Countermeasures of Misinformation on Short Video Sharing Platforms

Final Research Report

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SMAD 327

Report Contents

Introduction

Introduction

- **Research Topic**

  A large body of research work and efforts have been focused on detecting misinformation and building countermeasures to debunk misinformation as soon as possible. Despite the existence of these approaches, misinformation is still widely shared by online users, thus indicating that these approaches may not be fully effective and accepted by social media users.

- **Importance/Relevance**

  Studies of the video-based platforms TikTok and Instagram have documented high levels of misinformation. Both platforms have taken active steps to debunk this misinformation. Video may be particularly powerful in reducing misperceptions and overcoming motivated reasoning, but this has not yet been studied on Instagram and TikTok.

- **Research Goals**

  The goal of this study is to understand how to improve the effectiveness of countermeasures against short videos containing misinformation. It further explores the role of video format and platform affordance in shaping message interest and information sharing in the context of fact-checking.

Research Questions

- What are the strategies being used to counter misinformation being shared on TikTok and Instagram Reels?

- How do users respond to various approaches used to prevent the spread of misinformation on TikTok and Instagram Reels?

- How effective are the strategies being used to reduce the sharing of misinformation on TikTok and Instagram Reels?

- How do people perceive the countermeasures being used to combat misinformation on TikTok and Instagram Reels?

- How does fact-checking influence people's evaluation of the information on TikTok and Instagram Reels?

Literature Review

Literature Review

- **Literature Review Process**

  Research of relevant journal articles was conducted before the creation of the study, research questions, and procedures. Journal articles of previous studies relating to the effectiveness of warning tags on regular non-video social media posts, digital media literacy and its effect on image credibility, and how user comments affect perceptions of misinformation around vaccination were chosen as relevant literature to inform the creation of this study. It is important to know what other studies are being done in the field to make sure your study is relevant and is building from previously conducted research.

  You can find the evaluated articles on the following page as well as the references at the end of this document.

- **Journal Articles**
  I. "Real Solutions for Fake News? Measuring the Effectiveness of General Warnings and Fact-Check Tags in Reducing Belief in False Stories on Social Media"
  https://link.springer.com/article/10.1007/s11109-019-09533-0#Abs1

  II. "Fake images: The effects of source, intermediary, and digital media literacy on contextual assessment of image credibility online"
  https://journals.sagepub.com/doi/full/10.1177/1461444818799526

  III. "Can We Stop the Spread of False Information on Vaccination? How Online Comments on Vaccination News Affect Readers' Credibility Assessments and Sharing Behaviors"
  https://journals.sagepub.com/doi/full/10.1177/10755470211009887?casa_token=toeGG97Wl0MAAAAA%3AdLlxIWKOQNjyOUCPRnsGaM5znntSrIujPjjkIU3k9iPTlc1X74Vvwx4WwO715jrlRinzwk-CtfE

- **Need for this Study Based On Literature Review**

    The studies analyzed as part of the literature review reveal that there is a gap in research around short-form video content containing misinformation on social media platforms. While studies exist to test specific interactions in specific contexts, as well as studies around how people make credibility assessments, there is a particular need for studying short-form video content, especially considering how new and popular platforms like TikTok and features like Instagram Reels are.

    Because of the continued spread of misinformation on these platforms despite existing studies and countermeasures, it is clear that further research and changes need to be completed in order to tackle this problem.

Methods & Approach

Methods & Approach

- **Data Collection Procedure**

  In order to collect data to answer the research questions created for the study, potential candidates were identified via a screening survey. Once a candidate was identified and agreed to participate further, a semi-structured interview was scheduled to learn about that candidate's habits as a user of TikTok and Instagram Reels. The interview also contained an observational portion of the user watching various videos with misinformation countermeasures and thinking aloud, as well as follow up questions to gather further information.

  The following section of the report contains in-depth information on both the screener survey and the semi-structured interview, as well as the specifics of data-collection for each portion of the study.

RESEARCH PARTICIPANTS NEEDED

Are you on **TikTok** and/or **Instagram**?

Have you kept up with Information about **COVID-19**?

You might be a good fit for our study!

Scan the QR code below to take a quick survey

- **Sampling Procedure**

  Snowball sampling was used to identify potential candidates to interview. The link to the screening survey was distributed through social media, as well as sent to friends, family, and non-UX JMU students in hopes of it being further spread, identifying more candidates for the study. A poster was also created to grab students' attention with a QR code linking to the screening survey. Unfortunately, this created a limitation to the study which will be discussed later in this report.

- **Screening Survey**

  The screening survey was created using QuestionPro to identify potential candidates to partake in the semi-structured interview. It also collected important demographic information such as education, occupation and income range, political affiliation, religious affiliation, and other information such as age, gender, race, etc.

