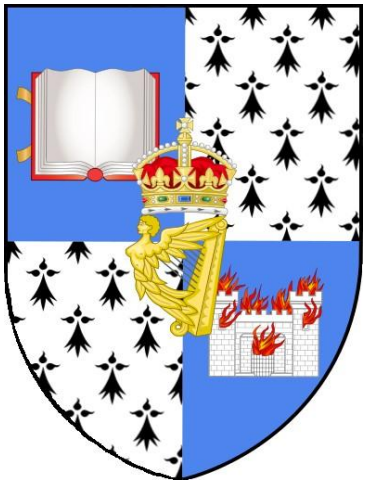
Essays on Information Consumption and Dissemination on Digital Social Platforms

By

Venu Bhaskar Puthineedi

Supervised by

Dr Ashish Kumar Jha



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Essays on Information Consumption and Dissemination on Digital Social Platforms

Chapter 1: Introduction

1.1 Background and Motivation

Social media has fundamentally reshaped human interaction, revolutionizing the way people communicate, form relationships, and access information. Platforms such as Facebook, Instagram, and X (formerly Twitter) are now an integral part of daily life, influencing not only social interactions but also professional networking, news consumption, and entertainment. This digital transformation has allowed individuals to connect across geographical boundaries, creating virtual communities that facilitate the rapid exchange of ideas and cultural discourse.

The global adoption of social media has reached unprecedented levels. As of 2024, more than 4.9 billion people—over 60% of the world's population—actively use social media. This widespread usage has driven significant changes across various sectors. Businesses now rely on these platforms for digital marketing, customer engagement, and the expansion of influencer economies. Education has also been transformed, with online learning and collaborative projects benefiting from the accessibility of digital platforms. Moreover, social media has played a pivotal role in mobilizing social and political movements, as seen with global campaigns like #MeToo and climate activism, where digital advocacy has influenced public policy and sparked widespread discourse (Ghobadi & Sonenshein, 2024).

Despite its many advantages, the pervasive influence of social media has also given rise to critical challenges. One of the most pressing concerns is the rapid spread of misinformation, which can have dire real-world consequences (Lewandowsky et al., 2012). A stark example occurred during the COVID-19 pandemic when misleading claims about unproven treatments spread rapidly online. As a result, numerous individuals consumed harmful substances, falsely believing these substances could protect them from the virus. This tragic outcome highlights how unchecked false information can pose serious risks to public health.

In addition to misinformation, social media platforms have contributed to the formation of ideological echo chambers, where users are predominantly exposed to content that aligns with their preexisting beliefs (Kitchens et al., 2020). This effect has had profound implications on political landscapes. During the 2016 U.S. presidential election, social media was used to disseminate targeted political ads and misleading content, influencing voter behavior and contributing to polarization (Guess et al., 2018). By reinforcing biased perspectives and limiting exposure to opposing viewpoints, these digital silos exacerbate societal divisions and reduce opportunities for constructive discourse.

Another growing concern is the psychological impact of prolonged social media use. Algorithms designed to maximize engagement often prioritize sensationalized and emotionally charged content, reinforcing negative biases in users' perceptions of reality. This phenomenon, known as "Mean World Syndrome," can cause individuals to develop heightened fears and anxieties, believing the world to be more hostile or dangerous than it actually is (Gerbner et al., 1986). The constant exposure to curated and often misleading portrayals of events can shape public attitudes, erode trust in institutions, and affect mental well-being.

These challenges—including the dangers of misinformation, the entrenchment of political and ideological divisions, and the psychological consequences of digital consumption—underscore the complexities of social media's role in modern society. Given its profound influence on public health, democracy, and social cohesion, there is an urgent need to investigate how information is consumed and disseminated on these platforms. Understanding these mechanisms is critical to developing strategies that maximize the benefits of social media while mitigating its potential harms, ultimately fostering a more informed and engaged society.

1.2 Research Problem and Gaps

The rapid evolution of digital social platforms has fundamentally transformed how individuals consume and disseminate information. While these platforms have democratized access to information, they have also introduced new complexities that shape public discourse in ways that remain insufficiently understood. Three critical issues warrant deeper investigation: (1) the formation and disruption of echo chambers, (2) the mechanisms underlying initial opinion formation in the absence of prior beliefs, and (3) the role of emotions and multimedia in amplifying engagement and virality in political discourse. These challenges not only influence individual cognition and behavior but also have far-reaching societal implications, necessitating a comprehensive and interdisciplinary approach to their study.

1.2.1 The Formation and Disruption of Echo Chambers

One of the most pressing concerns in digital information ecosystems is the entrenchment of ideological echo chambers—insular online spaces where individuals are repeatedly exposed to belief-confirming content while being shielded from opposing perspectives. These closed environments emerge through a combination of algorithmic curation,

selective exposure, and social reinforcement, leading to a self-perpetuating cycle of information consumption that reinforces existing biases (Cinelli et al., 2021).

Echo chambers pose a significant threat to societal cohesion, as they deepen ideological divides, reduce openness to counterarguments, and foster polarization. Traditional interventions aimed at mitigating these effects—such as fact-checking and algorithmic diversification—have largely proven ineffective, as they often trigger psychological reactance, causing individuals to double down on their preexisting beliefs rather than reconsider them. This raises a fundamental question: *Can cognitive strategies be leveraged to disrupt echo chambers and encourage more critical engagement?* This research suggests that introducing subtle cognitive challenges—termed "cognitive friction"—can prompt individuals to critically engage with opinion-challenging information rather than dismiss it outright.

1.2.2 Initial Opinion Formation in the Absence of Preexisting Beliefs

While much of the research on digital misinformation and polarization focuses on individuals with strongly held beliefs, a crucial yet overlooked phenomenon is the formation of *initial* opinions among users encountering novel information for the first time. Unlike those who engage with content through the lens of preexisting ideological frameworks, individuals without prior knowledge of a subject must rely on cognitive heuristics, social signals, and digital credibility cues to form their first impressions. Understanding this process is vital, as these initial opinions serve as the cognitive foundation for future attitudes and beliefs.

Key questions arise: *What are the primary drivers of initial opinion formation on social media platforms? To what extent do digital identity markers shape users' trust in information sources?* Additionally, how do cognitive overload and exposure to conflicting information affect the stability and evolution of newly formed opinions? Answering these

questions is critical for developing strategies promoting responsible information consumption, particularly in an era of misinformation and digital deception.

1.2.3 The Role of Emotions and Multimedia in Amplifying Engagement and Virality.

Beyond the cognitive and social mechanisms of opinion formation, the emotional dimensions of digital engagement play a pivotal role in shaping online discourse. Social media is not merely an information-sharing space but a highly affective environment where emotionally charged content garners disproportionate attention and engagement. The amplification of outrage, fear, and moral indignation has been shown to drive viral cascades, influencing political mobilization, public sentiment, and even real-world behavior.

This phenomenon is further exacerbated by integrating multimedia elements—images, videos, and memes—that serve as powerful emotional amplifiers. Visual content reduces cognitive effort while simultaneously intensifying emotional responses, making politically charged messages more persuasive and more likely to be shared. Research suggests that emotionally salient content increases engagement and shapes the nature of subsequent discourse as users respond in emotionally congruent ways, reinforcing collective sentiment.

This raises an urgent research question: *How do emotions and multimedia influence virality and engagement in political discourse?* While existing studies have examined the independent effects of sentiment and visual media, there remains a gap in understanding their combined influence within algorithmically mediated environments. Unraveling these dynamics is essential for addressing the unintended consequences of emotionally driven content amplification, including the spread of misinformation, increased political polarization, and the erosion of constructive discourse.

1.3 Research Objectives and Contributions

This thesis aims to address the challenges outlined in the previous section by investigating how information is consumed and disseminated on digital social platforms. It does so through three interrelated studies, each focusing on a distinct but interconnected aspect of digital engagement: (1) echo chambers and cognitive friction, (2) initial opinion formation, and (3) the amplification of emotions and multimedia in political discourse. By examining these issues through empirical analysis and theoretical integration, this research aims to contribute to both academic scholarship and practical solutions toward mitigating the negative consequences of digital information ecosystems.

Each of these studies is presented as a standalone essay in the following structure:

- **Chapter 2: Breaking Echo Chambers: How Political Ideology, Personality, and Cognitive Friction Reshape Engagement.**

  This chapter investigates the mechanisms underlying the formation of echo chambers and explores whether cognitive friction—the introduction of subtle cognitive challenges—can disrupt ideological entrenchment. Drawing on cognitive response theory (Greenwald, 1968), this study examines the effects of exposing users to conflicting viewpoints in a way that induces critical reflection (rather than immediate rejection) can reduce passive engagement and promote epistemic openness. The findings contribute to the broader discussion on algorithmic design, polarization, and digital literacy interventions.

- **Chapter 3: Where the Ball Starts Rolling?: An Empirical Investigation into Initial Opinion Formation on Social Media Platforms.**

  This chapter shifts focus from entrenched belief systems to the early-stage formation of opinions. It explores the cognitive and social mechanisms that drive

how individuals construct initial opinions on social media, particularly in cases where they lack pre-existing knowledge on a topic. The study investigates the point at which opinions stabilize, the role of digital identities in shaping trust, and how early exposure to information influences long-term perspectives. This research offers insights into combating misinformation and fostering more responsible digital engagement by identifying the key factors that govern initial belief formation.

- **Chapter 4: Political discourse on social media platforms.**

  The empirical study examines how emotions and multimedia content interact to shape engagement and virality in political discourse. It focuses on the role of anger, fear, and joy in driving political conversations, analyzing how emotionally charged posts—especially those accompanied by images and videos—gain traction through algorithmic amplification and user-driven engagement loops. This study integrates emotional contagion theory (Hatfield et al., 2014) with the Elaboration Likelihood Model (John & De'Villiers, 2020) to provide a nuanced understanding of how sentiment-laden content spreads across platforms, fuels polarization, and influences political narratives.

Chapter 2: Breaking Echo Chambers: How Political Ideology, Personality, and Cognitive Friction Reshape Engagement

2.1 Abstract

Echo chambers on digital platforms reinforce ideological divisions, limiting exposure to diverse perspectives and entrenching belief systems. Traditional interventions, such as fact-checking and algorithmic diversification, have struggled to effectively break these self-reinforcing cycles. This study introduces cognitive friction as a novel mechanism for disrupting echo chambers by inducing cognitive dissonance, prompting users to critically engage with opinion-challenging information rather than passively consuming belief-reinforcing content. Through a controlled experiment with 286 participants, we examine how political orientation, personality traits, and engagement behaviors influence responses to conflicting viewpoints. Findings reveal that cognitive friction significantly reduces automatic engagement with reinforcing content, shifting users from passive to more critical information consumption. While extroverts and highly engaged users exhibit greater receptivity to diverse perspectives, political ideology remains a dominant

factor in engagement shifts. These results provide theoretical and practical contributions by demonstrating that strategically introducing cognitive friction can weaken echo chambers. Rather than simply increasing exposure to diverse content, targeted cognitive engagement strategies offer a more effective approach to fostering balanced and reflective discourse in digital environments.

Keywords: Echo chambers, cognitive dissonance, cognitive friction, responsible platforms.

2.2 Introduction

In the digital age, the internet was expected to foster open dialogue by providing access to diverse ideas and perspectives. Instead, it has led to an unintended consequence—the rise of echo chambers. Social media algorithms and human tendencies shape these online spaces, leading users to seek familiar viewpoints, reinforce preexisting beliefs, and limit exposure to differing perspectives (Kitchens et al., 2020; Shore et al., 2018). Whether in political debates, public health discussions, or social issues, echo chambers deepen divisions, hindering mutual understanding (Guess et al., 2018; Zhu et al., 2024). The challenge is no longer whether these digital silos exist but how they can be dismantled.

The effects of echo chambers extend beyond online discourse, shaping real-world interactions, elections, and societal divisions (Ray et al., 2024). When individuals are repeatedly exposed to the same ideas, their beliefs become more rigid, making productive discussions difficult (Modgil et al., 2024). Social media platforms, as primary news sources, further amplify these effects by filtering and reinforcing selective information. This polarization not only fosters distrust but also transforms ideological differences into entrenched hostilities (Wakefield & Wakefield, 2023). Addressing these patterns is crucial—not just for digital discourse but for maintaining open dialogue in society.

Efforts to counteract echo chambers have largely focused on altering content exposure, but these approaches have shown limited success. Fact-checking, intended to correct misinformation, often backfires as individuals reject corrections that challenge their beliefs, further entrenching their views.(Lewandowsky et al., 2012). Media literacy programs, while beneficial, require long-term educational efforts and face scalability challenges (Vassilakopoulou & Hustad, 2023). These limitations highlight a crucial gap in echo chamber research—disrupting entrenched consumption patterns requires a deeper understanding of cognitive processing rather than simply adjusting content exposure.

This research shifts the focus from changing what people see to how they process information. In today's digital environment, individuals engage with content passively—scrolling, liking, and sharing with little reflection (Ciriello et al., 2024). This study challenges automatic processing by encouraging users to slow down, reconsider assumptions, and critically engage with opinion-challenging information. Introducing subtle cognitive challenges disrupts habitual patterns of information consumption, making individuals more aware of their biases and less likely to dismiss conflicting viewpoints outright. Rather than reinforcing ideological rigidity, this approach fosters deeper reflection, opening pathways for more balanced discourse.

This study introduces cognitive friction as a novel approach to breaking echo chambers. Cognitive friction involves the deliberate introduction of subtle cognitive challenges that prompt users to engage with opinion-challenging information rather than passively dismiss it. Grounded in cognitive response theory (Greenwald, 1968), this approach suggests that inducing cognitive dissonance can create moments of pause, encouraging individuals to critically reassess conflicting viewpoints. Unlike conventional fact-checking, which merely presents corrective information, cognitive friction stimulates

deeper cognitive elaboration, potentially weakening ideological rigidity and fostering epistemic openness (Festinger, 1962).

This research explores a critical question: Can cognitive friction be leveraged to disrupt echo chambers? By shifting the focus from content exposure to cognitive engagement, this study moves beyond traditional interventions and examines how subtle psychological nudges can reshape digital information consumption. It contributes to existing literature by integrating cognitive and information systems theories, offering a fresh perspective on mitigating social media-induced polarization.

Not everyone responds to information similarly—some engage thoughtfully, while others reject or react defensively (Agarwal & Karahanna, 2000). This research examines three key factors influencing information processing to better understand these differences: political orientation, personality traits, and social media usage patterns. Political beliefs shape how individuals interpret new information, with evidence suggesting that conservatives and liberals exhibit different cognitive and emotional responses when confronted with opposing viewpoints (Jost et al., 2018). Understanding these ideological differences can offer insights into whether certain groups are more receptive to cognitive friction.

Beyond political ideology, personality traits also influence engagement with information (Adamopoulos et al., 2018). Extroverts, for instance, tend to be more social, open to discussion, and willing to engage with diverse perspectives, whereas introverts may prefer controlled and selective information environments (Hess et al., 2009). Research suggests that individuals with higher social engagement tendencies are more likely to interact with opposing viewpoints, while those who are more reserved gravitate toward familiar content (Minson et al., 2020). By examining these personality-driven differences,

this study explores whether certain psychological predispositions make individuals more or less receptive to cognitive engagement with opinion-challenging information.

Finally, social media usage patterns shape how individuals interact with content. Factors such as time spent online, engagement habits (e.g., passive scrolling, active discussion), and platform preferences influence exposure to diverse perspectives (Bakshy et al., 2015). Heavy social media users, particularly those reliant on algorithmically curated content, may be more susceptible to echo chambers. At the same time, those who actively seek discussions may be more open to opposing viewpoints. By analyzing these behavioral patterns, this research provides a nuanced understanding of how digital habits influence cognitive engagement. Integrating political orientation, personality traits, and social media behaviors enables a comprehensive approach to studying how individuals process opinion-challenging information, ultimately informing more effective strategies for breaking echo chambers.

