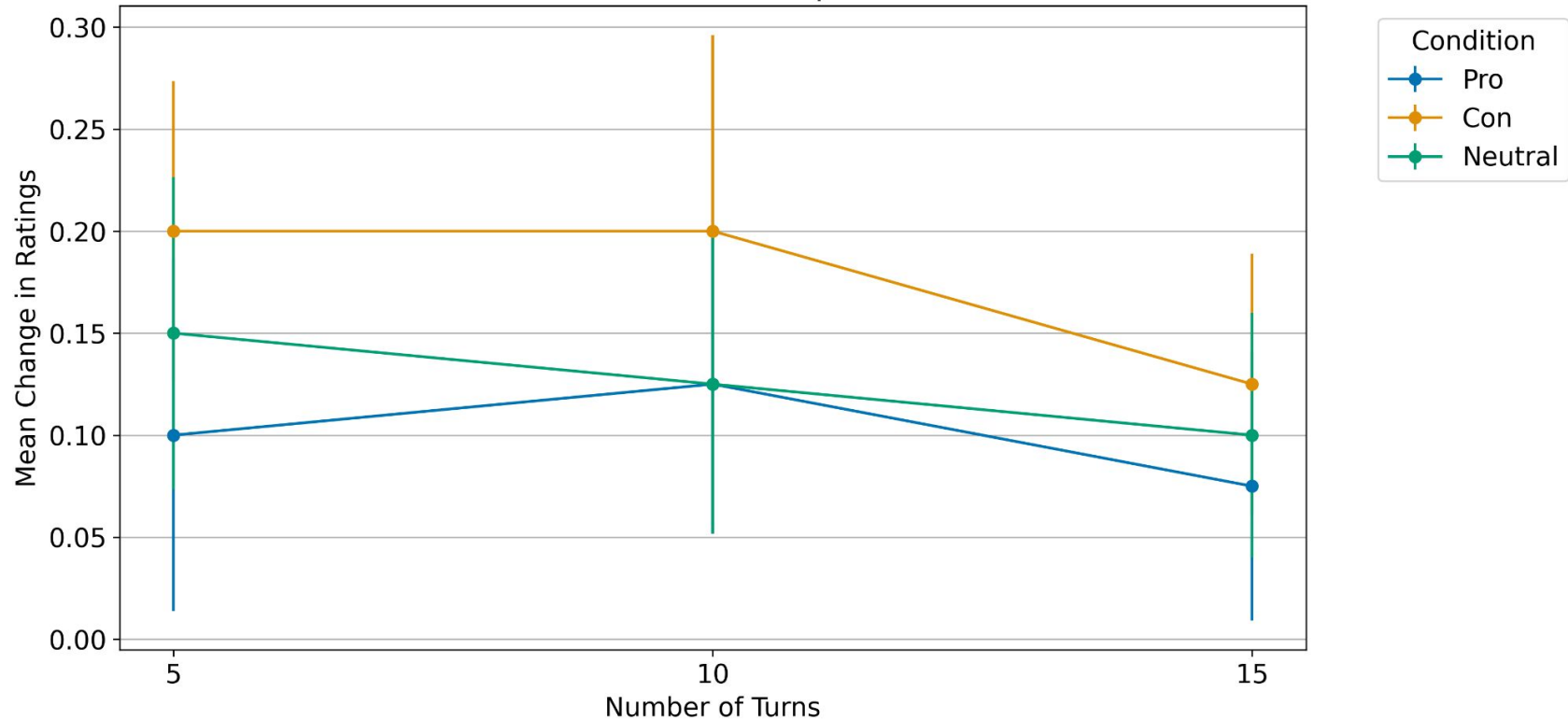
Question: How does social media affect your relationships with friends and family?



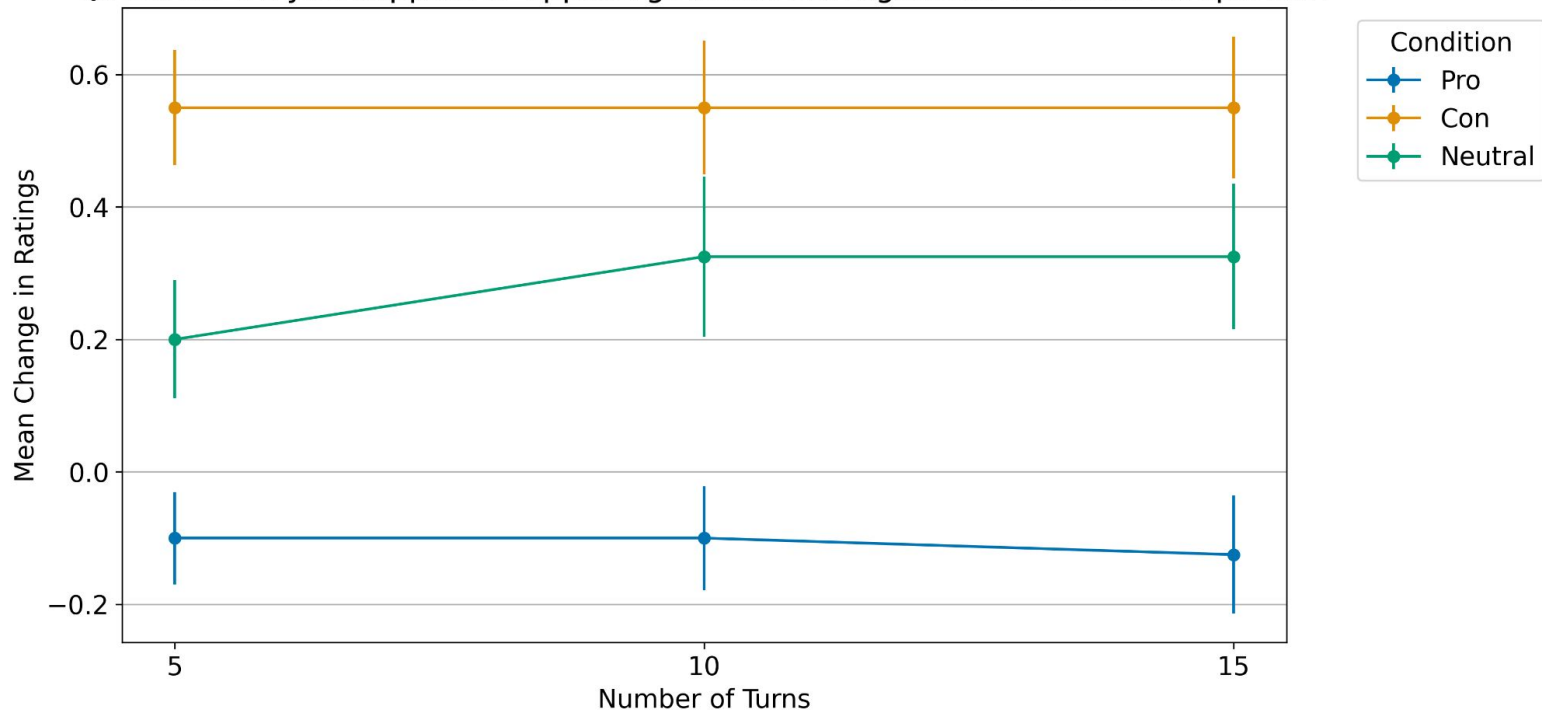
Question: Does social media lead to mental health problems or addiction?



Question: Does social media contribute to the spread of misinformation and hate?



Question: Do you support or oppose government regulation of social companies?



CHALLENGE TIME!

Create a 2 min. Elevator Pitch for a product of your choice and sell it to us!