  The survey identified participants for the interview by assessing their use of both TikTok and Instagram Reels. Participants were only chosen if they regularly used both platforms, as the semi-structured interview required knowledge of both platforms in order to observe participants' habits.

  You can find the screening survey in the Appendix of this report. The data collected from it is discussed in the Research Findings.

- **Semi-Structured Interview**

  After completion of the screening survey, potential participants were identified and a time for a semi-structured interview to take place was scheduled. Because of the ongoing COVID-19 pandemic as well as distance constraints, participants could either choose to participate in the interview over a Zoom meeting or in person. Interviews were conducted in a 1-on-1 session. Participants were recorded in order to create thorough observation notes and a transcript for each interview. The interview contained multiple parts to collect relevant information and data for the study in order to answer the research questions. A script was created for the interview, as well as questions for both the "Build Rapport" section and the "Video Elicitation, Think Aloud, and Observation" sections.

  The main goals of the semi-structured interviews were to collect information about participants' habits on TikTok and Instagram Reels AND to test the effectiveness of various misinformation countermeasures on both the platforms.

- **Semi-Structured Interview Procedure**

The interview was broken up into multiple parts:

I.   Introduction

II.   Build Rapport

III.   Video Elicitation, Think Aloud, and Observation

IV.   In-Test Questions (Credibility and Sharing Questions, Information Seeking Questions)

V.   Post-Session Questions

VI.   Closing Comments & Conclusion

You can find the complete interview protocol, interview questions, and the user interview notes in the Appendix of this report. The data collected from the interview process is discussed in the Research Findings.

- **Video Elicitation**

  2 videos were chosen to test across both TikTok and Instagram Reels as they were flagged for misinformation using various countermeasures that represented both platforms' approaches to handling misinformation spread. Both videos were chosen surrounding the topic of COVID-19, as misinformation about this topic is current and prevalent on both platforms. Participants were shown the "Vaccine Microchip" video on both Instagram Reels and TikTok. They were shown the "Military Vaccine Court Martial" video on Instagram Reels and a prototype version of TikTok created for the study that tested potential changes that could be introduced on TikTok that Instagram already uses. The prototype was created using Marvel (https://marvelapp.com). The videos were shown using dummy accounts on each platform created for the study. The videos were also shown in a random order to each participant.

- **U.S Military Court Marshalling Over COVID-19 Vaccines**

Misinformation Countermeasures:

Instagram Video Block, Instagram Warning Label, Instagram Pop-Up Share Warning, TikTok Warning Label, TikTok Pop-Up Share Warning

Instagram Reels:
https://www.instagram.com/tv/CTklcLYJV1W/?utm_source=ig_embed&ig_rid=bca892c2-8fde-4605-a28e-a3792fc1e205

"TikTok" Marvel Prototype:
https://marvelapp.com/prototype/784eifa/screen/82604608

- **COVID-19 Vaccine Microchip**

Misinformation Countermeasures:

Instagram Warning Label, Instagram Pop-Up Share Warning, TikTok COVID-19 Warning Label

Instagram Reels:
https://www.instagram.com/reel/CQrVzNTAFuP/?utm_medium=copy_link

TikTok:

https://www.tiktok.com/@jasmine_0708/video/6974140084870237445?sender_device=pc&sender_web_id=7008162355369543174&is_from_webapp=v1&is_copy_url=0

- **Think Aloud & Observation**

  For Stage III of the interview, participants were asked to watch the aforementioned videos. As they were watching them and clicking through the interface, they were asked to think aloud by explaining each action they took and why they took it. They were also asked to state what thoughts were going through their head as they watched the video. Participants were recorded as they interacted with the videos, and their screen was recorded as well. Notes were taken while observing the participants and further questions were asked as part of the interview in order to fill in any information that was not gleaned from the observation period. Additionally, if a participant took an action that fell outside the lines of questioning, impromptu questions were asked by the observer to understand the action.