This research is operationalized through a controlled experiment, with political ideologies and the nature of opinion-challenging information as key experimental variables. The study is conducted within the context of US politics, where echo chambers are particularly pronounced on social media. With 286 valid responses, the findings provide evidence that exposure to opinion-challenging information significantly influences engagement patterns. Specifically, participants exhibit reduced engagement with subsequent content and demonstrate higher levels of critical evaluation—both indicators of disrupted echo chambers. These results contribute to the broader discussion on mitigating polarization and fostering more reflective information consumption in the digital age.

2.3 Literature Review

Echo chambers have become a defining feature of digital information consumption, particularly within algorithmically curated social media environments. These closed

informational spaces emerge when individuals are primarily exposed to content aligning with their preexisting beliefs, reinforcing ideological homogeneity while limiting exposure to diverse perspectives (Bakshy et al., 2015). The formation of echo chambers is largely driven by selective exposure—the tendency to seek belief-consistent information—and algorithmic personalization, which prioritizes content that maximizes engagement over informational diversity (Pariser, 2011). As a result, digital platforms inadvertently reinforce ideological silos, shaping how individuals consume and interact with information (Kitchens et al., 2020).

The persistence of echo chambers is rooted in both structural and behavioral mechanisms. Structurally, network homophily—the inclination to form social connections with like-minded individuals—fosters ideological clustering, ensuring that users engage predominantly within insular communities (Schuetz et al., 2021). Social media platforms amplify this effect by promoting interactions within ideologically similar groups, reinforcing habitual exposure to belief-consistent narratives (Cinelli et al., 2021). Behaviorally, confirmation bias and selective exposure drive users to engage with content that aligns with their views while dismissing counter-attitudinal information (Frey, 1986). Algorithmic ranking systems, optimized for engagement rather than informational balance, further entrench these tendencies, creating a self-reinforcing cycle of ideological insulation.

Echo chambers pose significant societal challenges, particularly by deepening ideological polarization and eroding democratic discourse. Repeated exposure to belief-confirming content increases ideological extremity and reduces the likelihood of constructive dialogue across ideological divides (Bail et al., 2018). This fragmentation fuels political tribalism, fostering distrust toward opposing groups and institutions, thereby destabilizing democratic processes (Lane et al., 2024). Beyond politics, echo chambers contribute to

misinformation dissemination, public health crises, and radicalization by reinforcing false narratives and discouraging critical engagement with diverse viewpoints (Weismueller et al., 2024). Additionally, social fragmentation leads to increased hostility, reduced empathy, and diminished collective problem-solving capacity.

Addressing echo chambers is crucial for fostering cognitive flexibility and promoting diverse perspectives. However, designing effective interventions is challenging due to psychological reactance—a defense mechanism that strengthens preexisting beliefs when individuals perceive ideological challenges (Klayman & Ha, 1987). Traditional strategies, such as fact-checking and content labeling, have proven inadequate, as users often dismiss corrective information when it conflicts with their ideological stance (Lewandowsky et al., 2012; Moravec et al., 2020). Effective interventions must encourage cognitive engagement rather than disengagement, prompting individuals to critically reflect on their beliefs without perceiving such challenges as threats.

Paper	**Journal**	**Research Question**	**Theory**	**Summary**
Bright (2018)	Journal of Computer-Mediated Communication	What factors contribute to political fragmentation on social media platforms?	Fragmentation Theory	The study explores how exposure to like-minded voices in echo chambers may lead to political fragmentation and polarization on social media.
Horner et al. (2021)	Journal of Management Information Systems	How do individuals emotionally respond to belief-incongruent content, and how does this impact engagement patterns?	Emotional Valance Theory	This study examines how users react to content that challenges their beliefs. It finds that high-arousal emotions (anger, surprise) drive engagement, reinforcing echo chambers and suggesting the need for strategic content exposure to disrupt them.
Kim and Dennis (2019)	MIS Quarterly	How does altering the presentation format of social media content influence belief resistance and exposure to diverse viewpoints?	Reputation Theory	The study shows that highlighting the credibility of sources affects belief in misinformation. It suggests that platform design can encourage engagement with diverse content by emphasizing reputable

				sources, potentially breaking echo chambers.
Kitchens et al. (2020)	MIS Quarterly	What role do algorithmic filtering and selective exposure play in reinforcing echo chambers?	Selective Exposure Theory, Homophily	This research finds that algorithmic curation significantly limits exposure to diverse information. It suggests that breaking echo chambers requires deliberate adjustments in recommendation algorithms to introduce counter-attitudinal content.
Lane et al. (2024)	Journal of Computer-Mediated Communication	How has news coverage of social media in American politics evolved over time?	Moral Foundations Theory, Framing Theory	This study analyzes how American news outlets have covered social media in the context of politics from 2006 to 2021, reflecting on the role of echo chambers in political discourse.
Moravec et al. (2020)	Information Systems Research	Studies the influence of intervention presentation format on fact-checking to reduce the spread of fake news.	Cognitive Response Theory	The study finds that presenting corrective information in a way that triggers cognitive dissonance can encourage users to critically evaluate content. This supports the idea that interventions should strategically introduce cognitive friction.
Schuetz et al. (2021)	European Journal of Information Systems	The study finds that presenting corrective information in a way that triggers cognitive dissonance can encourage users to critically evaluate content.	Homophily	The study highlights how social media users cluster based on similarity, reducing exposure to diverse perspectives. It suggests that platform-driven interventions promoting weak-tie connections can help break echo chambers.
Shore et al. (2018)	MIS Quarterly	How do network structures on social media impact exposure to diverse viewpoints?	Network Theory	This study finds that highly clustered social networks promote echo chambers, while decentralized structures facilitate diverse content exposure. It suggests that platform design should encourage cross-cutting interactions to counteract ideological bubbles.

Weismueller et al. (2024)	Information Systems Journal	What role does emotional contagion play in reinforcing echo chambers, and how can interventions mitigate this?	Emotional Contagion Theory, Dual Processing Theory	This study shows that emotionally charged misinformation spreads faster within echo chambers. It suggests that interventions targeting emotional engagement, rather than just fact-based corrections, may be more effective in breaking these cycles.

Table 1: Literature review summary

Existing research in Information Systems (IS) has explored various strategies to mitigate echo chambers, including algorithmic adjustments, fact-checking mechanisms, and social debiasing techniques. Fact-checking efforts (Moravec et al., 2022) aim to counteract misinformation within echo chambers by providing corrective information, while social debiasing strategies—such as nudging users toward counter-attitudinal content—attempt to break ideological silos. Despite their promise, these approaches remain limited in effectively dismantling entrenched echo chambers.

A critical shortcoming of these interventions is their reactive nature, addressing echo chambers post-formation rather than preventing their persistence. Fact-checking often fails because users exhibit epistemic resistance, rejecting information that contradicts their preexisting beliefs (Schuetz et al., 2021). Algorithmic interventions struggle to balance content diversity with user engagement, as abrupt exposure to conflicting perspectives can lead to disengagement rather than persuasion. Social debiasing strategies, while helpful, frequently focus on surface-level interventions without addressing the cognitive mechanisms—such as belief reinforcement and selective attention—that sustain echo chambers (Bright, 2018).

This study addresses these gaps by shifting the focus from content-based interventions to cognition-based disruption. Rather than merely increasing exposure to diverse content, it introduces cognitive friction—a mechanism designed to challenge users' cognitive

processing, prompting deeper engagement with counter-attitudinal information. Drawing on cognitive response theory (Moravec et al., 2020), this research explores how triggering cognitive dissonance can encourage active belief reconsideration rather than outright dismissal. Unlike prior interventions relying on passive exposure to opposing viewpoints, this study investigates how cognitive discomfort can be strategically leveraged to foster reflection and reduce ideological rigidity.

This study is fundamentally grounded in Cognitive Response Theory, providing a theoretical lens for understanding how individuals engage with counter-attitudinal information. By introducing cognitive friction—a state of mental discomfort disrupting automatic information processing—this research proposes a novel framework for modeling engagement shifts within echo chambers. Unlike prior interventions focused solely on altering content exposure, this study examines how cognitive disruption fosters deeper information processing and belief reconsideration.

The following section expands on these theoretical foundations, outlining the cognitive mechanisms underpinning echo chambers and positioning this research within a structured theoretical framework.

2.4 Theoretical Background

2.4.1 Cognitive Response Theory (CRT)

Due to the overwhelming volume of digital content, social media users often default to cognitive shortcuts, such as heuristic processing, to streamline information consumption. Given online engagement's high-speed, low-effort nature, individuals often resort to heuristic processing—quick, intuitive judgments that help them make sense of information without deep analytical thought (Kahneman, 2011). These cognitive shortcuts shape how users interact with content, leading them to engage more with information that is quickly processed and aligns with their existing beliefs (Gimpel et al.,

2021). Algorithmic curation further reinforces this pattern by presenting users with content congruent with their past interactions, reinforcing habitual engagement loops. This dynamic creates a self-reinforcing cognitive environment where users are continuously exposed to information that requires minimal effort to process, reducing their likelihood of encountering diverse perspectives (Kitchens et al., 2020).

To study user behavior and formulate a mechanism to disrupt echo chambers, we bring in the Cognitive Response Theory (CRT). According to CRT, when users are repeatedly exposed to opinion-reinforcing information, their cognitive processes further solidify existing attitudes through confirmation bias—the tendency to favor information that aligns with preexisting beliefs while disregarding or counter-arguing contradictory viewpoints (Nickerson, 1998). This selective exposure mechanism strengthens ideological rigidity and decreases receptivity to alternative perspectives. Conversely, when users encounter opinion-challenging information, they often experience cognitive dissonance—a psychological state of discomfort that arises when new information contradicts their established beliefs (Festinger, 1962). In social media environments, this discomfort can lead to defensive reactions, such as dismissing, arguing against, or disengaging from content that contradicts their worldview. This polarization effect exacerbates echo chambers by reinforcing belief-driven engagement and discouraging interactions with diverse perspectives.

2.4.2 Moral Foundations Theory (MFT)

Moral Foundations Theory (MFT) provides a crucial lens for understanding ideological asymmetries in engagement, particularly in the context of echo chambers. MFT posits that individuals rely on distinct moral intuitions when processing information, shaping how they evaluate and respond to counter-attitudinal content (Graham et al., 2013). Research suggests that liberals tend to emphasize moral dimensions such as care and

fairness, while conservatives prioritize loyalty, authority, and sanctity (Schein & Gray, 2015). These differences influence how individuals react to conflicting viewpoints—liberals may dismiss content perceived as violating fairness, while conservatives may reject information that undermines authority or tradition. This moral filtering process reinforces ideological polarization, as individuals are more likely to accept information congruent with their moral framework and resist content that contradicts it. In digital environments, where algorithmic curation reinforces habitual exposure to belief-consistent content, moral foundations serve as cognitive anchors that further entrench ideological rigidity. Understanding these moral dynamics is critical for designing interventions that do not simply challenge users' beliefs but strategically engage their underlying moral values to facilitate openness to diverse perspectives.

Building on these theoretical foundations, this research develops a model that integrates Cognitive Response Theory (CRT) with MFT to explore how ideological engagement can be disrupted through **cognitive friction**. Rather than relying solely on content-based interventions, the model emphasizes subtle psychological mechanisms that challenge entrenched cognitive patterns without triggering outright rejection. By incorporating moral foundations into the intervention design, this research aims to identify engagement strategies sensitive to ideological predispositions, fostering constructive discourse in digital spaces. This structured approach ensures that proposed interventions are theoretically grounded, empirically testable, and practically applicable in mitigating the effects of digital echo chambers.

2.5 Hypothesis Development

Users on digital social media platforms engage with information in a hedonic mode (S. J. Kim et al., 2019). Unlike users in more critical modes of consumption that prioritize authenticity and accuracy, individuals operating within the hedonic mode are primarily

driven by the desire for enjoyment and amusement. Instead of meticulously evaluating the accuracy and credibility of the information they encounter, users immersed in the hedonic mode are inclined to prioritize the immediate gratification of their senses and emotions (Talwar et al., 2019).

The algorithms embedded within social media platforms compound the impact of the hedonic mode. These algorithms, meticulously designed to maximize user engagement, play a pivotal role in shaping the content that individuals encounter. The algorithms inadvertently reinforce the hedonic mode of information consumption by tailoring content to align with users' preferences. The relentless pursuit of engagement and entertainment can inadvertently create an environment limiting the diversity of information users are exposed to. In this information-limiting environment, therefore, users are exposed to a narrow spectrum of perspectives that align with their existing beliefs and preferences. As users prioritize enjoyment over authenticity while algorithms prioritize engagement over accuracy, misinformation proliferates. With a primary focus on promoting responsible platforms and reducing the spread of misinformation, this research aims to identify ways to dismantle echo chambers.

Users tend to interact with and share information that aligns with their interests and pre-existing beliefs (Frey, 1986). In an ideal scenario, users on digital social media platforms are presented with unbiased information without the influence of the platform's algorithm. Diverse information pieces are presented in such situations, and the users' interaction with information varies depending on their interests. However, in echo chambers, that is, information-limiting environments, users are presented with opinion-reinforcing information. Moreover, the users' interaction with information is higher in echo chambers as confirmation bias comes into play (Fox, 1997). Implying that users in echo chambers exhibit higher engagement with information.

2.5.1 Ideology and Echo Chambers

Information dissipation on digital social media platforms is fundamentally driven by user engagement, measured through likes, shares, and comments. Platform algorithms are designed to amplify content reach based on prior engagement levels, meaning posts with higher interactions are disseminated to a broader audience. While effective in promoting content, this mechanism facilitates the spread of misinformation, particularly within echo chambers—closed environments where users predominantly engage with opinion-reinforcing information. Since such information often aligns with users' existing beliefs and lacks verifiability, misinformation can spread more easily due to passive, habitual engagement rather than critical evaluation.

A widely discussed countermeasure to the formation and reinforcement of echo chambers is the exposure to ideologically diverse information—particularly content that challenges users' existing viewpoints (Kitchens et al., 2020; Laato et al., 2020; Pariser, 2011). However, despite this claim, there is little empirical validation of whether exposure to opinion-challenging information effectively disrupts echo chambers. In fact, simply exposing users to opposing viewpoints does not guarantee attitudinal change or behavioral shifts. Rather, how individuals process and respond to such conflicting information is a key determinant of whether echo chambers are weakened.

From a theoretical standpoint, this phenomenon can be explained through Cognitive Response Theory (Brehm & Cohen, 1962), which posits that individuals experience cognitive dissonance when confronted with information that contradicts their existing beliefs. Cognitive dissonance arises because opinion-challenging information creates a knowledge disparity between an individual's pre-existing views and newly encountered content, leading to psychological discomfort. This discomfort triggers a need for resolution, as individuals are intrinsically motivated to restore cognitive consistency.

When users experience cognitive dissonance, they attempt to reduce this discomfort through one of several strategies: ignoring the conflicting information, rationalizing it to align with their beliefs, verifying its credibility, or actively updating their opinions (Jermias, 2001). Crucially, this shift from passive, hedonic consumption of information to conscious decision-making alters the way users engage with digital content. Instead of engaging habitually with information, users become more skeptical and less likely to interact with subsequent content uncritically. Thus, engagement behaviors such as liking, sharing, or endorsing information tend to decrease when users experience cognitive dissonance.

A central characteristic of echo chambers is the absence of critical engagement—users consume and engage with information without rigorous scrutiny. However, when presented with opinion-challenging information, users deviate from this pattern by switching to conscious evaluation of the content. This shift signifies an initial disruption of the echo chamber effect. As users encounter opinion-challenging information, their engagement with the subsequent information in the echo chamber also changes. Specifically, rather than continuing to engage uncritically, users are more likely to scrutinize, hesitate, or disengage entirely. This behavioral shift is significant because it disrupts the habitual reinforcement cycle of echo chambers and marks the early stages of dismantling echo chambers.

Thus, in this study, we seek to investigate the role of opinion-challenging information in disrupting echo chambers through a two-step approach. First, we analyze how users engage with the initial opinion-challenging content and whether it induces cognitive dissonance, leading to a measurable decline in engagement. Second, we examine whether the cognitive dissonance carries over to influence engagement with subsequent

information within the echo chamber, causing users to become more skeptical and selective in their interactions.

