

Countering the Ripple Effects: Strategies for Decoding and Disrupting Emotional Triggers in Online Rumor Trust

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Abstract—This study investigates how emotional factors influence the message believability of online fake news, focusing on the individual and interaction effects of emotional arousal, valence, and social contagion. Grounded in the “Feelings-as-Information” theory, the research explores how emotions serve as heuristic cues that shape cognitive evaluations and processes. The study examines how varying emotional conditions affect message believability through an experimental design simulating fake message dissemination. The findings aim to provide insights into the role of emotions in driving misinformation and offer strategies to mitigate its spread. Additionally, the outcomes will inform media literacy efforts and guide social media platform policies to better address the challenges posed by emotionally driven misinformation.

Keywords: *arousal cues; emotional valence; social contagion; message believability; fake news dissemination.*

I. INTRODUCTION

Online fake news has become a significant concern, worsened by the rise of social media platforms [1]. False messages on these platforms disrupt public understanding and influence societal decisions. Accurate information is essential for informed behavior and positive social outcomes, but the fast spread of false information makes this difficult. Studies show misleading content spreads faster and broader than verified facts [2]. This is troubling, as unverified claims and rumors hinder effective online communication. The absence of strict fact-checking and editorial oversight further fuels the spread of misinformation [3]. Despite ongoing efforts, online false messages remain a challenge to clear and accurate communication.

Emotion significantly influences how information is evaluated and shared online. Social media often reflects emotional reactions to life events [4]. Messages that trigger strong emotions like fear, disgust, or surprise are more likely to be shared, as these emotions capture attention and promote distribution [5]. This is especially true for fake news or rumors, often using exaggerated language and vivid imagery to manipulate emotions [6]. During the COVID-19 pandemic, emotionally charged messages significantly increased the spread of misinformation, confusing the public [7]. This raises an important question: How do emotional expressions affect the message’s believability and dissemination? This

points to the need for further research on how emotional factors shape the evaluations on social platforms.

Emotional expressions are essential in information evaluation, but research findings are mixed. Some studies show positive effects, while others suggest the opposite. For instance, Yin, Bond, and Zhang (2017) [8] found that online reviews with low arousal levels were perceived as more helpful. In contrast, Ye and Motoki (2024) [9] observed that high-arousal messages are more effective in the USA, while low-arousal ones are preferred in Japan, particularly in discussions about healthy food. These differences highlight the complexity of emotional dynamics in evaluating information. However, these studies focus primarily on factual content, leaving a gap in understanding how emotional expressions affect the believability of online fake news and sharing behavior.

This study explores how emotional arousal cues, valence, and social contagion in online fake news impact perceived message believability. Analyzing these emotional dimensions together seeks to uncover their individual and combined effects. The research is based on the Feelings-as-Information Theory, which suggests that emotions act as mental shortcuts influencing cognitive evaluations. This framework is well-suited for investigating how arousal cues shape the believability of online fake news, especially when moderated by the emotional valence and social contagion within the messages.

The rest of this paper is organized as follows. Section II describes the literature review and hypothesis development. Section III addresses the planned research method. Section IV goes into the expected contributions of this study.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

A. Feelings-as-Information Theory

The Feelings-as-Information Theory, introduced by Schwarz and Clore (1983) [10] and later expanded by Schwarz (2012) [11], posits that emotions act as informational cues that shape judgments and decisions. Emotions function as heuristics, enabling individuals to interpret complex information efficiently by offering quick, often subconscious, feedback on the relevance and significance of stimuli. Research supports this framework, demonstrating that people rely on emotions to assess events

[10]. Forgas (1995) [12] found that emotions influence tasks like memory recall and risk assessment, while Watson and Spence (2007) [13] explored how emotions affect consumer behavior. Anninou (2018) [14] further explained how different emotional appraisals impact decision-making. This theory is crucial for understanding how emotional expressions influence the perceived believability of online rumors, particularly on social platforms. Since users frequently engage with emotional content, the theory offers insight into how arousal, valence, and social contagion shape message believability and behavior intentions. It also provides a foundation for designing social media algorithms to enhance credible information dissemination and mitigate rumor spread.

B. Hypothesis development

Emotional arousal plays a crucial role in how people evaluate and engage with online information. Research shows that emotionally charged content is better remembered [15], more trusted [16], and spreads faster on social media [5]. The Feelings-as-Information Theory [11] suggests that heightened emotional engagement increases the significance and believability of messages. In contrast, the absence of arousal cues lowers emotional intensity, reducing cognitive engagement and the likelihood of accepting and sharing the message. This indicates that strategies aimed at reducing emotional arousal in online content could lower the perceived believability of fake news. Thus, hypothesis 1 is stated as follows:

Hypothesis 1: The absence of emotional arousal cues in online fake messages will lower their perceived message believability compared to messages containing such cues.

Emotional valence refers to the positive or negative dimension of the emotion conveyed in messages. Positive emotions generally enhance trust and acceptance of the message, while negative emotions can induce skepticism and critical evaluation [17, 18]. Additionally, Lerner and Keltner (2000) [19] demonstrated that positive emotions increase heuristic processing and trust, making individuals more receptive to the message content, while negative emotions foster more systematic and critical processing. When people encounter positive valence messages, they tend to lower their cognitive defenses, which can create a favorable cognitive bias, leading them to view the message as more credible.