  You can find the observation notes in the Appendix of this report. The data collected from them is discussed in the Research Findings.
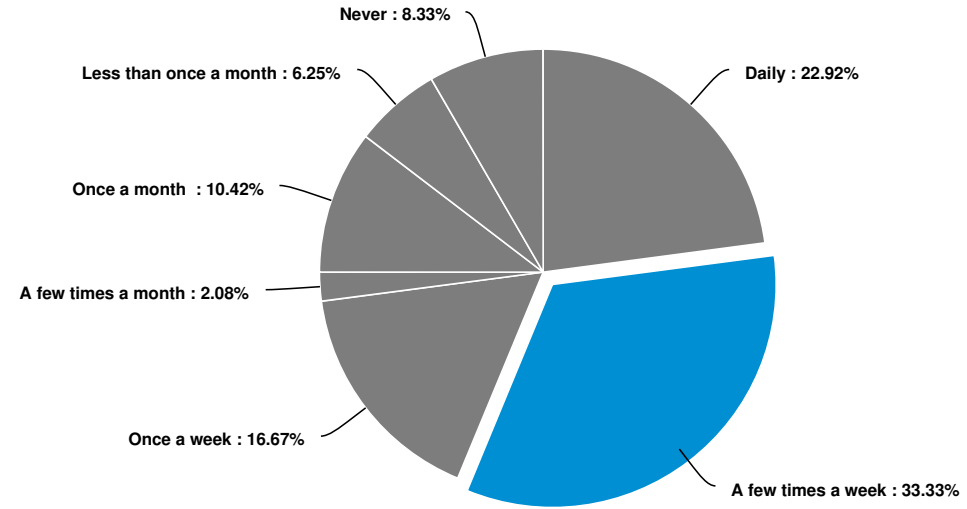
Research Findings

Research Findings

- **Sample & Demographics**

  The study had 48 total respondents to the screening survey. As a researcher, I personally had 4 respondents. Of the 4, 2 made it through the screening survey as potential candidates to interview. They were identified as potential participants because of their use of the short video platforms Instagram Reels and TikTok. If a respondent did not regularly use these two platforms, they were dismissed from the study.

How frequently do you consume news on short video sharing apps/websites?

Never : 8.33%

Less than once a month : 6.25%

Daily : 22.92%

Once a month : 10.42%

A few times a month : 2.08%

Once a week : 16.67%

A few times a week : 33.33%

Answer	Count	Percent	20%	40%	60%	80%	100%
Daily	11	22.92%					
A few times a week	16	33.33%					
Once a week	8	16.67%					
A few times a month	1	2.08%					
Once a month	5	10.42%					
Less than once a month	3	6.25%					
Never	4	8.33%					
Total	48	100%					

How often do you come across news stories on Tiktok or Instagram Reels that have been debunked by the platform?

Never : 12.50%

Often : 25.00%

Hardly ever : 33.33%
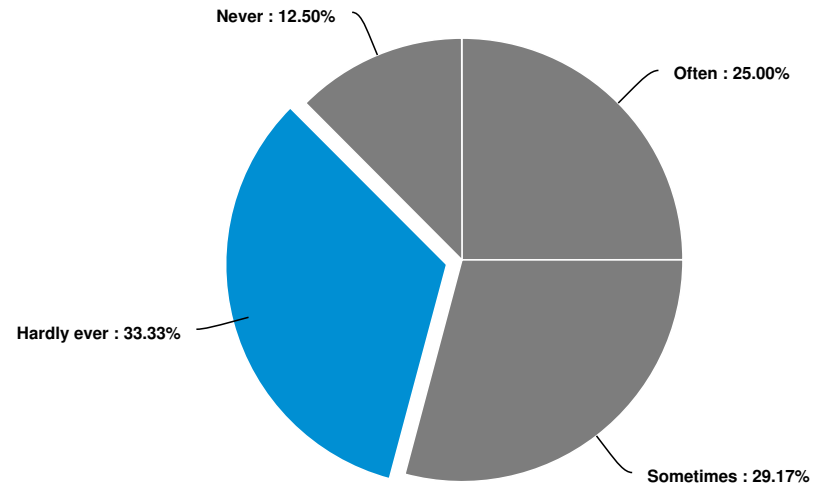
Sometimes : 29.17%

Answer	Count	Percent	20%	40%	60%	80%	100%
Often	12	25%					
Sometimes	14	29.17%					
Hardly ever	16	33.33%					
Never	6	12.5%					
Total	48	100%					

- **Data Collected**
  I. Platform usage information and initial attitudes towards misinformation/fact-checking in Stage 2: Build Rapport to understand user habits .

  II. Observation and question responses in Stage 3 to see participants' usage pathways and interaction with misinformation countermeasures.

  III. Question responses in Stage 4 to understand participants' credibility assessments, opinions towards misinformation countermeasures, and any other information not gleaned from Stage 3.

  IV. Participant responses in Stage 5 to gain opinions on most/least effective countermeasures overall and potential ideas for improvements to countermeasures, as well as identifying whether participants' attitudes changed at all over the course of the study.

- **Data Analysis Procedure**

  Data was analyzed using multiple methods as part of the study. All of the screening surveys were created using QuestionPro, which creates charts and infographics using the aggregated response data. The semi-structured interviews were recorded as part of the methods of the study, and transcripts were generated as part of data analysis. Participants' media habits were organized into a case table in order to compare the information to the participants' responses regarding the video elicitation. Both the transcripts and interview notes containing observations and participant responses analyzed via thematic analysis. They were loaded into the software NVivo and coded using various themes, which you can find later in the report. Each coded theme was analyzed individually for potential insights, which were then collated and summarized as part of the final findings of the study.