Therefore, we aim to empirically test the arguments in the literature regarding the potential of opinion-challenging information to disrupt echo chambers. Our first objective is to validate whether exposure to opinion-challenging information induces cognitive dissonance in users. When individuals encounter content that contradicts their pre-existing beliefs, they experience psychological discomfort, prompting them to resolve this dissonance by disregarding the conflicting information or updating their beliefs. This shift from passive to deliberate engagement alters their interaction patterns. Precisely, as users attempt to alleviate cognitive discomfort, their overall engagement with the information—measured through likes and shares—diminishes. Based on this theoretical foundation, we hypothesize that:

H1: Consumption of opinion-challenging information reduces the engagement with the information.

Furthermore, once users experience cognitive dissonance, they are prompted to make a conscious decision on how to react to the presented information. This shift signifies a transition from the hedonic mode of information consumption—where users passively engage with content without critical evaluation—to a more deliberate and rational decision-making process. Introducing opinion-challenging information disrupts this passive engagement, compelling users to scrutinize content more carefully. However, beyond the immediate discomfort of cognitive dissonance, the sustained exposure to such dissonant content generates **cognitive friction**—a prolonged state of mental discomfort that continues to shape engagement behavior over subsequent interactions.

As cognitive friction persists, users become increasingly wary of the information they encounter, even when it aligns with their pre-existing beliefs. Unlike the typical uncritical reinforcement seen in echo chambers, the lingering effect of cognitive friction fosters a habit of deeper scrutiny, reducing the automatic acceptance of congruent content. This deviation from habitual engagement patterns suggests a disruption in the self-reinforcing nature of echo chambers, potentially marking the initial stages of their dismantling. Therefore, we hypothesize that:

H2: User engagement with subsequent information in echo chambers decreases when presented with opinion-challenging information.

2.5.2 Political Orientation and Information Engagement

User-level factors play a crucial role in shaping information consumption and interaction on digital platforms (Moravec et al., 2020). Among these factors, individual personality and ideology significantly influence various domains, including political, social, ethical, and epistemological ideologies. These ideological frameworks determine how individuals engage with political, economic, and cultural information. This study focuses on political ideology, encapsulating a broad range of socio-economic and cultural perspectives while shaping cognitive biases in information processing.

Political orientation plays a pivotal role in shaping how individuals consume, engage with, and respond to information on social media platforms, making it a crucial factor in studying digital misinformation and echo chambers. Research has consistently shown that users selectively engage with content that aligns with their pre-existing ideological beliefs, reinforcing confirmation bias and leading to partisan information silos (Guess et al., 2018). This selective exposure influences both passive behaviors, such as liking and viewing content, and active behaviors, such as sharing and commenting, ultimately amplifying ideologically consistent narratives while suppressing opposing viewpoints

(Bakshy et al., 2015). Furthermore, Cota et al. (2019) provide empirical evidence of the presence and impact of echo chambers in the U.S. political landscape, demonstrating how social media-driven ideological clustering influenced political discourse and voter behavior during the 2016 U.S. elections. Given that social media platforms curate and recommend content based on user engagement patterns, political orientation becomes a core determinant of how misinformation spreads and how resistant users are to counter-attitudinal information. Studying political orientation—encompassing left-wing, right-wing, and centrist perspectives— in this context is therefore essential, as it provides insights into how digital echo chambers are formed, sustained, and potentially disrupted through targeted interventions.

Political orientation is deeply connected to Moral Foundations Theory (Graham et al., 2013), which suggests that liberals and conservatives prioritize different moral values (e.g., fairness vs. authority). These fundamental differences affect how individuals perceive, interpret, and engage with information, particularly when it challenges their moral frameworks. Conservatives, who are more sensitive to perceived threats to moral and social order, may react more intensely to information that contradicts their beliefs, leading to cognitive dissonance and resistance to belief updating (Jost et al., 2018). Liberals, while more open to diverse perspectives, also exhibit biases in engaging with information that aligns with their moral values.

Adaval and Wyer Jr (2022) argue that conservatives react more strongly to moral challenges than liberals, leading to higher confirmation bias among right-wing users. Since political information often involves moral considerations, right-wing individuals may exhibit greater resistance to counter-attitudinal content, while left-wing individuals may engage with it more critically rather than dismissively.

Political orientation also influences the nature of engagement with online content. Liberals, due to their higher cognitive openness, are more likely to engage critically with information. In contrast, conservatives, prioritizing ideological consistency, tend to show higher engagement with content that aligns with their beliefs while exhibiting lower engagement with counter-attitudinal information. Centrists, often less politically driven, may engage less overall but may be more responsive to the way information is framed (Guess et al., 2018).

Since political orientation shapes information consumption and engagement, individuals with different leanings exhibit significant variations in their social media interactions. The variation in ideological perspectives influences how users interpret, respond to, and engage with political information online. Hence, we hypothesize the following:

H3: The political orientation of the users has a significant impact on engagement with information on digital platforms.

2.5.3 Extroversion and Engagement with Information

The growing prominence of social media as a primary source of information has led researchers to examine how personality traits influence user engagement with online content. Among these traits, extroversion plays a central role in shaping digital behavior, as it directly relates to an individual's tendency toward social interaction, responsiveness to external stimuli, and active communication (Correa et al., 2010). Extroverts, characterized by their high levels of sociability, assertiveness, and excitement-seeking behavior, are more likely to engage actively with content through commenting, sharing, and initiating discussions (Guadagno et al., 2008). Since social media thrives on interactive engagement loops, studying extroversion is critical in understanding how users interact with and disseminate information in digital environments.

From a theoretical perspective, Eysenck's Arousal Theory (1967) provides a compelling explanation for why extroverts are particularly prone to heightened engagement with information. The theory posits that extroverts have a lower baseline level of cortical arousal, leading them to actively seek external stimuli to maintain an optimal level of activation (Matthews & Gilliland, 1999). Social media, with its constant updates, interactive features, and real-time communication, serves as an ideal environment for extroverts, who derive stimulation from digital interactions. In contrast, introverts, who naturally have a higher baseline arousal level, may find excessive online engagement overstimulating, leading to more passive content consumption rather than active participation (Landers & Lounsbury, 2006).

Furthermore, social media engagement can be understood through the need for social connectedness, as outlined in the Uses and Gratifications Theory (Ruggiero, 2000). Extroverts are intrinsically motivated by social interaction and validation, seeking feedback and reinforcement through their online presence. The ability to receive immediate social responses, engage in dynamic discussions, and share personal opinions aligns with their need for social gratification and external engagement (Correa et al., 2010). In contrast, introverts are less motivated by external validation and are more likely to engage in observational, passive content consumption rather than initiating or sustaining online discussions (Amichai-Hamburger & Ben-Artzi, 2003).

Given these theoretical perspectives, we hypothesize that extroverts are more likely to engage with information on social media platforms than introverts. Their need for social interaction, reward-seeking tendencies, and preference for high-stimulation environments make them more likely to actively comment, share, and discuss content. In contrast, introverts may engage in a more passive, non-interactive manner. This distinction underscores the critical role of extroversion in shaping online information consumption,

reinforcing the expectation that extroverts exhibit significantly higher engagement levels in digital spaces.

H4: Extroverts are likelier to engage with information on social media than introverts.

2.5.4 Veracity and Engagement

Users consume information on social media in a manner that prioritizes engagement over accuracy, mainly due to algorithm-driven content curation that reinforces their preferences and beliefs (Bakshy et al., 2015). Research suggests that users rarely verify the credibility of information, instead relying on cognitive shortcuts and confirmation bias, which lead them to accept and engage with content that aligns with their existing views (Nickerson, 1998). Additionally, cognitive ease—the tendency to trust familiar and easily digestible content—contributes to the uncritical acceptance and spread of misinformation (Kahneman, 2011). Since social media encourages rapid consumption and interaction, users are more inclined to share and engage with content without scrutinizing its accuracy, allowing misinformation to proliferate (Apuke & Omar, 2021; Laato et al., 2020).

This issue becomes even more pronounced within echo chambers, where individuals are repeatedly exposed to ideologically consistent information that reinforces their existing beliefs. In such environments, the veracity of information is secondary to group cohesion and ideological alignment. Users tend to accept content at face value if it originates from sources they perceive as trustworthy, leading to selective exposure, where only belief-confirming information is engaged with, while contradictory evidence is dismissed (Brehm & Cohen, 1962).

Given this, it logically follows that the accuracy of information in echo chambers does not significantly impact user engagement with that content or subsequent posts. Users in

these spaces are primarily driven by ideological reinforcement and social validation rather than factual accuracy (Lewandowsky et al., 2012). As a result, misinformation does not deter engagement, as users prioritize community participation and belief affirmation over evidence-based reasoning.

Thus, we hypothesize that the veracity of information in echo chambers will not impact users' engagement with that information or subsequent echo chamber posts. This aligns with research on confirmation bias, selective exposure, and Social Identity Theory, which collectively suggest that engagement within ideological communities is driven more by alignment with personal beliefs than by factual accuracy. Consequently, once users are embedded within an echo chamber, their interaction with content is shaped primarily by social and psychological motivations rather than a concern for truth.

H5: Veracity of information in echo chambers will not impact users' engagement with that information or subsequent echo chamber posts.

2.6 Methodology

We used controlled experiments as the method of choice in this study, as it allowed for the observation of participants by presenting opinion-reinforcing information to the subjects. The interaction with the information helped us understand the behavior of social media users.

2.6.1 Design

We conducted the study in the US context because the evidence highlighting the presence of echo chambers in US presidential elections (Cota et al., 2019) and the rising political divide in the country provided the appropriate background to study the phenomenon described in the preceding sections. The experimental subjects were initially divided into three groups based on their political orientation, that is, left-wing, right-wing, and no

political orientation. The second factor was the nature of the information being presented to the subjects, which included (a) opinion-reinforcing content to observe the formation of echo chambers; and (b) opinion-challenging content to observe the dissemination of echo chambers. Bringing these two factors together, we obtained a typical three-by-two experimental design with three political categories and two categories of information. Table 2 presents the five different experiment groups in this research.

	Left-wing	**Right-wing**	**Centrists**
Reinforcing	Group-1	Group-3	Group-5
contrary	Group-2	Group-4	Group-6

Table 2: Design of the experiment

The experiment consisted of three sections. The first section captured demographic details such as age, gender, education qualification, and self-declared political orientation, in which participants were asked to self-identify their political orientation.

The second section was the focus of the research, and it obtained the subjects' perceptions while consuming information on digital social media platforms. The subjects were divided into three political orientation categories based on their self-identification in the first part of the experiment. They were randomly assigned to opinion-reinforcing or opinion-challenging information cases within political ideologies. The subjects in the experiment were presented with two segments, with eight information points in each segment.

Each information piece was categorized along three dimensions: ideological alignment (left-wing, right-wing, or neutral), reinforcement nature (reinforcing or contrary), and veracity (true or misinformation), detailed in Table 3. The first five pieces (and the seventh) are true and reinforcing, simulating an echo chamber where individuals receive ideologically aligned, accurate content. The sixth piece introduces misinformation, designed to either reinforce existing beliefs (for Groups 1, 3, and 5) or challenge them

(for Groups 2, 4, and 6). This setup enables an assessment of how misinformation is processed when it supports prior beliefs versus when it contradicts them.

Grounded in Cognitive Response Theory, the study hypothesizes that participants in reinforcing environments are less likely to scrutinize information that aligns with their beliefs. Consequently, Groups 1, 3, and 5 are expected to accept reinforcing misinformation uncritically. In contrast, Groups 2, 4, and 6, exposed to contrary misinformation, are likely to experience cognitive dissonance—a psychological discomfort that may reduce their engagement and belief in the misinformation.

In this experiment, centrists function as the baseline and serve as the control group. Since the research primarily focuses on the contrast between the extreme ends of the political ideology spectrum—left-leaning and right-leaning users—the centrist group provides a neutral reference point for comparative analysis. Their inclusion allows us to observe how opinion dynamics differ when exposed to the same information stimuli, thereby strengthening the interpretability of the treatment effects.

Following this key intervention, all participants encounter a seventh piece of true and reinforcing information, followed by an eighth piece that is reinforcing but contains misinformation. If exposure to contrary information disrupts echo chambers, as hypothesized, participants in Groups 2, 4, and 6 should exhibit greater scrutiny and reduced belief in the final misinformation piece. This would support the idea that encountering contrary information can activate System 2 thinking—the analytical cognitive process that encourages critical evaluation—potentially mitigating the automatic acceptance of ideologically aligned misinformation.

Info points	Group-1	Group-2	Group-3	Group-4	Group-5	Group-6
1	left-wing/Reinforcing/True	left-wing/Reinforcing/True	right-wing/Reinforcing/True	right-wing/Reinforcing/True	neutral/Reinforcing/True	neutral/Reinforcing/True
2	left-wing/Reinforcing/True	left-wing/Reinforcing/True	right-wing/Reinforcing/True	right-wing/Reinforcing/True	neutral/Reinforcing/True	neutral/Reinforcing/True
3	left-wing/Reinforcing/True	left-wing/Reinforcing/True	right-wing/Reinforcing/True	right-wing/Reinforcing/True	neutral/Reinforcing/True	neutral/Reinforcing/True
4	left-wing/Reinforcing/True	left-wing/Reinforcing/True	right-wing/Reinforcing/True	right-wing/Reinforcing/True	neutral/Reinforcing/True	neutral/Reinforcing/True
5	left-wing/Reinforcing/True	left-wing/Reinforcing/True	right-wing/Reinforcing/True	right-wing/Reinforcing/True	neutral/Reinforcing/True	neutral/Reinforcing/True
6	left-wing/Reinforcing/Misinformation	left-wing/Contrary/Misinformation	right-wing/Reinforcing/Misinformation	right-wing/Contrary/Misinformation	neutral/Reinforcing/Misinformation	neutral/Contrary/Misinformation
7	left-wing/Reinforcing/True	left-wing/Reinforcing/True	right-wing/Reinforcing/True	right-wing/Reinforcing/True	neutral/Reinforcing/True	neutral/Reinforcing/True
8	left-wing/Reinforcing/Misinformation	left-wing/Reinforcing/Misinformation	right-wing/Reinforcing/Misinformation	right-wing/Reinforcing/Misinformation	neutral/Reinforcing/Misinformation	neutral/Reinforcing/Misinformation

Table 3: Experimental design and nature of stimuli presented to the subjects.

The third section of the experiment focused on identifying the subjects' personalities. The two personality characteristics of significance are "Extroversion" and Thinking/Feeling. This section consisted of 48 questions, which were designed to quantify the nature of the subjects concerning their personality traits. The questions were answered on a scale of 1 to 5, where 1 represented "not me" and 5 represented "exactly me." The survey was developed based on existing scales adapted from Michael (2003). The complete instrument is provided in Appendix 1.

The questions captured different personality characteristics simultaneously. The MBTI test's 48 questions are designed to assess multiple personality traits simultaneously. For instance, the statement "Construct an argument to convince someone using evidence clearly in front of you both" evaluates both thinking and extroversion traits. Of the 48 questions, 24 were focused on determining the extroversion of the subject, and the remaining 24 captured the introversion. Based on the option selected by the subjects, a score of 1 was assigned for the option "not me" and 5 for "exactly me." Extroversion and introversion scores were calculated based on responses to questions in the respective

segments. Then, the extroversion index was calculated by subtracting the introversion and extroversion scores. Furthermore, an Extroversion category was created based on the extroversion index. If the extroversion index was negative, a value of 0 was assigned to the subject, representing an introverted personality type. On the other hand, a value of 1 was assigned to the subject if the extroversion index was positive, representing the extroversion personality type. Similarly, 12 of the 48 questions captured the subjects' thinking nature, and 12 questions determined the feeling nature. The Thinking/Feeling index was calculated by subtracting the feeling score from the thinking score. Moreover, the Thinking/Feeling category was created based on the Thinking/Feeling index. If the Thinking/Feeling index was negative, the subject was assigned a value of 0, representing the feeling personality trait; otherwise, the subject was assigned a value of 1, representing the thinking personality trait.