Based on these findings, this study proposes that positive emotions are associated with increased trust and acceptance, thereby enhancing the perceived message believability of online rumors. Conversely, negative emotions can induce skepticism and critical evaluation, reducing the perceived message believability of these rumors. When individuals experience negative emotions, they are more likely to engage in systematic and analytical thinking, which helps them scrutinize the content more closely and identify potential inconsistencies or falsehoods. This critical evaluation process is essential for recognizing online rumors, as it promotes a more cautious and discerning approach to

information processing. Therefore, we hypothesize that online rumors presented with negative emotional valence will be perceived as less believable compared to those offered with positive emotional valence. Thus, Hypothesis 2 is stated as follows:

Hypothesis 2: Online fake messages with negative emotional valence will be perceived as less believable than those with positive emotional valence.

Although emotional arousal cues influence information evaluation, emotional valence may shape its effect. Research shows that arousal combined with positive valence enhances satisfaction and approach behaviors, while arousal with negative valence promotes skepticism and avoidance [20, 21]. Positive experiences with high arousal are more memorable and believable, enhancing message impact [22]. Thus, emotional valence may moderate the effect of arousal cues on the believability of online rumors. Arousal with positive valence boosts favorable evaluations, while arousal with negative valence fosters analytical thinking, helping individuals detect misinformation.

Consequently, this heightened scrutiny can reduce the likelihood of misinformation being accepted as accurate. Hence, the impact of emotional arousal cues on the perceived message believability is moderated by emotional valence. We proposed the hypothesis 3 as follows:

Hypothesis 3: Arousal cues have a weaker effect on message believability under the negative valence conditions than under the positive valence conditions.

Emotional contagion refers to the spread of emotions from one person to another, amplifying social validation and making messages seem more credible through shared emotions [23]. It occurs in both face-to-face interactions and online communication, such as social media [4]. Emotional contagion theory explains how emotions transfer among individuals, influencing group behaviors and beliefs, especially in social media settings. Social cognitive theory further suggests that observing emotional expressions can shape one's emotions and behaviors through observational learning [24]. Research shows that emotional contagion enhances conformity, promoting message acceptance and credibility [25]. Shared emotions foster perceived consensus and social validation, reinforcing belief in the message's validity [24]. Individuals who are more susceptible to emotional contagion tend to mimic others' expressions, strengthening emotional responses and credibility perceptions. However, minimizing emotional contagion can help curb the spread of misinformation, as increased social attention makes fake news harder to control. Thus, Hypothesis 4 is stated as follows:

Hypothesis 4: Fake news containing emotional contagion cues will be perceived as more believable compared to fake news without such cues.

Emotional arousal shapes how people evaluate information, and emotional contagion can amplify this effect. Emotional contagion reinforces heightened emotional states caused by arousal, increasing the perceived credibility of information within a community [5]. Research shows that collective emotions on social media influence public opinion and behavior, enhancing the believability of emotionally charged messages [26]. When content aligns with the audience's feelings, it is more likely to be shared and trusted [27]. Hatfield, Cacioppo, and Rapson (1993) [23] found that emotional contagion amplifies individual emotions, strengthening collective responses and boosting message credibility. This feedback loop intensifies arousal, making messages more compelling and memorable. However, reducing arousal and contagion cues can help curb the spread of misinformation by limiting emotional resonance. Online rumors and fake news gain intensity through social attention and the effects of emotional contagion. This heightened emotional arousal exacerbates their dramatization, making the spread of such misinformation increasingly challenging to control. Therefore, this study suggests that the impact of emotional arousal cues on perceived message believability is less when emotional contagion cues are absent. Thus, Hypothesis 5 is stated as follows:

Hypothesis 5: The impact of arousal cues on perceived message believability is reduced in the absence of emotional contagion cues compared to when such cues are present.

Drawing from the Feelings-as-Information Theory and previous literature, the degree to which individuals trust the information plays a critical role in shaping their actions, such as whether they share it on social platforms. When a message is recognized as unreliable or dubious, individuals are less motivated to share it to avoid spreading misinformation or protect their reputation within their online communities. On the other hand, when a message is perceived as more believable, users feel validated and socially responsible, which can encourage sharing and disseminating what they believe is accurate information. This highlights the importance of message credibility in driving engagement and contributes to understanding how misinformation spreads online. Thus, Hypothesis 6 is stated as follows:

Hypothesis 6: The lower the perceived message believability, the lower the behavioral intention to share the message on social media.

III. RESEARCH METHOD

A. Task 1: Preparation and Design of Experimental Materials

- Collection of Online Fake News:

The objective is to gather a comprehensive list of significant domestic and international online rumors from 2024. The selection criteria for these rumors will include factors such as the number of shares, mentions, and public impacts. This will involve monitoring popular social media

platforms, news websites, and fact-checking organizations. Additionally, a survey will be conducted with approximately 3-40 online readers to assess their awareness and familiarity with these rumors. Based on the survey results, the most recognized and impactful rumors will be selected for the experimental design.