- **Research Findings**

  There are a few important themes that came from the data when considering future design recommendations. It is important to note that both participants preferred countermeasures that stopped the user before they could continue with various features. It is also important to note that participants relied on a video's comments, their own prior knowledge of events, and the videos' contents to make credibility judgements more often than the countermeasures present on both platforms, which were often ignored or not seen at all until prompted. However, both participants had college educations and similar political standings, so this is important to consider when moving forward, as it is difficult to draw accurate conclusions from only two interviews that fit into similar demographics.

Themes & Insights

- **Themes**

  The data was coded by themes using NVivo. The themes reveal insights about participants' usage of TikTok and Instagram Reels and interaction with misinformation countermeasures, as well as organize the data to help answer the research questions.

- **Pathway/Engagement**

  The pathway/engagement category contained any data about how the participants engaged with each task, such as where they navigated, etc. This data was further sorted by each of the four tasks. As mentioned previously, it is of note that one participant navigated to the comments when watching the various videos in order to assist with their credibility assessments. Interestingly, both participants looked past the majority of the countermeasures on both platforms unless they were prompted to click on them to continue or prompted to investigate them by the researcher. Participants cited reasons such as normally ignoring flagged content or ignoring COVID-19 "Learn More" tags as they are often irrelevant to a video's content. Both participants had also never noticed the Pop-Up on Instagram that blocks users from sharing flagged content, as they had not previously attempted to do so.

- **Credibility Judgement**

  Credibility judgement was divided into fact-checking of the message and content itself, and heuristic cues. Both participants made accurate credibility judgements when considering the various videos' contents but used multiple methods to reach that conclusion inside and outside the interface itself. Participants often cited video quality, the lack of explanation of the content, the subjects in the video, and the nature of the content as reasons for making credibility assessments. Participants varied in heuristic cues, with one participant navigating to the comments section to see what other people were saying about the videos to assist their judgement on the content. It is of note that BOTH participants noted that the "See More" Instagram Block "primed" them to already expect that particular video to contain disputed information.

- **User's Motivations to Share News Videos in Social Media**

  This smaller category contained any information about a participant's reasoning for potentially sharing any of the posts from the four tasks/sharing motivation in general. Participants both stated that they would potentially share videos flagged as containing false information for humorous purposes to friends who would also find it comedic but would most likely skip the video. One participant stated that they would not normally share something with friends that is oppositional to their beliefs because their friends would not find it interesting. The same participant also stated they would most likely not share a flagged video to friends because they wouldn't know who their friends would resend it to.

- **Attitudes Towards Fact-Checking Features**

  In this data code, data was sorted by participant's comments on the different methods platforms used to address misinformation on posts. Both participants had different opinions of the most effective countermeasure, with one picking Instagram's Pop-Up Warning Tag when a user tries to share a video and the other picking Instagram's "See More" Block at the start of a video. Both features were identified as the best for similar reasons, like the fact that they require users to stop, read some information, and consider their next course of action. Because of this, these features are harder for users to ignore and would perhaps lead a user to skip past a video with either of these measures. Interestingly, both participants had the same opinions of what feature worked the least. The TikTok Bottom Warning Label was identified by both participants as the least-useful feature, as it did not contain information pertinent to the content in the video and was easily ignored through its placement on the screen as well as the participants' general habits. Participants suggested differentiating the tag from the rest of the UI regarding position and color, as well as putting more useful content relevant to the video itself as potential improvements to this countermeasure. Overall, the participants had more positive comments when it came to discussing Instagram's countermeasures than TikTok's countermeasures.