The final part of the third section includes 10 questions designed to assess participants' introversion and extroversion levels based on the Big Five personality test, as detailed in Appendix 2. This serves as a robustness check to validate the results obtained from the MBTI test. Participants respond to these 10 questions with a "yes" or "no" answer, allowing for the classification of their personality type. The results are then compared with the MBTI outcomes to ensure consistency and reliability.

2.6.2 Stimuli

As stated previously, the third section of the experiment delved into the subjects' perceptions and their reactions to the information shown. In this phase, users encountered information presented in a format resembling Tweets on the platform known as X (formerly named Twitter). Each piece of information mimicked the attributes commonly seen on Twitter, including the number of likes, shares, and comments. This design choice

aligned with the argument of Moravec et al. (2020) that presentation format significantly influences how information is consumed.

To address the crucial factor of source authenticity, which has been extensively explored in social media research, Aghakhani et al. (2022) demonstrated that the perceived authenticity of its source influences the credibility of the information consumed. Following their work, our experiment carefully structured the sources of the Tweets to mimic those from verified news channels such as CNN, Fox News, and notable political leaders. Additionally, left-leaning participants received information from prominent left-wing sources, while right-leaning subjects received content from right-wing sources. This approach minimized the potential impact of source credibility on information consumption, allowing us to focus on the nature of the information itself. A sample of stimuli is presented in Appendix 3.

The information points provided to the subjects were concentrated on specific topics, such as immigration rights, educational policies, and human rights. These topics were intentionally selected to ensure a focused examination of confirmation bias or cognitive dissonance; they have been previously established as issues where left- and right-wing opinions are highly polarized (Risius et al., 2023). The information points were sourced from online news channels such as Fox and CNN, and prominent leaders and websites, including Donald Trump and PolitiFact, made tweets.

To create the effect of an echo chamber, we showed information consistent with the dominant political ideology of the group. For subjects in the left-wing group, we showed information aligning with the left-wing orientation, while subjects in the right-wing group received information consistent with the right-wing orientation. We conducted pre-tests with a selected set of individuals (n=30) for the following purposes:

- We aimed to identify the optimal number of news items to maintain engagement without overwhelming subjects. We found that subjects' responses were best placed at five news items, as any additional news item was rated as excessive and would likely cause them to stop reading with full attention.
- The news items were also shown to the subjects with declared left- and right-wing orientations, and they were asked to rate the news items as being left- or right-oriented. The news items selected for the experiment were the ones with which the respective groups identified most strongly.

The above steps helped us identify the validity of our stimuli.

2.6.3 Participants

This research focused on the US political context. The experiment was conducted on Prolific and designed in SurveyMonkey, where data were also generated. Participants took approximately 11 minutes to complete the experiment and were compensated £1.20 for their time. Usually, participants on Prolific are compensated with £6 per hour. To ensure the robustness and validity of respondents, we followed the protocol suggested in recent publications to guarantee that the respondents were human, active, and attentive during the task (Bansal et al., 2023). This verification was done by conducting attention checks at the beginning and end of the experimental conditions (Rossi et al., 2022).

The experiment was launched on Prolific in December 2024, and 356 adults from the US volunteered to complete the survey, of which 36 responses were incomplete. Upon further analysis, we found 34 more responses invalid as they were patterned or did not pass attention checks. Finally, we obtained 286 valid responses. In the first section of the experiment, the subjects provided their demographic details along with their perceived political orientation. Based on the identified orientation of the subjects, they were segregated into left-wing, right-wing, or centrist groups. In total, there were 129 left-wing

subjects, 101 right-wing subjects, and 56 centrist subjects. Among the 129 left-wing participants, 65 subjects were presented with opinion-reinforcing information (Group 1), and 64 were presented with opinion-challenging information (Group 2). Furthermore, among the 101 right-wing participants, 50 subjects were presented with opinion-reinforcing information (Group 3) and 51 with opinion-challenging information (Group 4). Of the 56 subjects with centrist political orientation, 27 were presented with opinion-reinforcing information (Group 5) and 29 with opinion-challenging information (Group 6).

2.7 Results And Discussion

Table 4 provides a brief description of the variables used in the analysis.

	Variable	**Description**
Demographic variables	Gender	The gender of the subjects (1- Male, 2- Female, 3- Others/ non-binary).
	Age	Age in years.
	Industry	Working industry of the subjects (factor variables to represent 8 industries as 1 to 8).
	Work experience	Work experience in months.
	Hours on SM	Average number of hours spent on social media per day.
	Amount of news	The amount of news consumed on social media on a scale of 1-7.
Experimental variables	Left-wing	A binary variable where 1 represents the left-wing subject.
	Right-wing	A binary variable where 1 represents the right-wing subject.
	Information Nature	The nature of the information provided to subjects (0- opinion-reinforcing and 1- opinion-challenging).
Personality variables	E/I Category	Category 0 represents introversion, and Category 1 represents extroversion.
	F/T Category	Category 0 represents the feeling personality type, and Category 1 represents the thinking personality type.

	Mean	**Std**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Gender	0.448	0.498	1.000									
Industry	6.804	2.737	-0.116	1.000								
Work experience	164.364	145.332	-0.110	0.152	1.000							

Hours on sm	3.322	2.644	0.133	-0.199	-0.310	1.000						
Amount of news	4.986	1.366	0.128	-0.111	-0.234	0.355	1.000					
Left-wing	0.451	0.498	-0.067	0.014	0.101	-0.073	-0.068	1.000				
Right-wing	0.353	0.479	0.056	-0.054	-0.149	0.121	0.179	-0.670	1.000			
Information nature	1.503	0.501	-0.006	-0.051	0.042	-0.009	-0.036	-0.013	0.002	1.000		
Extroversion	0.493	0.501	-0.001	-0.039	-0.045	0.015	0.051	-0.022	0.047	0.070	1.000	
Feeling/Thinking	0.280	0.450	0.081	-0.141	-0.012	-0.029	-0.039	0.124	-0.086	-0.036	-0.038	1.000

Table 4: Variable description table.

Table 5: Descriptive statistics and correlation of the variables.

Table 5 presents the descriptive statistics and correlations between the independent variables, while Table 6 reports the randomization results of the experiments. The findings indicate that, at a 95% confidence level, there were no significant differences between the experimental groups, confirming the effectiveness of the random assignment—except for the variable "Amount of News." Notably, an interesting pattern emerged from the randomization results: participants in Groups 5 and 6, categorized as centrists, exhibited a lower level of news consumption on social media compared to participants in other groups. This finding suggests a potential avenue for future research into how political orientation influences specific news consumption behaviors.

	Gender	work experience	Hours on sm	Amount of news
Group-1	0.406	184.922	3.328	5.063
Group-2	0.406	176.578	2.906	5.103
Group-3	0.500	120.200	3.840	5.380
Group-4	0.471	149.686	3.667	5.255
Group-5	0.444	166.222	2.519	4.333
Group-6	0.483	192.966	3.517	4.897
P-value	0.893	0.157	0.221	0.008

Table 6: Groupwise means and randomization tests.

We employed regression models to examine the influence of demographic, experimental, and personality variables on information's perceived likeability, shareability, and

believability. Table 7 presents the regression results for three models analyzing these effects at the sixth information point: Model 1a investigates likeability, Model 1b examines shareability, and Model 1c assesses believability. Depending on their assigned group, participants were exposed to reinforcing or opinion-challenging information at this experiment stage. This design allows us to assess whether the presentation of opinion-challenging content induces cognitive dissonance, influencing participants' evaluation of the information.

Similarly, Table 8 reports the regression results for three models evaluating these effects at the eighth information point: Model 2a (likeability), Model 2b (shareability), and Model 2c (believability). This stage is critical as it allows us to assess whether the cognitive dissonance triggered by opinion-challenging content translates into cognitive friction and influences subsequent engagement behaviors, prompting users to consume information more cautiously.

	Model 1a	**Model 1b**	**Model 1c**
(Intercept)	1.545 (0.607) *	1.063 (0.602).	2.494 (0.546) ***
Gender1	0.110 (0.215)	0.047 (0.213)	-0.030 (0.193)
Industry	0.067 (0.040).	0.026 (0.039)	0.071 (0.036) *
Work experience	0.000 (0.001)	-0.000 (0.001)	-0.001 (0.001)
Hours on sm	0.104 (0.044) *	0.130 (0.044) **	0.089 (0.040) *
Amount of news	0.291 (0.084) ***	0.272 (0.083) **	0.181 (0.076) *
Left-wing	0.562 (0.285) *	0.256 (0.282) *	0.622 (0.256) *
Right-wing	0.722 (0.300) *	0.894 (0.297) **	0.740 (0.270) **
Information nature	-1.158 (0.210) ***	-0.700 (0.208) ***	-1.165 (0.189) ***
Extroversion	0.436 (0.210) *	0.461 (0.208) *	0.258 (0.189)*
Thinking/Feeling	0.094 (0.238)	0.194 (0.236)	0.130 (0.214)
R^2	0.218	0.205	0.217
Adj. R^2	0.190	0.176	0.189

	Model 1a	Model 1b	Model 1c
Num. obs.	286	286	286

Values in parentheses represent standard error; *** p<0.001, ** p<0.01, * p<0.05

Table 7: Regression coefficients for Models where DV is likeability, shareability, and believability for the sixth information point.

	Model 2a	Model 2b	Model 2c
(Intercept)	2.435 (0.598) ***	1.840 (0.592) **	3.340 (0.503) ***
Gender1	0.232 (0.211)	0.232 (0.209)	0.263 (0.178)
Industry	0.027 (0.039)	-0.049 (0.039)	-0.009 (0.033)
Work experience	-0.000 (0.001)	0.000 (0.001)	-0.001 (0.001)
Hours on sm	0.169 (0.044) ***	0.195 (0.043) ***	0.098 (0.037) **
Amount of news	0.199 (0.083) *	0.201 (0.082) *	0.158 (0.070) *
Left-wing	0.155 (0.280)	0.161 (0.278)	0.077 (0.236)
Right-wing	0.324 (0.295)	0.499 (0.292).	-0.063 (0.248)
Information nature	-1.123 (0.207) ***	-0.825 (0.205) ***	-1.146 (0.174) ***
Extroversion	0.454 (0.207) *	0.792 (0.205) ***	0.617 (0.174) ***
Thinking/Feeling	0.074 (0.235)	0.369 (0.232)	0.385 (0.197) .
R^2	0.220	0.256	0.251
Adj. R^2	0.192	0.229	0.223
Num. obs.	286	286	286

Values in parentheses represent standard error; *** p<0.001, ** p<0.01, * p<0.05

Table 8: Regression coefficients for Models where DV is likeability, shareability, and believability for the eighth information point.

The experimental design presented subjects with five initial information points aligned with their political beliefs, effectively simulating an echo chamber. The sixth information point, however, varied between reinforcing and challenging. This setup allowed us to assess how exposure to opinion-challenging information influences engagement, thereby providing empirical validation for Cognitive Response Theory. According to this theory, encountering information that contradicts one's existing beliefs induces cognitive dissonance, leading to a decline in engagement with the conflicting content.

Table 7 presents the regression results for likeability, shareability, and believability of the sixth information point. The findings reveal that the nature of information (reinforcing vs. challenging) significantly impacts engagement. Specifically, when the information shifts from reinforcing (0) to challenging (1), likeability (Model 1a, coefficient = -1.158, $p < 0.0001$), shareability (Model 1b, coefficient = -0.70, $p < 0.001$), and believability (Model 1c, coefficient = -1.165, $p < 0.001$) all decrease significantly. These results provide strong support for Hypothesis **H1**, confirming that exposure to opinion-challenging information significantly reduces engagement, as demonstrated in Figure 1.

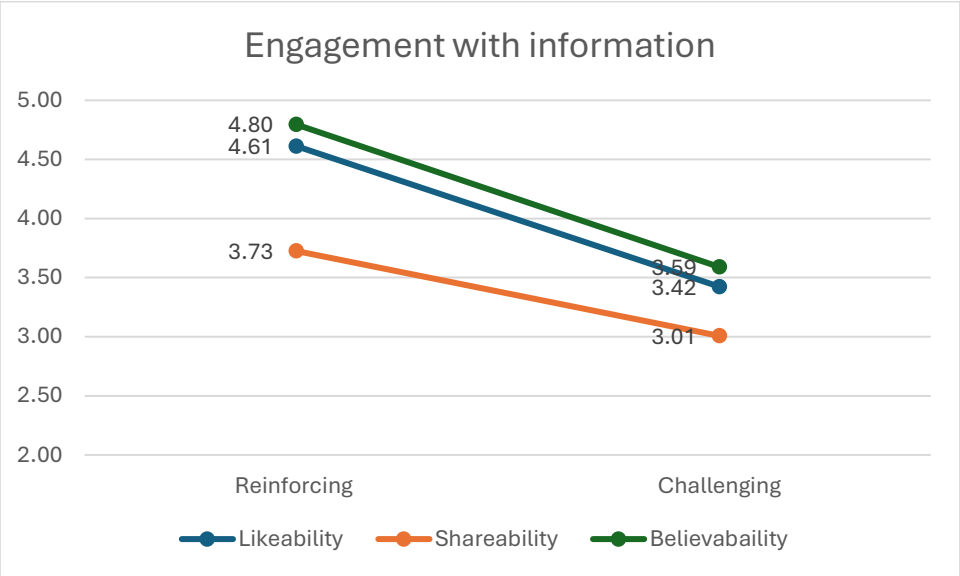

Figure 1: Engagement levels of subjects exposed to opinion-reinforcing versus opinion-challenging information.

The findings further substantiate the argument that opinion-challenging content induces cognitive dissonance, which, in turn, lowers engagement. This aligns with prior theoretical claims from Cognitive Response Theory (Greenwald, 1968), reinforcing the idea that individuals exhibit resistance when confronted with counter-attitudinal information. Additionally, validating Hypothesis H1 yields an important insight: while opinion-challenging content may initially reduce engagement, it also introduces cognitive friction—an essential element in disrupting echo chambers. This helps in validating the

proposition made by Moravec et al. (2020) that exposure to such content could serve as a mechanism to weaken ideological isolation in social media environments.

Hypothesis H2 is central to this study, as it posits that exposure to opinion-challenging information causes cognitive dissonance and induces cognitive friction, shifting users out of a hedonic mode of information consumption. This cognitive shift leads to a more critical evaluation of subsequent information and reduced engagement. To test this hypothesis, the experiment presented subjects with a seventh information point that was reinforcing and true, followed by an eighth information point that was reinforcing but misinformation.

Table 8 presents the regression results for likeability, shareability, and believability of the eighth information point. The findings demonstrate that the nature of the preceding information (reinforcing vs. challenging) significantly affects engagement with subsequent content. Specifically, when subjects are exposed to an opinion-challenging sixth information point, their engagement with the eighth (misinformation) information point decreases significantly, as reflected in the following coefficients: likeability (Model 1a, coefficient = -1.123, $p < 0.001$), shareability (Model 1b, coefficient = -0.825, $p < 0.001$), and believability (Model 1c, coefficient = -1.146, $p < 0.001$). These results provide strong empirical support for Hypothesis H2, confirming that cognitive dissonance triggered by opinion-challenging information induces cognitive friction, leading to reduced engagement with subsequent content, as presented in Figure 2.