- Selection of Online Platforms:

The objective is to identify the most popular online platforms for spreading and encountering online rumors. A preliminary survey will be conducted to determine current platform preferences among a representative sample of internet users (e.g., Facebook, Twitter, Instagram, Reddit, Line, WeChat, etc.). The platforms with the highest usage and relevance will then be selected to host the experiment design.

- Pre-testing of Multiple Independent Variables:

The objective is to ensure a clear definition and effective manipulation of independent variables for the experiment. Pre-tests will be conducted to distinguish between the presence and absence of arousal cues, the presentation of positive versus negative emotional valence, and with versus without social contagion cues. Feedback from these pre-tests will refine the experimental materials and ensure that participants can effectively recognize and respond to the different conditions.

- Collection and Development of Measurement Items:

The objective is to create reliable and valid measurement items for assessing the impact of emotional dimensions on message believability. Existing measurement items from relevant literature will be adapted, focusing particularly on emotional responses and perceived believability. All items will be rated on a 7-point Likert scale. A pre-test involving experts in human-computer interactions and electronic commerce will be conducted to validate these measurement items.

The measurements of perceived message believability are adopted from Appelman and Sundar (2016) [28]. Participants were asked: "To what extent do you agree that the content you just read is accurate?", "To what extent do you agree that the content you just read is authentic?", "To what extent do you believe the content you just read is believable?". In order to measure the participants' behavior intention, we will adopt a 3-item scale derived from Lee and Ma (2012) [29]. Participants indicated whether they agree "I intend to share the information on social media," "I expect to share the information on social media," and "I plan to share the information. The questionnaires will be revised based on expert feedback and translation checks to enhance reliability and validity.

B. Task 2: Examine the Causal Effects of Message Believability

- Experimental Setup:

The second task is to examine the causal effects of message believability. We will conduct a between-subject design with a 2 (arousal cues: present vs. absent) x 2 (emotional valence: positive vs. negative) x 2 (emotional contagion cues: with vs. without) factorial design. This setup

will create eight different experimental conditions to investigate the main and interaction effects of these emotional dimensions on the perceived believability of online rumors.

- Participants:

We will start by posting announcements and advertisements in university group chats and forums to recruit participants. The subjects should be representative of e-commerce users because the largest population of online users is 20 to 40 years old. Interested participants will register for the experiment by signing up through a designated online registration form. Before the experiment, participants will be asked to confirm their attendance and receive reminder emails about their scheduled session.

We will recruit 320-350 subjects to participate in the experiment. To ensure that the sample is representative of the broader online population, we will strive for demographic diversity in terms of age, gender, education level, and internet usage habits. Participants will be randomly assigned to one of the eight experimental conditions.

- The Procedure of Online Experiment

Pre-experimental Briefing: Participants will receive an email or notification with detailed instructions about the study. The briefing will include an introduction to the study's purpose and the task they will be performing. Participants will be informed that they will be evaluating different online messages to understand their perceived message believability. They will also be notified that their participation is voluntary and that their responses will be kept confidential.

Experiment: Participants will be assigned to one of the eight experimental conditions in a randomized manner. They will be instructed to carefully browse the online messages presented to them, which have been tailored according to their assigned condition (varying by emotional arousal cues, emotional valence, and social contagion cues). After browsing, participants will complete an online questionnaire designed to measure their emotional responses and perceived believability of the messages and behavior intention.

Debriefing: Upon completing the questionnaire, participants will receive a debriefing message explaining the true purpose of the study and emphasizing the importance of critically evaluating online information. They will be instructed not to discuss the experiment with others to maintain the integrity of the study. Participants will be thanked for their participation and provided with a digital participation gift or the chance to enter a raffle for a prize.

- Data Analysis:

Before analyzing the data, we will first check the quality of the questionnaire responses. This involves identifying and excluding invalid responses, such as those with excessively short or long completion times, incomplete answers, or answers that show a lack of attention or bias. After ensuring the data quality by filtering out these invalid responses, we will proceed with the statistical analysis. ANOVA will be used to examine manipulation checks, as well as the main effects and interaction effects of arousal cues, emotional valence, and emotional contagion cues on perceived believability. Additionally, moderation analyses will investigate the role of emotional valence and contagion cues

in moderating the relationship between arousal cues and perceived believability. To assess the reliability of the dependent variable, message believability, we will calculate Cronbach's alpha to ensure the internal consistency of the measurement items. By conducting these analyses, we aim to understand how different emotional factors influence the believability of online messages, providing insights that can inform strategies to counteract the spread of misinformation.

IV. CONCLUSION

This study aims to contribute to the understanding of how emotional factors influence the believability and spread of online rumors. By examining emotional arousal, valence, and contagion simultaneously, it provides insights into their individual and combined effects. The findings will enhance knowledge of how emotions shape cognitive evaluations and drive misinformation. Additionally, the study offers practical implications for designing strategies to mitigate the spread of fake news by identifying key emotional triggers that affect believability. This research will inform future efforts in media literacy and platform policies to better address the challenges posed by emotionally driven misinformation.

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