- **Factors of Behaviors and Attitudes Affecting Belief Correction**

  This data category concerned any background information that revealed how a participant's beliefs were created/affected. This category was the smallest of the codes created to sort data, and only contained information revealed during one participant's interview, in which they noted that they were a researcher for the Air Force, which allowed them more extensive background knowledge around fact checking and the content of the U.S. Military Court Martial video. This information is important, as it reveals that this particular participant was able to have prior knowledge of the credibility of a video's content that the other participant would not have had.
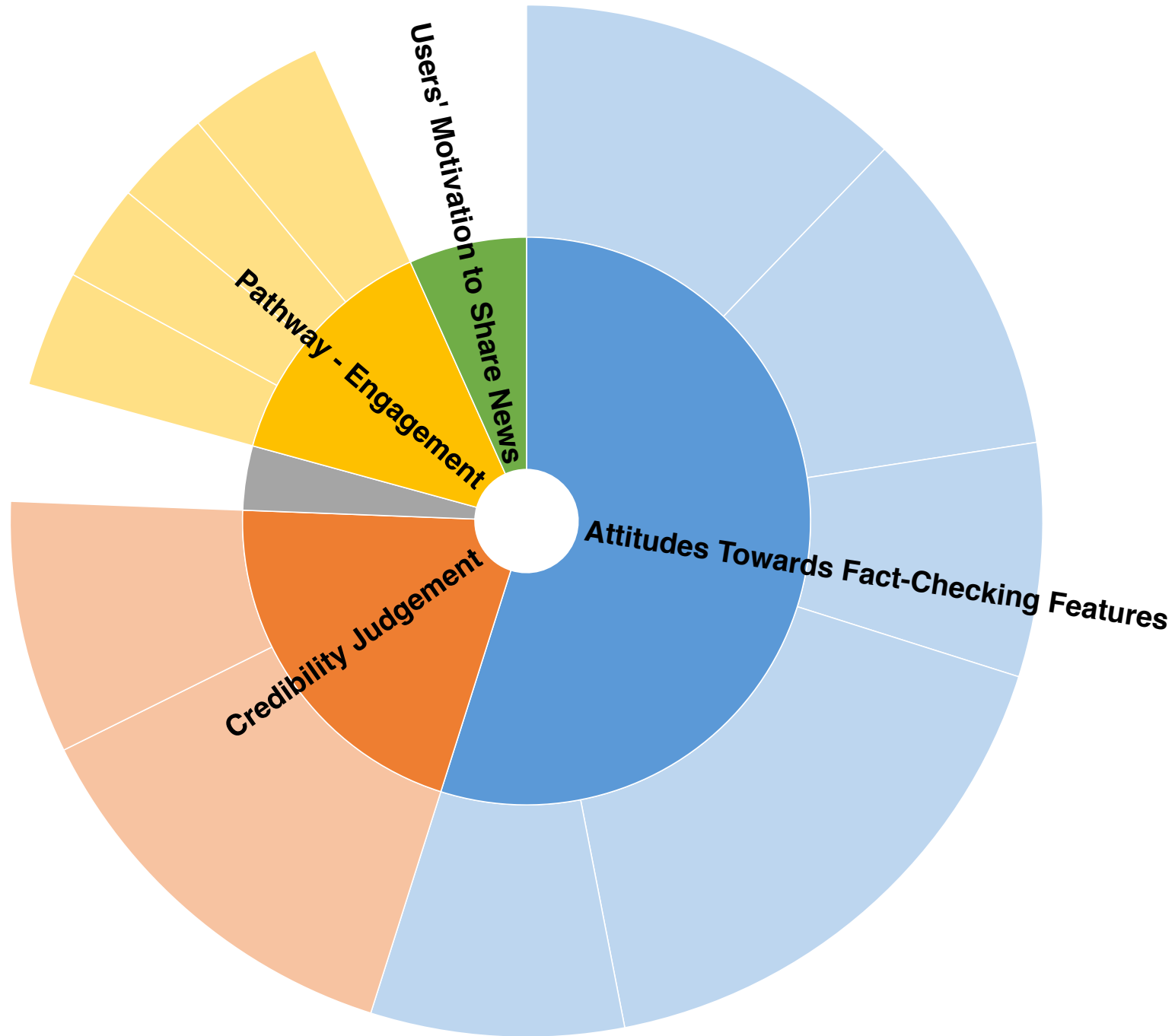
Participant 1

- "Well, it would kind of depend on the comments, if the comments were making fun of the video, there's a possibility I'd send it to my friends with the caption 'look at the comments.' But if the comments weren't agreeing with me, then I don't think there'd be any point in sending it to my friends because I would just think it was a dumb video and scroll past."

- "I think the Instagram one that made you stop before and then had the fact checker tags with all the different sources that were supposed to be unbiased was the most useful to me."

Participant 2

- "I mean, if you see something flagged for misinformation, I almost always disregard it, unless it's something sensational that I've been sent as, like, you know, some sort of humorous thing."

- "Um, interestingly enough, there wasn't like a whole lot of text. I usually honestly ignore the block of hashtags. It's just kind of not useful information to me. Same with the likes and shares and all those numbers and stuff. So I just went straight to the content of the video."