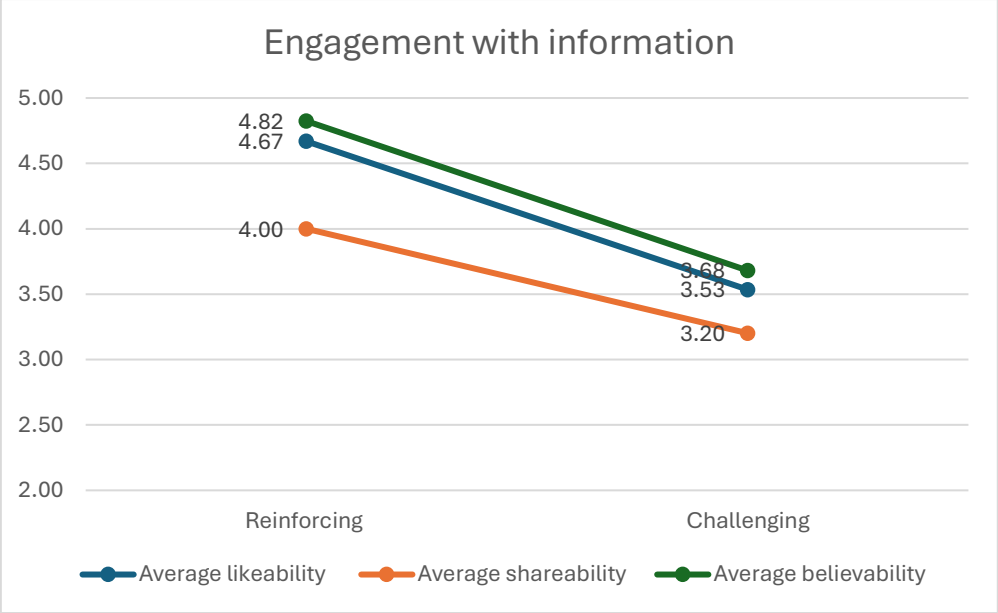

Figure 2: Subject engagement levels with subsequent information after exposure to opinion-reinforcing versus opinion-challenging information at the eighth information point.

These findings align with the theoretical argument that cognitive dissonance disrupts hedonic information consumption, prompting users to engage with content more critically. The observed reduction in engagement—particularly with misinformation—suggests that cognitive friction may serve as an indicator of echo chamber disruption. Thus, validating Hypothesis **H2** represents a critical breakthrough in understanding how individuals interact with information in ideologically homogeneous environments and how exposure to counter-attitudinal content can alter cognitive processing.

Furthermore, these results provide empirical validation for the claims made by Laato et al. (2020) and Kitchens et al. (2020), who suggest that exposure to opinion-challenging information can mitigate the spread of misinformation. By demonstrating that cognitive dissonance reduces the resonance of subsequent information, this study contributes to the growing literature on strategies to weaken echo chambers and promote more deliberative information consumption.

Hypothesis H3 posits that political orientation significantly influences how users consume and engage with information on social media platforms. The regression results presented in Table 7 provide empirical support for this claim, demonstrating that political orientation—whether left-wing or right-wing—has a measurable impact on engagement metrics such as likeability, shareability, and believability.

Specifically, the categorical variable indicating left-wing orientation exhibits a significant effect on likeability (Model 1a, coefficient = 0.562, $p < 0.05$), shareability (Model 1b, coefficient = 0.256, $p < 0.05$), and believability (Model 1c, coefficient = 0.622, $p < 0.05$). These findings suggest that subjects with left-wing political orientations tend to engage more with information than their non-left-wing counterparts. Similarly, the categorical variable representing right-wing orientation also has a significant impact on engagement, with coefficients indicating a stronger effect: likeability (Model 1a, coefficient = 0.722, $p < 0.05$), shareability (Model 1b, coefficient = 0.894, $p < 0.01$), and believability (Model 1c, coefficient = 0.740, $p < 0.01$).

A key insight from these results is that right-wing subjects exhibit higher engagement with information than left-wing and centrist participants. This finding aligns with the Moral Foundations Theory (Graham et al., 2013), which posits that individuals with different political orientations rely on distinct sets of moral intuitions when processing information. According to this theory, liberals (left-wing individuals) prioritize moral foundations such as care and fairness, leading them to engage more with content that aligns with social justice or harm reduction narratives. In contrast, conservatives (right-wing individuals) are more responsive to loyalty, authority, and purity-based moral arguments, making them more likely to engage with content that reinforces in-group identity and traditional values.

The results further suggest that right-leaning individuals demonstrate stronger engagement across all measured dimensions. This observation can be interpreted through the lens of Moral Foundations Theory, which indicates that conservatives exhibit a broader range of moral intuitions, potentially making them more reactive to information that aligns with their ideological predispositions (Graham et al., 2013). Additionally, prior research suggests that conservatives may have a stronger psychological need for certainty and cognitive closure, leading to heightened interaction with information that confirms their worldview (Jost et al., 2018).

These findings contribute to the growing discourse on the role of political ideology in shaping online behavior, reinforcing the notion that ideological predispositions not only dictate content preference but also influence how users interact with and perceive information. This study, therefore, provides empirical evidence that political orientation—when viewed through the framework of Moral Foundations Theory—serves as a crucial determinant of engagement patterns on social media platforms.

From multiple theoretical references, there are arguments regarding the extroverted nature of humans and the need for social interaction and engagement (Matthews & Gilliland, 1999; Ruggiero, 2000). The fourth hypothesis aims to validate such claims in social media environments. The results from Table 7 indicate that when the variable extroversion changes from introversion (0) to extroversion (1), the engagement with the information increased significantly in terms of likeability (Model 1a, coefficient = 0.436, $p < 0.05$), shareability (Model 1b, coefficient = 0.461, $p < 0.05$), and believability (Model 1c, coefficient = 0.258, $p < 0.05$).

Furthermore, the Social Compensation Hypothesis provides an additional perspective, suggesting that introverts may use online platforms for passive consumption rather than

active participation (Zywica & Danowski, 2008). Unlike extroverts, who thrive on dynamic exchanges and digital socialization, introverts may be more reserved in their engagement patterns, leading to lower interaction levels. This distinction reinforces the argument that personality traits play a crucial role in determining the extent of information engagement on social media.

By validating **H4**, this study contributes to the broader discourse on personality-driven digital behavior, emphasizing that extroversion fosters higher engagement in online environments. These findings offer valuable implications for digital content strategies, platform algorithms, and social media marketing, suggesting that content designed to maximize interaction may naturally resonate more with extroverted individuals while alternative engagement strategies may be required to reach and involve introverted audiences effectively.

A key revelation from the results is that the veracity of information—true or false—does not significantly influence how social media users engage with content. Instead, engagement is predominantly driven by belief alignment. The experimental design explicitly introduced misinformation at the sixth and eighth information points, yet participants continued interacting with these pieces despite their inaccuracy. This pattern suggests that engagement is more strongly influenced by ideological reinforcement than by the authenticity of the information itself.

Regression results from Tables 7 and 8 provide empirical evidence for this claim. The variable information nature (reinforcing vs. challenging) significantly affects the likeability, shareability, and believability of both the sixth and eighth information points. Participants exposed to opinion-reinforcing information exhibited higher engagement levels than those exposed to opinion-challenging content. Notably, Figures 1 and 2

visually illustrate the disparity in engagement with the sixth and eighth information points despite being misinformation pieces. This reinforces the argument that individuals engage with information that aligns with their pre-existing beliefs, regardless of its factual accuracy.

To further validate this claim, a supplementary study involving 464 participants was conducted using an identical setup. Participants were presented with five initial reinforcing information points, followed by a sixth information point that was either reinforcing or contrary. The only difference in this additional study was that the sixth information point was true rather than misinformation. Results mirrored the primary study's findings: Participants engaged more with the reinforcing information than with the opinion-challenging information, demonstrating a clear preference for belief-congruent content over factual correctness. The detailed study design and regression results are presented in Appendix 4 and 5.

These findings align with cognitive and social psychological theories, particularly confirmation bias (Nickerson, 1998) and motivated reasoning, which suggest that individuals selectively engage with information that supports their pre-existing attitudes while discounting contradictory evidence. The Selective Exposure Theory also explains why users actively seek out and interact with belief-reinforcing content, even when faced with misinformation.

By supporting **H5**, this study provides critical insights into the mechanisms of information consumption on social media. The evidence suggests that combating misinformation requires more than just fact-checking; interventions should address belief-driven engagement patterns and cognitive biases that lead users to interact with false yet reinforcing content. These findings contribute to ongoing discussions on

misinformation spread, digital echo chambers, and the challenges of promoting factual discourse in online environments.

Our findings indicate that news consumption and time spent on social media significantly influence user engagement with online information. Regression results from Table 7 show that as users consume more news on social media, their likeability (0.291, $p < 0.001$), shareability (0.272, $p < 0.01$), and believability (0.181, $p < 0.05$) of information increase. Similarly, time spent on social media is positively correlated with engagement, suggesting that users who spend more hours on these platforms interact more with content, regardless of its accuracy. This trend is consistent with existing research, which shows that increased exposure to digital content leads to higher engagement as users become more accustomed to consuming and reacting to information in online environments.

However, this also raises concerns about echo chambers and misinformation vulnerability, as engagement appears to be driven more by familiarity and belief alignment rather than factual accuracy. Prior studies have highlighted that frequent social media users tend to interact more with content that reinforces their pre-existing views, making them more susceptible to misinformation. Our results provide further evidence that exposure to more news on social media does not necessarily improve critical engagement—instead, it strengthens existing biases. This underscores the need for interventions promoting media literacy and diverse content exposure, ensuring user engagement is based on critical evaluation.

Although the Feeling/Thinking personality variable does not show statistical significance in the regression models, a deeper analysis reveals an interesting pattern. Thinking-type individuals tend to experience higher levels of cognitive dissonance when confronted with opinion-challenging information than Feeling-type individuals. This suggests that

those who rely on logical reasoning may struggle more with conflicting information, leading to greater discomfort and hesitation in engaging with it. In contrast, Feeling-type individuals may process information differently, potentially relying more on emotional or value-based reasoning, making them more adaptable to conflicting viewpoints. While this distinction is not statistically significant in the models, the observed behavioral differences suggest that cognitive dissonance responses vary based on personality traits, influencing how individuals engage with diverse perspectives online.

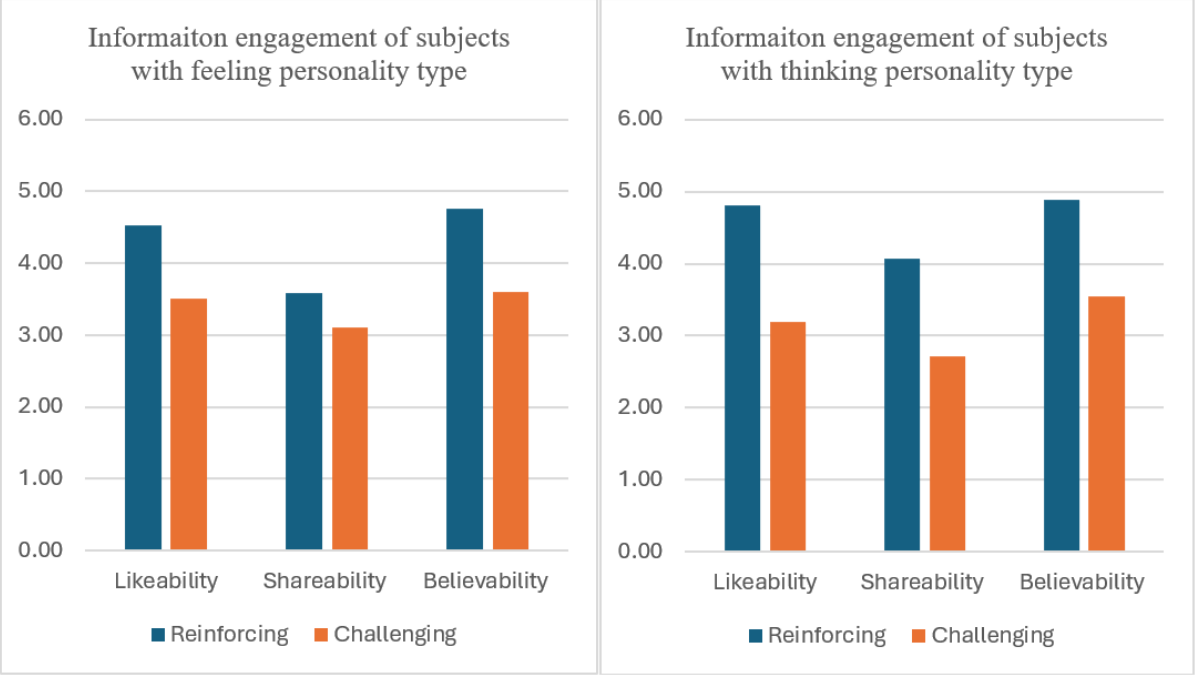

Figure 3: Subject engagement levels with sixth information point based on personality type.

2.8 Robustness Checks

Multiple checks and tests were conducted from both theoretical and analytical perspectives to assess the stability and generalizability of the results. To test the validity of the models, the variance inflation factor (VIF) was computed to rule out the possibility of autocorrelation. All the models had a VIF value lower than 3.5, indicating no or very low autocorrelation between the variables. In terms of the residual analysis, the residuals turned out to be linear, and no heteroscedasticity was observed.

The rationale for introducing two segments of information stems from the recognition that opinions and engagement behaviors vary depending on the topic of the information presented. Prior research has demonstrated that attitudes and belief-consistent engagement on social media are often context-dependent, meaning that individuals may exhibit different levels of confirmation bias and cognitive dissonance depending on the topic at hand. Without incorporating a second set of information stimuli, our findings would have been highly context-specific, potentially limiting their generalizability. By including a second segment of information with varying content, we ensure that the idiosyncrasies of a single topic do not drive our results but rather reflect broader patterns of engagement behavior across different types of political content. Furthermore, the results from the second segment are consistent with those from the first segment, reinforcing the robustness of our findings across different topics and confirming that cognitive friction has a replicable effect on engagement behavior across various political content types.

2.8.1 Tobit Regression

Likability, shareability, and believability were the three dependent variables of the research, and they corresponded with the engagement of users captured in an experiment. The values of these dependent variables were in the range of 1–7. This finding showed that the dependent variables were both left- and right-censored; the lower censored value was 1, and the upper censored value was 7. As these restrictions were imposed given the nature of the research, it was critical to assess whether these restrictions affected the findings. A Tobit regression model was used to compare and validate the regression results and study the effects beyond the restrictions. The results of the Tobit regression model for likability, shareability, and believability are presented in Appendix 6. The Tobit

regression results closely matched the primary regression results and provided evidence that the censored values did not limit the validity of the results.

2.8.2 Supplementary Experiment

As discussed in the results and discussion section, a supplementary experiment was conducted to further validate the findings of the main experiment. This additional study followed a similar experimental design but incorporated a few key modifications to enhance the robustness of the results. First, all information points presented to participants in this supplementary experiment were factually accurate, ensuring that the effects observed were solely attributable to the nature of the information (reinforcing vs. challenging) rather than potential misinformation. Second, the experiment was designed to be more concise, spanning only six information points, allowing for a focused assessment of how the nature of information influences user engagement over a shorter exposure period.

The detailed experimental setup is provided in Appendix 4, and the results are presented in Appendix 5. Consistent with the main experiment, the findings of the supplementary study reaffirm the significant role of political orientation and the nature of information in shaping engagement behavior. Participants exposed to opinion-challenging information exhibited distinct engagement patterns compared to those presented with opinion-reinforcing content, reinforcing the broader conclusions drawn from the main experiment. These results provide additional support for the argument that cognitive responses to information are influenced not only by preexisting beliefs but also by structured exposure to varying viewpoints, further contributing to the understanding of ideological engagement in digital environments.

2.9 Theoretical Implications

2.9.1 Cognitive Dissonance as a Disruptive Mechanism in Echo Chambers

Prior research in information systems and media studies has extensively examined the mechanisms reinforcing echo chambers, yet relatively little attention has been given to how they might be disrupted. Our findings provide empirical validation that cognitive dissonance functions as a critical mechanism for weakening ideological isolation in digital environments. Specifically, we demonstrate that exposure to opinion-challenging content induces cognitive friction, which in turn reduces engagement with subsequent misinformation. This refines Cognitive Response Theory (Greenwald, 1968) within the context of algorithmically curated information streams, offering a more nuanced understanding of selective exposure dynamics. Contrary to the assumption that exposure to dissonant content only results in disengagement, our results suggest that cognitive discomfort can lead to a shift in processing strategies, promoting greater scrutiny of subsequent content. This highlights an underexplored pathway for disrupting ideological echo chambers in social media ecosystems.