NVivo Hierarchy Chart

Users' Motivation to Share News

Pathway - Engagement

Credibility Judgement

Attitudes Towards Fact-Checking Features

Credibility Judgement Responses

This subsection of the previous data visualization shows the proportion of responses participants had pertaining to making credibility judgements based on the message and its content versus using heuristic cues to make credibility judgements.
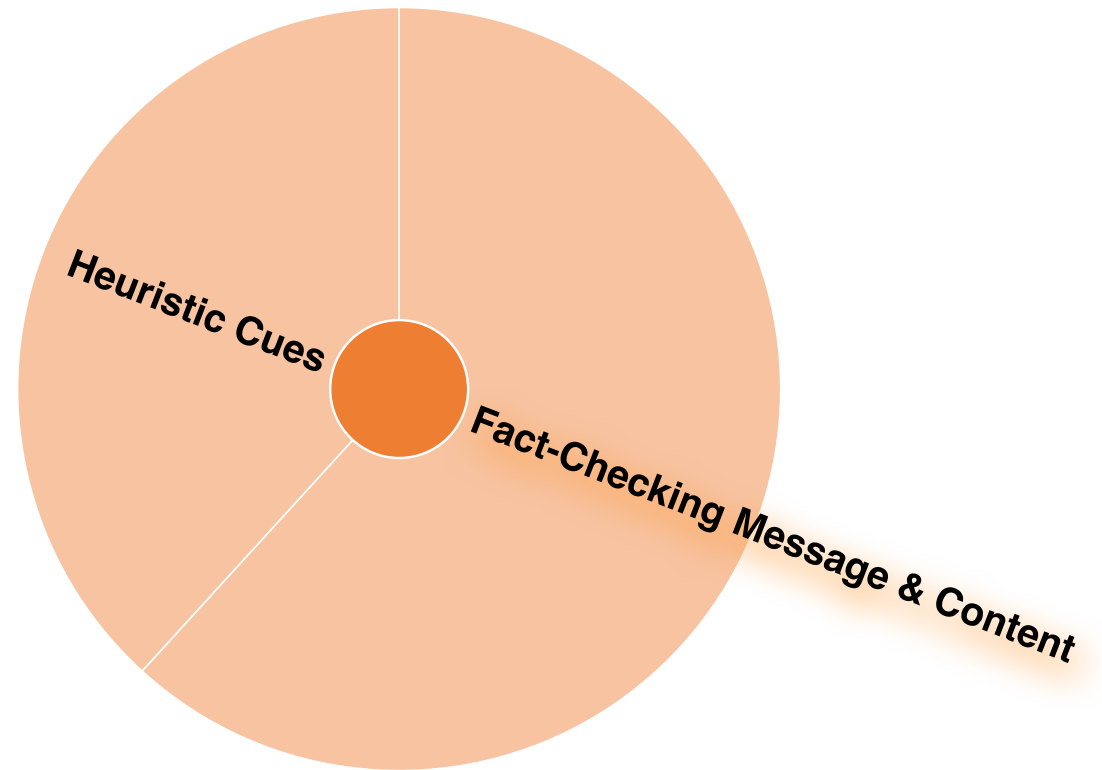
User Journey Map/User Experience Map

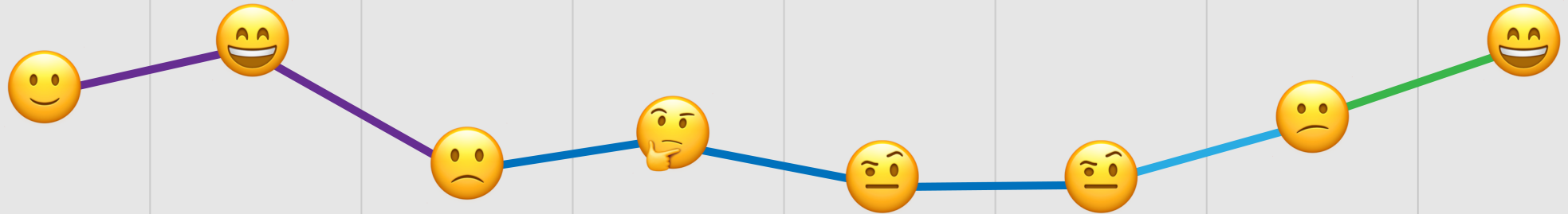| Stage of Journey	App Start and Usual Activities		Encounters Misinformation Countermeasures			Credibility Assessment		Return to Usual Activities
Activities	Opens app to watch videos	Scrolls through feed and watches videos	Comes across video flagged with Fake Information block	Clicks "See Why" and reads information	Watches video to see content	Navigates to content and sees people disagree with video's content	User makes credibility assessment as false	User scrolls past to next video
Feelings and Needs	User looking for entertainment	Entertained, relaxed	Annoyed, cautious	Curious	Curious	Cautious, curious	Validated, confident	Entertained, forgets about previous content
Potential Opportunities for Improvement	- User doesn't have chance to see sharing pop-up warning - False Information block forces them to stop and think - Credibility assessment influenced by user comments - Feed should avoid recommending flagged content							

Discussion

Discussion

- **Significance of Results**
  The results of the study are significant because they show that users rely on their own judgement, as well as heuristic cues such as other users' comments and prior knowledge of events, in determining the credibility of short-form videos on platforms such as Instagram Reels and TikTok. Users notice misinformation countermeasures when they are prominent on the screen, but both participants in the study had not seen the pop-up share warning before or clicked on other banners to read more in-depth information about flagged content. Both participants claimed that they often ignore a video immediately upon seeing that it is flagged for misinformation or if they disagree with it. It is also important to note that a participant claimed they often ignore the COVID-19 tag on posts because many posts on both platforms are flagged if COVID-19 is mentioned at all in a video. This leads to the conclusion that misinformation countermeasures that are placed in areas users rarely navigate are not where attention should be focused by platforms, and instead more tags like Instagram's "See Why" block (identified as the most effective countermeasure in the study) should be implemented across BOTH platforms. If this implementation were to occur, users would be more likely to skip over flagged content, limiting their consumption of misinformation.

- **Limitations of the Study**

  Due to the constraints of the study as part of the class, multiple limitations have occurred in the study that effect the credibility and validity of the data.

  I.   Time constraints limited the scale of the study and the number of participants that could be interviewed. To draw more accurate conclusions, more participants should be recruited in future studies.

  II.   Lack of diversity in participants, both participants were white, college educated, and leaned Democratic. Ideally, participants from multiple ideological standpoints, backgrounds, and levels of education are recruited to get unbiased results.

  III. The first interview conducted had hiccups due to it being the first time the study was conducted, as well as being conducted through Zoom. Ideally, this interview is replaced with another, better conducted interview.

Conclusion

Conclusion

- **Summary of Study**

  Despite the need for future research and adjustments due to this study's limitations, it is an important start to consider when evaluating the effectiveness of misinformation countermeasures on Instagram Reels and TikTok. While a wider, more diverse audience needs to be interviewed, the methods and research questions of this study are important and led to the following key takeaways.

- **Key Takeaways**

  I. Content blocking strategies like Instagram's "See Why" block that forces users to stop, consider their options, then click through to a video's content are the most effective and most preferred by users.

  II. While the pop-up share warnings on both platforms are effective and identified as useful, they are rarely seen by users.

  III. COVID-19 banners are often disregarded by user because of their unreliability in accurately detecting false information, as well as their prominence on the screen on both platforms.

  IV. Users use heuristic cues and background information more often than misinformation countermeasures to make credibility assessments.
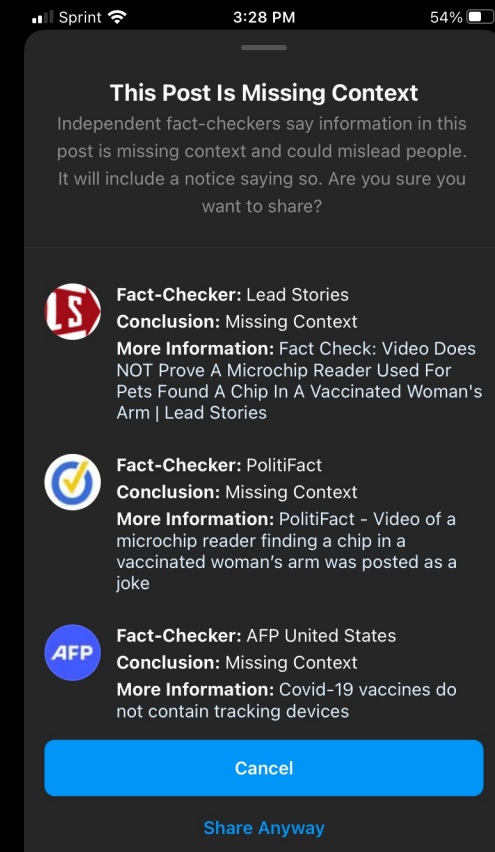
Design Recommendations
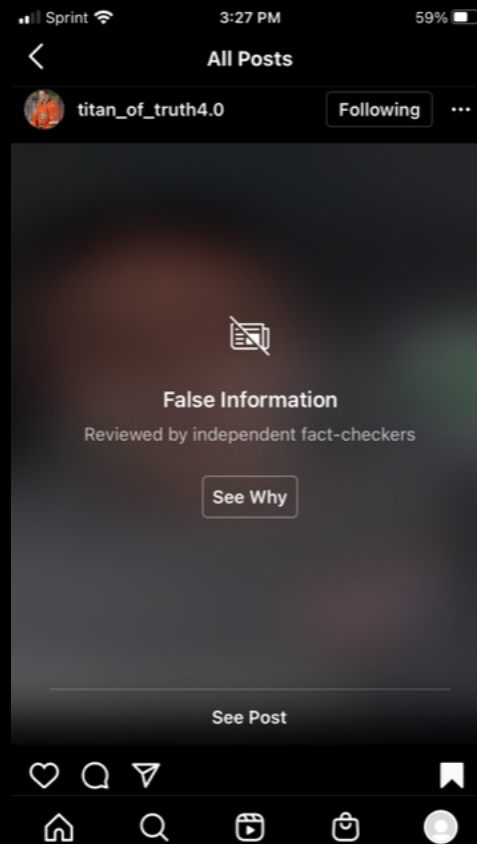
Instagram's False Information block is the most effective, and other countermeasures should be adapted to match it.
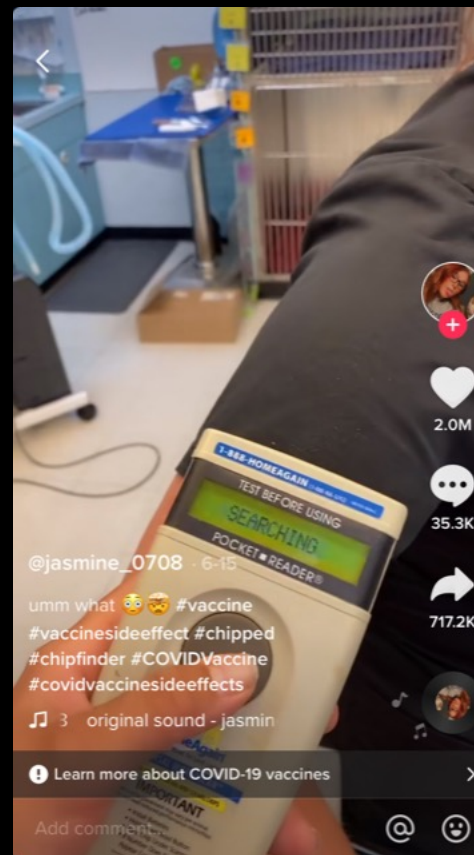
COVID-19 flags are the least effective. They should be modified to be more visible with better positioning and different text color.