2.9.2 Reevaluating Confirmation Bias and Selective Exposure in Algorithmic Environments

Traditional theories of confirmation bias (Nickerson, 1998) and selective exposure suggests that individuals overwhelmingly engage with content that aligns with their pre-existing beliefs, reinforcing ideological segregation. Our study challenges this perspective by showing that exposure to counter-attitudinal content does not merely trigger disengagement but instead alters cognitive processing trajectories. We find that belief-incongruent content induces a shift toward a more critical mode of information consumption, significantly reducing engagement with misinformation. This has profound implications for algorithmic curation systems, which predominantly optimize for

engagement without considering the potential of cognitive dissonance as a corrective mechanism. Our findings suggest that algorithmic frameworks should integrate dissonance-based interventions to disrupt habitual reinforcement loops, thereby fostering more deliberative information processing in digital environments.

2.9.3 Political Orientation as a Determinant of Digital Engagement Patterns

This study advances the integration of Moral Foundations Theory (Graham et al., 2013) within information systems research by demonstrating that political ideology significantly moderates online engagement behaviors. While prior IS research has largely examined ideological clustering through network homophily (Bakshy et al., 2015), our findings indicate that political identity influences engagement patterns at an individual level, independent of network structure. Specifically, we observe that right-wing users exhibit stronger engagement with information overall, while left-wing users engage more selectively based on content alignment with moral concerns such as fairness and harm reduction. This calls for future research into ideologically adaptive content personalization, exploring how social media algorithms impact users' resistance to misinformation across political identities differently.

2.9.4 Personality-Driven Digital Engagement: The Role of Extroversion and Cognitive Styles

While information systems research has extensively examined social and algorithmic influences on digital engagement, the role of personality-driven differences have remained underexplored. Our study empirically establishes that extroversion significantly amplifies engagement with digital content, reinforcing the relevance of personality in IS research. This finding opens new avenues for investigating personality-aware digital interventions, particularly in designing engagement strategies that accommodate varying social motivation and interaction preferences. Additionally, our results suggest that

Thinking vs. Feeling personality traits moderate cognitive dissonance responses, with Thinking-type individuals experiencing greater cognitive discomfort when exposed to opinion-challenging content. This underscores the need for future research into cognitive style-sensitive misinformation interventions, ensuring that debunking strategies account for individual differences in analytic versus affective information processing.

2.10 Practical Implications

2.10.1 Reengineering Algorithmic Feeds to Introduce Strategic Cognitive Dissonance

Current recommendation algorithms primarily optimize for engagement, inadvertently reinforcing ideological echo chambers and increasing susceptibility to misinformation. Our findings demonstrate that exposure to belief-incongruent yet credible content can induce cognitive friction, reducing subsequent engagement with misinformation. Platforms should explore algorithmic nudging mechanisms that periodically introduce such content in a calibrated manner—designed to disrupt ideological insularity without provoking outright disengagement. This approach moves beyond simplistic "balanced exposure" models and toward precision-tuned epistemic expansion, where cognitive dissonance is strategically leveraged to foster critical engagement rather than reactionary dismissal.

2.10.2 Personalized Misinformation Interventions Based on Political Orientation and Personality

Engagement with misinformation is not ideologically symmetrical, and as our findings indicate, interventions must be tailored accordingly. Since right-leaning users exhibit higher engagement with identity-based narratives, corrective strategies should align with their moral foundations—such as loyalty, authority, and purity—rather than overtly contradicting their worldview. For left-leaning users, who may be more receptive to fact-

based rebuttals, interventions should still incorporate emotionally compelling storytelling to sustain attention. Personality traits further moderate engagement patterns:

- Extroverted users—who exhibit heightened digital interaction—may respond better to social debunking interventions, where misinformation corrections are integrated into peer discussions rather than isolated fact-checks.
- Introverted users may prefer personalized misinformation resistance tools, such as private accuracy prompts, before sharing content.
- Analytical thinkers (with a high "Thinking" personality trait) might benefit from interactive "Are you sure?" friction prompts, nudging them to evaluate sources before dissemination.
- Emotionally driven users (high "Feeling" trait) may require affective-based misinformation correction techniques, leveraging narratives over factual debunking.
- By integrating political identity and cognitive styles into misinformation interventions, platforms can enhance engagement with corrective content rather than triggering defensive resistance.

2.10.3 Beyond Fact-Checking: Designing Affective-Based Misinformation Interventions

Traditional fact-checking assumes users prioritize accuracy when consuming information. However, our findings reveal that belief alignment, not veracity, is the primary driver of engagement. Consequently, misinformation interventions must move beyond fact-checking into affective-based strategies that target the emotional and cognitive mechanisms underlying misinformation susceptibility. Effective alternatives include:

- Prebunking interventions that educate users on misinformation tactics before exposure, enhancing resistance through a psychological inoculation effect.
- Narrative-based corrections that embed fact-checking within emotionally resonant stories, making truth-telling more engaging than misinformation itself.
- Social norm interventions that highlight peer consensus against misinformation, leveraging social influence rather than authoritative correction.

2.10.4 Embedding Critical Engagement Prompts in Digital Literacy Initiatives

Our study underscores increased social media use correlates with higher engagement but not necessarily improved critical thinking. Therefore, digital literacy initiatives must go beyond traditional fact-checking guidance and train users to recognize cognitive dissonance as a cue for critical evaluation. This could be operationalized through:

- Platform-integrated literacy tools that subtly indicate when content may trigger confirmation bias (e.g., notifications prompting users to consider an alternative viewpoint before sharing).
- Discomfort Recognition Training, where users are taught to identify cognitive friction as an indicator that they should pause and reflect rather than reactively reject.
- By embedding critical engagement nudges into digital literacy programs, platforms, and educators can cultivate long-term epistemic resilience rather than relying on short-term corrective interventions.

2.10.5 Rethinking Algorithmic Transparency: Making Cognitive Friction Visible

While current transparency initiatives focus on content provenance and engagement metrics, our findings suggest that platforms should also surface cognitive friction

indicators—helping users become aware of when and why they feel discomfort with belief-incongruent content. Potential design implementations include:

- Epistemic Reflection Indicators, where platforms highlight when a user's engagement patterns shift toward belief-confirming loops, prompting subtle self-awareness.
- Cognitive Challenge Toggles, allowing users to opt into exposure settings that introduce mild epistemic dissonance—gradually expanding ideological boundaries without overwhelming resistance.

Rather than simply disclosing why users see content, transparency mechanisms should be reimagined to help users understand how their cognitive biases shape engagement, fostering self-directed, critical consumption behaviors.

2.11 Future Research Directions

With over 4.8 billion active social media users worldwide (Statista, 2023), understanding the collective nature of information consumption across multiple platforms, countries, and ideological spectra presents a significant challenge. However, establishing a strong theoretical foundation is essential for guiding future research. This study contributes to the Information Systems (IS) domain by focusing on strategies to dismantle echo chambers, offering theoretical and practical insights. The experimental design centered on U.S. political information, as prior literature has identified strong echo chamber effects in this context (Cota et al., 2019). However, the mechanisms of cognitive friction explored in this study may extend beyond political discourse to other polarized topics, such as climate change, public health misinformation, and financial decision-making. Future research should examine whether similar engagement patterns emerge in these domains

and develop tailored intervention strategies to promote critical engagement with diverse perspectives.

This study primarily focuses on short-term engagement patterns following exposure to opinion-challenging information. Future research should investigate the long-term effects of cognitive friction, assessing whether repeated exposure to conflicting viewpoints leads to sustained behavioral shifts, belief updating, or increased openness over time. Additionally, while social media platforms present information in a non-linear, fragmented manner, experimental studies typically control the sequence and structure of information exposure. This difference raises an important research question regarding the impact of simultaneous exposure to diverse information sources and how information overload influences user retention and analysis across different domains.

While this study demonstrates that cognitive friction can disrupt echo chambers, future research should explore personalized interventions based on user traits, including political ideology, cognitive style, and personality. Developing adaptive content delivery mechanisms that adjust the level of cognitive dissonance based on an individual's resistance levels could optimize engagement without triggering excessive reactance. Furthermore, although this study incorporates personality traits, the analysis remains largely statistical, limiting the exploration of psychological underpinnings of information consumption. Future studies should delve deeper into the psychological dimensions of engagement, examining how cognitive and emotional factors shape user behavior on social media.

Lastly, this study focuses exclusively on text-based information consumption, leaving a critical gap in understanding how multimodal content—such as images, videos, and audio—shapes engagement and cognitive friction. Given the increasing dominance of

visual and audiovisual media on digital platforms, future research should explore how different content formats influence users' willingness to engage with opinion-challenging information and whether cognitive friction operates differently across media types. Addressing these areas will enhance the theoretical and practical foundation for designing interventions that effectively challenge ideological rigidity and foster more open, critical digital discourse.

2.12 Conclusion

Echo chambers on digital platforms reinforce ideological rigidity and limit exposure to diverse viewpoints. This study demonstrates that when strategically introduced, opinion-challenging information induces cognitive friction, prompting users to evaluate content rather than passively accepting belief-reinforcing narratives critically. By applying Cognitive Response Theory (CRT), the findings show that cognitive friction disrupts habitual engagement, reducing the automatic reinforcement of ideological silos. Results highlight that political orientation, personality traits, and engagement behaviors shape responses to conflicting information. While extroverts and highly engaged users interact more with diverse content, ideological predispositions strongly mediate cognitive responses. These insights emphasize the need for personalized interventions, where platform algorithms introduce countervailing viewpoints to encourage more reflective discourse.

Beyond politics, cognitive friction impacts misinformation correction, public health messaging, and social issue debates. Future research should explore long-term behavioral shifts, multimodal content engagement, and adaptive interventions. This study advances Information Systems (IS) research by shifting the focus from content exposure to cognitive engagement, offering a novel approach to breaking echo chambers.

Thoughtfully designed interventions can foster more constructive digital interactions, promoting a critically engaged online society.

Chapter 3: Where Does the Ball Starts Rolling?: An Empirical Investigation into Initial Opinion Formation on Social Media Platforms

3.1 Abstract

Digital social media platforms are flooded with vast amounts of unknown and often unverified information, creating an environment where users are constantly exposed to new content that can quickly influence their perspectives. The initial formation of opinions in this context is critical, as these first impressions not only shape immediate reactions but also have lasting impacts on user behavior and attitudes, both online and offline. Opinions developed through social media can drive decision-making, influence political alignments, and even shift consumption patterns. Given the growing influence of social media on societal dynamics, understanding how these initial opinions form is vital for promoting responsible information dissemination and curbing the spread of misinformation. Drawing on cognitive psychology, this research explores the interaction between cognitive processes and the digital identity of information sources, offering insights into how opinions are formed on social media. Study One, involving 320 participants, reveals that initial opinions begin to solidify after consuming five pieces of content, serving as the foundation for further opinion development. Study Two, with 180 participants, investigates factors such as cognitive structures, personality traits, and socio-demographic characteristics, finding that users are more likely to trust information from profiles with unverified titles (e.g., Dr. or Doctor) than from verified expert influencers. This research has profound implications for Information Systems (IS) research,

contributing to a deeper understanding of how user beliefs and opinions are shaped through social media consumption, ultimately guiding future studies on information processing and digital trust dynamics.

Keywords: Digital platforms, initial opinions, digital identity.

3.2 Introduction

In 2020, the World Health Organization (WHO) reported a concerning phenomenon: around 800 individuals engaged in the hazardous practice of self-injecting bleach, driven by the mistaken belief that it could cure COVID-19 (Shirish et al., 2021). This alarming behavior persisted despite clear labeling indicating the product's dangers and the apparent irrationality of the practice. The driving force behind this misguided action was misinformation proliferated via social media platforms. This situation presents a critical question for academic inquiry: How do individuals form and adopt such perilous beliefs when they lack pre-existing knowledge or expertise on the subject? Understanding this process is crucial for addressing the pervasive misinformation and developing effective interventions to promote responsible information consumption on social media. Thus, this study aims to understand how initial opinions are formed in the absence of pre-existing beliefs.

"Suddenly, Everybody's an Expert"[1]

- New York Times (February 3, 2000)

This news headline was published by the New York Times in the early 2000s, during the early days of social media. Since then, and more notably after the pandemic, there has been a growing trend of individuals presenting themselves as experts online, often in areas far beyond their domain of expertise. Multiple news outlets and blogs have recognized

[1] https://www.nytimes.com/2000/02/03/technology/suddenly-everybody-s-an-expert.html

this issue (see Reddit[2], blogs[3][4] for some examples). It is reasonable to assume that not everyone starts as an expert on every topic, even if they believe so after spending a few days immersed in their favorite social media platforms.

One issue with individuals suddenly becoming self-proclaimed experts is that many topics have multiple perspectives, yet people frequently promote "facts" (whether speculative or factual) from just one side, posing as authorities. When consuming information on social media, users often fail to verify the authenticity of what they read, leading to the spread of half-truths and, ultimately, misinformation (Laato et al., 2020; Moravec et al., 2022).

Extensive research highlights the role of pre-existing beliefs and confirmation bias as significant contributors to the spread of misinformation (Modgil et al., 2021). However, a more intriguing question arises: In situations where users lack pre-existing beliefs or opinions, how do they consume information and form their initial opinions? In the digital landscape of social media, users are bombarded with information on various familiar and unfamiliar topics (Bouadjenek et al., 2016). Since individuals are unlikely to possess prior knowledge on all topics, it is essential to explore how initial opinions form in such scenarios and how this sparks the chain of information consumption. To the best of our knowledge, this paper is one of the few that delves into the issue of initial opinion formation on social media.

Understanding the factors that drive the formation of initial opinions on social media platforms is crucial for developing effective strategies that mitigate adverse outcomes and encourage more balanced information consumption. Cognitive mechanisms such as

[2] https://www.nytimes.com/2000/02/03/technology/suddenly-everybody-s-an-expert.html
[3] https://mattruby.substack.com/p/when-did-everyone-become-an-expert
[4] https://theconversation.com/everyones-an-expert-in-the-digital-era-fakes-need-to-be-exposed-36616

heuristics and social influence play a critical role in shaping initial opinions in a social media context (Yin et al., 2018). Additionally, individual differences in cognitive schemas, personality traits, and socio-demographic factors may influence opinion formation (Chan et al., 2023), highlighting the need for tailored information systems to promote responsible social media use. Therefore, it is essential to study the factors influencing the formation of initial opinions. This research seeks to answer the question: *When do individuals form their initial opinions while consuming information on social media platforms, and what factors contribute to this process?*

The study is operationalized through two experiments. The first experiment addresses the question of when initial opinions form as individuals consume new information on social media. Beyond the information consumption behavior, our research also tests if social media users are actually not concerned with the veracity of the information. The second experiment aims to identify the factors that influence the formation of initial opinions. The results suggest that information load significantly influences information consumption and believability. Further, the results provide evidence that the *veracity of the information* does not influence the interaction with the information contributing to the literature by validating the existing arguments in the literature. This research contributes to theory and practice by revealing two key findings: first, the minimum number of information points required to form opinions in individuals is *five*; second, the digital identity of the information source significantly impacts user interaction with information. Furthermore, social media users are more likely to trust information from profiles with unverified titles than from those of expert influencers.

3.3 Background and Literature

Individuals utilize various social media platforms based on their specific needs. When seeking professional or knowledge-related information on platforms like *LinkedIn* and

Indeed, users tend to engage in critical evaluation of the content they consume. In this utilitarian mode characterized by a pragmatic approach, individuals prioritize authenticity and reliability, as their primary goal is to obtain accurate and relevant information to fulfill specific professional or intellectual requirements (Roy & Ng, 2012). Conversely, on platforms such as *Instagram* and *Facebook*, where the primary objective is to derive pleasure and engage socially, Users frequently make rapid judgments without thoroughly evaluating the credibility of the content. In this hedonic mode, characterized by a focus on enjoyment and social interaction, individuals are less mindful of the authenticity of the information they encounter (Kahneman, 2003). The nature of social media platforms plays an important role in determining how users consume information.

In the digital landscape of social media platforms such as Instagram and Facebook, users encounter a wealth of information on various topics, both familiar and unfamiliar (Bouadjenek et al., 2016). When consuming information in hedonic mode, characterized by a focus on enjoyment and social interaction, users may prioritize entertainment over the authenticity of information. This can contribute to the inadvertent spread of misinformation, especially false information disseminated without malicious intent (Shirish et al., 2021). Extensive research highlights that pre-existing beliefs and confirmation bias are significant factors driving the spread of misinformation (A. Kim et al., 2019; Moravec et al., 2020). However, an intriguing question arises: How do users consume information and form initial opinions when they lack pre-existing beliefs and opinions?

Surprisingly, there is limited body of literature on how users form initial opinions. Therefore, our research aims to address this gap by investigating how users consume information and form initial opinions in the absence of pre-existing beliefs and opinions. To discuss the research questions raised above, we need to dive into the mechanisms of

how individuals engage with content when they have no existing beliefs versus when they have pre-existing beliefs.

When consuming information in a hedonic mode, individuals tend to engage with content that aligns with their existing beliefs and interests (Kapoor et al., 2018). The ability to perceive, process, and retain information is determined by the amount of cognitive resources available, which can be explained by Cognitive Load Theory and Information Processing Theory (Hu et al., 2017). These resources are influenced by the complexity of the information, its relevance to understanding the topic, and the user's interest in the topic (Plass et al., 2010).

In contrast, individuals consume new information of interest; they utilize cognitive resources to perceive and process it. The remaining cognitive resources diminish as they consume information on similar topics. The amount of cognitive resources available decreases with the increased amount of information consumed (Hu et al., 2017). As this amount increases and cognitive resources decrease, users may experience cognitive effects such as reduced attention focus, information overload, decision fatigue, and decreased cognitive performance (Laato et al., 2020). Consequently, individuals tend to make quick decisions based on the initial information consumed that is etched in their memory. This implies that the initial information consumed is responsible for forming initial opinions, which are then used to make decisions on new information. The crucial question to be addressed here is: *At what point are these initial opinions formed*?

3.3.1 Critical Information Load

The point at which individuals transition from being novices to exhibiting expert behavior in a topic solely based on the volume of information consumed is termed the point of critical information load. At this juncture, individuals become inundated with information that surpasses their cognitive capacity, prompting them to rely on existing knowledge to

assess new information. As a result, they assume a sense of expertise based solely on the information they have consumed, illustrating the phenomenon of cognitive overload. This phenomenon is explained by the Dunning-Kruger effect, which states that individuals with lower levels of competence in a particular domain are more likely to overestimate their abilities compared to those with higher levels of competence (Kruger & Dunning, 1999).

After reaching the critical information load threshold, individuals lacking prior knowledge on a topic tend to exhibit behaviors akin to experts, assessing and validating new information through the lens of their initial opinions and beliefs. According to Cognitive Response Theory, exposure to information congruent with one's existing opinions triggers confirmation bias, wherein individuals selectively seek, interpret, and favor information that aligns with their preexisting beliefs (Klayman & Ha, 1987). Conversely, when confronted with information that contradicts their opinions, individuals may experience cognitive dissonance, resulting in reduced engagement with the information (Festinger, 1962). Cognitive dissonance refers to the discomfort arising from the inconsistency between existing beliefs and new information, leading to decreased interaction with the conflicting information (Brehm & Cohen, 1962).

Based on Cognitive Response Theory (CRT) and, arguments form Kruger and Dunning (1999), individuals acting like experts after the point of critical information load should experience confirmation bias if the new information point aligns with the initial opinions formed and experience cognitive dissonance if the initial opinions are challenged. If the new information consumed reinforces the initial opinions, then individuals tend to like, share, and believe the information more, resulting in increased engagement with it (Kim & Dennis, 2019). However, if the new information is contrary to the initial opinions, then

engagement with the information reduces. This behavior is solely based on the volume and topic of information.

3.3.2 Process of Digital Engagement

Information consumption behavior on social media platforms is influenced by a multitude of user-level and platform-level factors (A. Kim et al., 2019). A substantial body of literature emphasizes the impact of source credibility on user behavior and information consumption (Cheung et al., 2012; Jha & Shah, 2021). However, a less-explored aspect is the source's digital identity. Social Identity Theory posits that individuals derive a significant portion of their identity from the social groups to which they belong (Hogg, 2016). As per this theory, individuals construct their identity through a blend of self-presentation, interaction, and participation within social groups.

Similarly, social media users craft digital identities that reflect their personal interests, professional affiliations, and cultural affiliations or identities (Kreps, 2010). These digital identities influence how other users perceive and interpret the information they share based on pre-existing cognitive schemas. Schemas are pre-existing cognitive structures that aid in organizing and interpreting information (McVee et al., 2005). The digital identity serves as one of these schemas, influencing how users perceive and interpret the information the source shares. In line with this, users on social media tend to trust and engage with information that aligns with their pre-existing cognitive structures. Figure 4 describes the formation of initial opinions in individuals consuming new and relevant information on social media platforms.

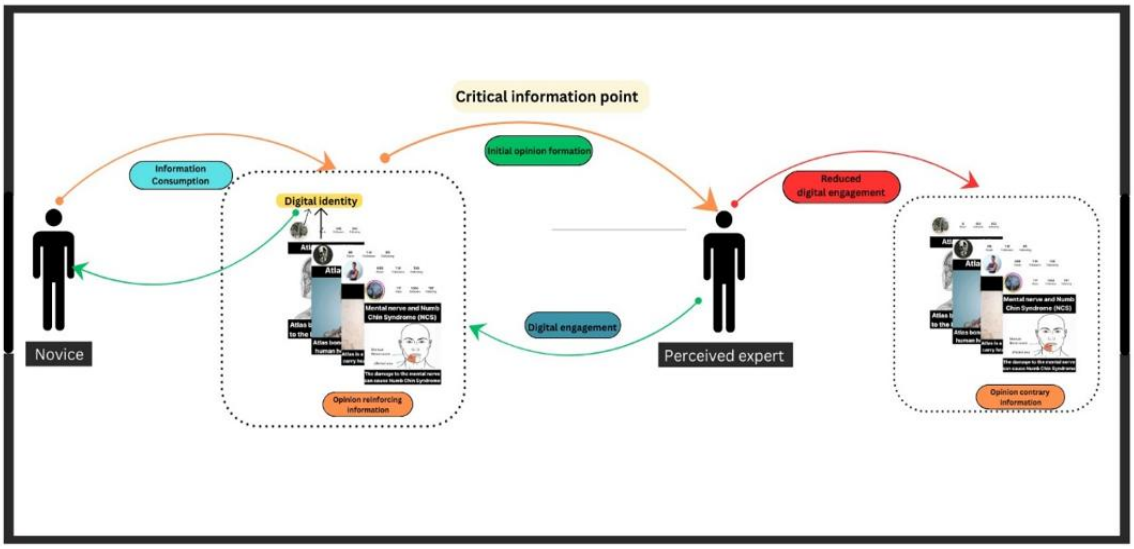

Figure 4: Initial opinion formation on social media platforms in hedonic mode.

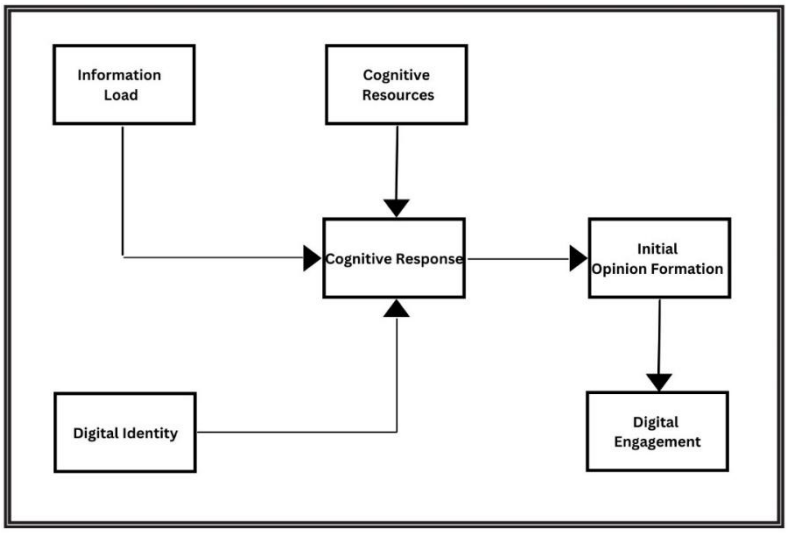

Figure 5: Factors contributing to the formation of initial opinions.

On social media platforms, individuals' digital engagement with new information is shaped by the initial opinions they form. These initial opinions are molded by the cognitive responses elicited by the information they encounter (Cialdini et al., 1981). If the presented information aligns with the individual's interests, corresponds with their cognitive schema, and they have sufficient cognitive resources available, they may form an initial opinion. Conversely, it may be disregarded if the information does not meet

these criteria. As individuals consume more information, these initial opinions solidify and subsequently influence their decisions regarding further information consumption (Cham et al., 2024). This process thereby impacts their digital engagement on the platform. In essence, the initial opinions formed serve as a filter to evaluate subsequent information, guiding individuals' digital interactions and engagement. This is clearly illustrated in Figure 5.

Building upon arguments from literature and theories, this paper aims to understand the critical information point and examine the influence of digital identity. Consequently, the subsequent sections of the paper will elaborate on the hypotheses development, followed by a detailed description of the experimental design and culminating in the presentation of results and findings. By elucidating on these aspects, the paper endeavors to contribute to a deeper understanding of how individuals engage with information on social media platforms, particularly concerning the role of perceived source credibility in shaping digital interactions. Through empirical investigation, we aim to shed light on the mechanisms underlying information consumption behaviors in online environments, thereby informing strategies for responsible information dissemination and fostering more informed digital engagement.

3.4 Hypothesis Development

3.4.1 Information and Cognitive Load

As users are introduced to a plethora of new content on social media platforms spanning various domains, their consumption and interaction patterns are guided by their interests and existing beliefs (Kapoor et al., 2018). In a landscape inundated with news stories, opinions, and perspectives, users may feel compelled to form rapid judgments based on initial information encountered in their feed that aligns with their interests (Teng et al., 2017). In such an environment, where users are constantly exposed to new information,

their ability to perceive, process, and retain this information is explained by Information Processing Theory and Cognitive Load Theory. According to Cognitive Load Theory, users' ability to process new information depends on the availability of cognitive resources (Hu et al., 2017). Within these resources, the complexity of the information, its relevance to understanding the topic, and the user's interest in the topic all play significant roles (Plass et al., 2010).

According to A. Kim et al. (2019), users on social media platforms consume information for pleasure and fun (i.e., hedonic mode of information consumption). In the hedonic mode of information consumption, cognitive system-1 is active, where users spend less cognitive effort to analyze information (Moravec et al., 2020). When users encounter new information on social media platforms related to their interests, they expend the available cognitive resources to process the information (Plass et al., 2010). Due to the nature of the landscape, they are compelled to form opinions. Further, when users consume information that aligns with their initial opinions, they tend to expend the remaining cognitive resources. Thus, this leads to the formation and reinforcement of initial opinions regarding the new topic of interest.

Moreover, individuals may experience cognitive consonance when presented with information that aligns with new opinions, further reinforcing their confidence in those beliefs and motivating continued engagement with similar content (Klayman & Ha, 1987). Additionally, users may engage with and share information as a means of social validation, seeking a sense of belongingness within their social network and reinforcing their group identity (James et al., 2017; Kraut et al., 2010). Therefore, we hypothesize that with an increased information load, individuals are more likely to engage with, share, and believe information on social media platforms related to their topics of interest, even if they have not previously encountered it. This hypothesis suggests that the

overwhelming volume of information on social media platforms influences users' interaction behaviors and belief formation processes, leading to a propensity to engage with and endorse the content.

H1a: Increased information load leads individuals to like more posts on social media, even with minimal prior knowledge.

H1b: Increased information load leads individuals to share more posts on social media, even with minimal prior knowledge.

H1c: Increased information load leads individuals to believe more posts on social media, even with minimal prior knowledge.

3.4.2 Point of Critical Information Load and Veracity

The point of critical information load is the threshold at which individuals on social media platforms transition from being novices to exhibiting behavior reminiscent of experts in a particular topic solely based on the volume of information. At this juncture, individuals become inundated with information that surpasses their cognitive capacity, prompting them to rely on existing information to assess new information. In doing so, they assume a sense of expertise based solely on the information consumed, illustrating the phenomenon of cognitive overload and its implications for information processing on social media.

According to the Dunning-Kruger effect, individuals with lower levels of competence in a particular domain are more likely to overestimate their abilities when compared to those with higher levels of competency (Kruger & Dunning, 1999). When consuming new information on social media with limited cognitive resources, individuals with little to no prior knowledge of the topic may develop a sense of confidence or perceived expertise in the topic. In such scenarios, the initial information consumed plays a crucial role in the

formation of opinions and beliefs on a new topic. Consumption of similar information will initiate the formation of opinions and beliefs, thus leading to the formation of initial opinions.

If the initial information consumed is responsible for forming initial opinions and influencing the user's behavior toward new information points, then the most important question that arises is: What *is the point of critical information load?*

Based on the research done by Miller (1967) the short-term memory of individuals can hold up to seven plus or minus two information points. In the hedonic mode of information consumption, the users perceive, evaluate, and consume information by expending minimum cognitive resources and recalling information that is easily available (i.e., short-term memory). Based on this theory, an initial experiment is conducted to identify the point of critical information load. The results suggest that the minimum number of information points required for users to form opinions and perceive themselves as experts in a topic is five.

According to Cognitive Response Theory, if the information aligns with the initial beliefs of the users, then confirmation bias comes into play, and the interaction with the information does not change (Klayman & Ha, 1987). However, when consuming information that contradicts the initial beliefs, the users experience cognitive dissonance, reducing interaction with the information. Therefore, at the point of critical information load, if the social media users tend to behave like experts in a topic they have not encountered before, then based on these beliefs, their interaction with further information points should vary based on the nature of the further information points presented to them. Hence, we hypothesize that:

H2a: Beyond the critical information point, subsequent information conflicting with initial exposure draws fewer likes

H2b: Beyond the critical information point, subsequent information conflicting with initial exposure is shared less frequently.

H2c: Beyond the critical information point, subsequent information conflicting with initial exposure is less likely to be believed.

3.4.3 Digital Identity and Information Load

One of the major factors influencing information consumption and interaction is the information source. The vast amount of research revolves around Source Credibility Theory, which provides a clear picture of various source characteristics that can influence information consumption interaction and dissipation (Cheung et al., 2012; Jha & Shah, 2021; Liu et al., 2020). However, little research dwells on the concepts of digital identity, which transcends the projected source reputation, which concerns the number of followers, likes, amount of interaction, etc (Jha & Verma, 2023; Serman & Sims, 2023). However, the perceived reputation of the source and digital identity is often overlooked.

Social Identity Theory posits that individuals derive a significant portion of their identity from the social groups they belong to (Mishra et al., 2012). According to Social Identity Theory, individuals construct their identity through a combination of aspects like self-presentation, interaction, and participation in social groups (Ellemers & Haslam, 2012). Analogously, social media users create digital identities that reflect their traits, such as personal interests, professional affiliations, and cultural indications. Other users can perceive the created digital identity differently based on their schema for consuming information.

The schemas are the pre-existing cognitive structures that help organize and interpret information (McVee et al., 2005). The digital identity acts as one of the schemas that influence how users perceive and interpret the information the source shares. Credibility and trust in the digital identity play a crucial role in how users accept and engage with the information (Kelton et al., 2008). According to this, the users on social media trust information and engage with it if the information presented aligns with their pre-existing cognitive structures.