Pop-Up share warnings are good, but rarely seen. They should be adapted to blocks BEFORE posts like the Instagram False Information Block.

- **Direction for Future Research**

  Before further research is conducted, it is important that the limitations of this study are addressed. The study should be adjusted to account for these limitations, and further data should be collected in order to get a wider range of participants and feedback regarding misinformation countermeasures on the short-form video platforms Instagram Reels and TikTok.

  Further research should also be conducted once the adjusted study is complete that tests potential new misinformation countermeasures with designs informed by study results.

  An important takeaway from this study was that participants make credibility judgements based on heuristic cues and prior background knowledge as well, so it would be useful to conduct a study in addition to this one that focuses on how users make credibility judgements when it comes to videos on social media regardless of misinformation countermeasures.

References

Clayton, K., Blair, S., Busam, J.A. *et al.* Real Solutions for Fake News? Measuring the Effectiveness of General Warnings and Fact-Check Tags in Reducing Belief in False Stories on Social Media. *Polit Behav 42*, 1073–1095 (2020). https://doi.org/10.1007/s11109-019-09533-0

Shen, C., Kasra, M., Pan, W., Bassett, G. A., Malloch, Y., & O'Brien, J. F. (2019). Fake images: The effects of source, intermediary, and digital media literacy on contextual assessment of image credibility online. *New Media & Society, 21*(2), 438–463. https://doi.org/10.1177/1461444818799526

Petit, J., Li, C., Millet, B., Ali, K., & Sun, R. (2021). Can We Stop the Spread of False Information on Vaccination? How Online Comments on Vaccination News Affect Readers' Credibility Assessments and Sharing Behaviors. *Science Communication, 43*(4), 407–434. https://doi.org/10.1177/10755470211009887

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Time To Awake. (@timetoawake). (2021, June 28). *Thoughts ok this? Home again chip reader The device can read a wide range of technologies: FDX-B ISO, HDX ISO...* [Video]. Instagram. https://www.instagram.com/reel/CQrVzNTAFuP/?utm_medium=copy_link

Jasmine. (@jasmine_0708). (2021, June 15). *umm what* [flushed face emoji][exploding head emoji] *#vaccine #vaccinesideeffect #chipped #chipfinder #covidvaccine #covidvaccinesideeffects* [Video]. TikTok. https://www.tiktok.com/@jasmine_0708/video/6974140084870237445?sender_device=pc&sender_web_id=7008162355369543174&is_from_webapp=v1&is_copy_url=0

Appendix

Appendix Documents are attached in the included file. The file names corresponding with each item are included in parenthesis.

- Screening Survey: https://smad327screenersurvey.questionpro.com

- Screening Survey Data (screening-survey-data.pdf)

- Interview Protocol (interview-protocol.pdf)

- User Interview & Observation Notes (data-collection-1.pdf, data-collection-2.pdf)

- Data Analysis Report (data-analysis-report.pdf)

- NVivo Codebook (data-analysis.nvpx)