Based on the Cognitive Learning Theory, the new information consumed will be stacked, altered, or discarded based on the nature of the information (Fox, 1997). If the information aligns with the pre-existing cognitive structures and interests, then the information is stacked. The digital identity of the source is an aspect responsible for creating a specific schema or cognitive structure for the consumption and retention of information. The information consumed influences subsequent information processing only if the initial information is retained. Hence, to test this line of argument, we hypothesize that the interaction with subsequent posts on digital social media after the point of critical information point is impacted by the digital identity of the individuals. Therefore, the third set of hypotheses are:

H3a: The likeability of subsequent posts on digital social media platforms is impacted by the digital identity of the source.

H3b: The shareability of subsequent posts on digital social media platforms is impacted by the digital identity of the source.

H3c: The believability of subsequent posts on digital social media platforms is impacted by the digital identity of the source.

3.4.4 Digital Identity and Confirmation Bias

According to Cognitive Response Theory, confirmation bias is the tendency to interpret, search for, recall, and favor information in a way that confirms one's pre-existing beliefs (Westerwick et al., 2017). Pre-existing beliefs come into play if the users have prior knowledge about the topic of information being consumed. In scenarios with little to no prior knowledge, social media users resort to information consumption schema or cognitive structures to consume and interact with the information. This implies that forming initial opinions in social media users depends on cognitive structures (McVee et al., 2005).

When consuming new information on the topic of interest, if the information fits in the cognitive structures, then users consume it, and based on this initial information, the opinions and beliefs are formed or updated (Agarwal & Karahanna, 2000). Once these initial opinions are formed, they act as the pre-existing beliefs along and will be responsible for how users interact with further information on the same topic. This implies that the users recall or refer to the initial information when consuming further information.

Based on Cognitive Load Theory, when consuming new information on any topic, users will expend fewer cognitive resources and interact with the information based on existing beliefs (Sweller, 2011). So, we argue that the inference or reference to the previous information is dependent on the users' cognitive structures, which is dependent on the trust digital identity of the source. Hence, we hypothesize that:

H4: The trust in the initial information's digital identity will impact the information reception's propensity to refer back to the original information points.

3.5 Methodology

We used controlled experiments as the method of choice in this study to quantify the perceptions and opinions of participants while consuming various information points. The interaction with the information helped us understand the behavior of social media users and how opinions are created and updated.

This research consists of two studies. The first examines how initial beliefs and opinions form while consuming social media information, while the second explores how different sources influence opinion formation and user behavior. The two experiments adhere to the university's ethical guidelines and have been thoroughly vetted by the relevant ethical committees, ensuring they are fair and appropriate for research purposes.

3.5.1 Study 1

3.5.1.1 Factorial Design

This design enables an in-depth examination of how information load, the nature of the information (reinforcing or challenging), and its veracity (true or false) affect participants' information processing and behavior. The experimental setup is designed to generate data that will confirm or refute the stated hypotheses. Table 9 outlines the experimental design, where, for example, the subjects in group 3T/1F indicate three true initial information points followed by one false subsequent information point. The subjects are then prompted to express their likeliness of liking, sharing, and believing the subsequent information on a seven-point Likert scale. Apart from the quantified opinions, demographical features such as age, gender, education qualification, social media usage, and income are captured.

	3/1		5/1	
Opinion-reinforcing	3F/1F	3T/1T	5F/1F	5T/1T

Opinion-challenging	3F/1T	3T/1F	5F/1T	5T/1F

Table 9: Experimental design of study 1

The first study of the research is focused on understanding the formation of initial opinions while consuming information and the influence of information load on the formation of beliefs and opinions. This is operationalized by conducting an online experiment. The experimental design comprises three factors, with two levels in each level, culminating in a three-factor, eight-level matrix. The first factor pertains to the number of information points presented to participants. This factor comprises two conditions: the first group is exposed to four information points, designated as the **3/1** condition, where the first three information points are classified as initial information, while the fourth serves as subsequent information. Similarly, the second group is exposed to six information points, referred to as the **5/1** condition, where the first five information points are treated as initial information, and the sixth point operates as subsequent information, as delineated in Table 9.

Based on their assigned group, participants initially receive either three or five pieces of initial information, followed by an evaluation of their opinion formation upon exposure to the subsequent information point. This evaluation measures participants' propensity to like, share, and believe the subsequent information on a seven-point Likert scale. This level evaluates the influence of information load on users' information consumption and provides a basis to evaluate the first set of hypotheses. Each information point utilized in the experiment is represented by a distinct Instagram post.

The second factor of the study aims to investigate the presence of confirmation when participants are presented with opinion-reinforcing information and the occurrence of cognitive dissonance when confronted with opinion-challenging information. This factor

focuses on the nature of the subsequent information point, with two levels: **opinion-reinforcing** and **opinion-challenging** information. While the initial information remains consistent across both groups at this level, the critical variable that shifts is the subsequent information. For participants in the reinforcing information condition, the subsequent information aligns with the initial information. Conversely, for those in the challenging information group, the subsequent information contradicts the initial information. Incorporating this level expands the design into a two-factor, four-level matrix and aids in studying the formation of initial opinions.

Finally, to evaluate the impact of information authenticity on participants' opinions, a third factor is introduced to the experimental grid, where the veracity of information becomes a key factor, resulting in a three-factor, eight-level experimental design. Participants are exposed to either true (denoted as T) or false (denoted as F) information. In the reinforcing group, participants who receive true initial information are provided with true subsequent information, while those presented with false initial information continue with false subsequent information. In contrast, participants in the challenging group who receive true initial information are later presented with false subsequent information, and those with false initial information encounter true subsequent information. Though the third factor does not directly address any particular hypotheses of our study, it provides a platform to study the claims made by numerous studies that social media users are not concerned with the veracity of the information.

3.5.1.2 Stimuli

The second section of the study dives into the subjects' perceptions while consuming the information presented to them. In this phase, users encountered information presented in a format resembling posts on the Instagram platform. Moravec et al. (2020) argued that

presentation format influences users while consuming information. So, each information point is crafted to look like a post on Instagram.

Our study was focused on understanding the influence of initial information on the consumption and interaction of information in the future and the formation of beliefs and opinions. This posed the challenge of creating new information points for the subjects, and at the same time, the new information points needed to be in line with the subjects' interests. This challenge was addressed by choosing information points from the medical domain. In the study, less familiar anatomical concepts, such as the atlas bone and the mental nerve, were employed strategically to mitigate the potential influence of pre-existing beliefs and opinions among the subjects regarding a specific concept or domain. Despite these anatomical concepts being relatively unknown to the general public, selecting participants for the study who lacked awareness of these concepts yet expressed an interest in engaging with such information on social media posed a notable challenge. This selection process is elaborated on in the forthcoming participants' section.

In the experiment, the information points were derived from the medical domain, ensuring that the true information presented to participants was definitive, factual knowledge. Human anatomical information is rooted in objective reality rather than subjective belief, making it inherently factual. For instance, **"The atlas bone is one of the three bones of a joint responsible for pivotal movements of the head"** serves as an example of the precise, factual information conveyed to the participants. To create the false information points, true statements were slightly modified, rendering them anatomically incorrect. These distortions were subtle but significant enough to introduce factual inaccuracies. For example, **"The atlas bone is solely responsible for pivotal movements of the head"** exemplifies a false information point used in the study, which is an altered version of the original, accurate statement. These modifications allowed researchers to observe how

participants processed true versus false information. The detailed discussion regarding stimuli development is illustrated in Appendix 7, and Appendix 8 provides snapshots of the stimuli used in the experiments.

3.5.1.3 Participants

The study was conducted in the medical context. To identify the participants who lacked awareness about the stimuli used in the study yet had an interest in engaging with such content on social media platforms, a pre-screening survey was conducted to identify appropriate subjects for the study. The pre-screening survey was designed to identify subjects interested in medical information, follow medical pages on social media, and do not work in the medical industry. The short-listed subjects were then requested to take part in the main study.

The main study was conducted on Prolific and designed in Qualtrics. The subjects took approximately 5 minutes to complete the study and were compensated $1 for their time. Usually, participants on Prolific are compensated with $12 per hour. To ensure the robustness and validity of respondents, we followed the protocol suggested in recent publications to guarantee that the respondents were human, active, and attentive during the task (Bansal et al., 2023). This verification was done by conducting attention checks at the beginning and end of the experimental conditions (Rossi et al., 2022). The study was floated on Prolific in November 2023, and 303 short-listed adults from the US volunteered to complete the survey. The subjects were randomly split into eight groups mentioned in Table 9. Among the 303 responses, 22 were incomplete, 18 failed the attention checks, and 17 were deemed invalid as they were patterned responses, resulting in a total of 246 valid responses.

3.5.2 Study 2

3.5.2.1 Design and Stimuli

The second phase of the research focuses on examining the impact of information sources on user interaction and referencing prior information. An extension of the initial study, the second phase shares similarities with only one level and incorporates four factors. Utilizing information from the first study, this phase assesses the influence of different sources on information interaction and reference to previous information. While the first study utilized medical information to mitigate pre-existing beliefs, this phase delves into the effects of various social media profiles in the medical domain, specifically on Instagram.

The study aims to comprehend the influence of four distinct profiles disseminating medical information on Instagram. These profiles include a doctor profile with a high number of followers, an expert influencer with a substantial following, a doctor profile with a low number of followers, and a common person profile with a limited following.

The experiment was structured into two distinct sections. The first section collected participants' demographic information, including age, gender, educational qualification, social media usage, and income. The second section, which constituted the core of the research, aimed to capture participants' perceptions while engaging with content on digital social media platforms. Participants were randomly assigned to one of the four predefined profile groups. Each participant was then exposed to two segments, each containing six discrete information points (five initial information points and one subsequent). Following the presentation of these points, participants were asked to rate their likelihood of liking, sharing, and believing the subsequent information. Responses were measured using a seven-point Likert scale, ranging from 1 (extremely unlikely) to 7 (extremely likely).

The effect of the profile variable on information consumption provided a foundation for evaluating the third set of hypotheses. Additionally, participants were asked to assess their likelihood of referring to the previous information point while interacting with the current one. The impact of the profile on participants' propensity to reference prior information served as the basis for testing the fourth hypothesis. This approach enabled a nuanced examination of the relationship between the assigned profile and information interaction and consumption patterns. The stimuli for the second study mirror those of the first study, with the only variation being the profile sharing the information. Participants are randomly divided into four groups, each corresponding to one of the discussed profiles above.

3.5.2.2 Participants

The second study also required participants who were unaware of the stimuli used in the study yet were interested in engaging with medical content on social media platforms. So, another short pre-screening study similar to the first pre-screening study was conducted on prolific to identify appropriate subjects. The study was launched on Prolific in December 2023, and 221 short-listed adults from the US volunteered to complete the survey. The subjects were randomly split into four groups. Of the 221 responses, 17 were incomplete, and 12 failed the attention checks. Upon further analysis, 13 responses were deemed invalid as they were patterned responses, resulting in 179 valid responses.

3.6 Results and Analysis

Tables 10 and 11 present the comprehensive descriptive statistics and correlation analysis pertaining to the independent variables for both Study 1 and Study 2. The findings underscore a notable absence of significant correlations among the independent variables. This absence indicates a lack of multicollinearity concerns, fortifying the statistical independence of the variables under investigation. Tables 12 and 13 present the outcomes

of the randomization process for Study 1 and Study 2, respectively. The results underscore the efficacy of the randomization methodology employed, as no statistically significant differences were observed in the characteristics of subjects across different experimental groups. These findings, established at a 95% confidence level, validate the successful random assignment of subjects for both studies.

	Mean	Stdev	1	2	3	4	5	6	7	8	9	10	11
Gender	1.614	0.536	1.000										
Age	38.789	12.260	-0.090	1.000									
Education qualification	1.821	0.788	-0.116	0.066	1.000								
Work experience	14.107	11.116	-0.135	0.156	-0.024	1.000							
Annual salary	2.776	2.146	-0.256	0.214	0.418	0.184	1.000						
Hours on sm	3.024	3.450	0.046	-0.112	-0.057	-0.130	-0.078	1.000					
Number of sm	3.663	1.354	-0.141	-0.081	0.062	0.033	0.105	0.128	1.000				
Amount of news	5.154	1.259	-0.075	-0.076	-0.005	-0.105	-0.063	0.158	0.258	1.000			
Information load	1.484	0.501	-0.092	0.016	0.075	-0.025	0.067	0.037	0.001	0.043	1.000		
Nature of information	1.496	0.501	-0.074	0.008	-0.074	0.049	-0.007	-0.086	-0.005	-0.012	0.032	1.000	
Veracity of information	1.537	0.500	-0.016	-0.054	-0.066	0.001	-0.028	-0.038	-0.033	-0.009	0.068	-0.024	1.000

Table 10: Descriptive statistics and correlation matrix for Study 1

	Mean	**SD**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Gender	1.547	0.499	1.000								
Age	38.916	12.431	0.064	1.000							
Education qualification	2.324	2.100	-0.101	0.060	1.000						
Work experience	259.213	766.780	0.095	0.430	0.105	1.000					
Annual salary	3.028	2.214	-0.166	0.109	0.044	0.054	1.000				
Hours on sm	3.024	2.668	0.164	-0.212	0.006	-0.196	-0.133	1.000			
Amount of news	4.771	1.532	-0.063	-0.206	0.065	-0.100	-0.035	0.393	1.000		
Profile	2.475	1.128	0.164	0.134	-0.037	-0.014	-0.044	0.056	-0.168	1.000	
Trustworthy	4.056	1.539	-0.172	-0.046	0.062	-0.016	0.150	0.011	0.268	-0.439	1.000

Table 11: Descriptive statistics and correlation matrix for Study 2

	Gender	Age	Education qualification	Work experience	Annual salary	hours on sm	amount of news
Group-1	1.719	38.594	2.094	162.500	3.344	3.016	5.000
Group-2	1.735	36.294	1.971	153.765	2.088	3.176	5.147
Group-3	1.710	39.516	2.097	183.452	2.516	2.871	5.161
Group-4	1.467	40.267	1.633	193.267	2.633	2.500	5.100
Group-5	1.583	39.708	2.000	156.542	2.167	4.583	5.333
Group-6	1.559	40.441	1.971	176.765	3.412	2.853	5.235
Group-7	1.444	40.370	2.000	171.778	3.222	2.426	5.222
Group-8	1.647	35.941	1.971	156.706	2.735	3.029	5.088
p-value	0.218	0.665	0.453	0.930	0.085	0.473	0.988

Table 12: Groupwise means and randomization tests for Study 1

	Gender	Age	Education qualification	Work experience	Hours on sm	Amount of news	Annual salary
Group-1	1.478	36.457	2.065	144.652	2.728	5.152	3.043
Group-2	1.468	38.511	2.064	214.915	2.564	4.766	3.191
Group-3	1.561	39.951	2.220	178.463	2.683	4.756	3.073
Group-4	1.689	40.911	1.844	186.533	2.772	4.400	2.800
	0.126	0.351	0.150	0.478	0.932	0.139	0.863

Table 13: Groupwise means and randomization tests for Study 2

We implemented Ordered Logit models to study the influence of user-level factors (age, gender, education qualification, work experience, annual salary, hours on social media, and amount of news) and experimental variables on the dependent variables likability, shareability, believability, and reference to previous information. Tables 14 and 15 present the ordered logit results for studies 1 and 2. Study 1 is focused on examining the influence of information level factors (**information load, nature of information, and veracity of information) on the dependent variables,** whereas Study 2 is focused on understanding the influence of profile (**profile** and **trustworthiness of profile)** on the dependent variables.

Variable	**Likeability**	**Shareability**	**Believability**	**Reference to Previous Information**
Gender	-0.504 (0.222) *	-0.557 (0.231) *	-0.251 (0.228)	-0.241 (0.220)
Age	0.018 (0.015)	0.005 (0.015)	-0.013 (0.015)	-0.010 (0.015)
Education Qualification	-0.028 (0.159)	0.162 (0.162)	0.164 (0.168)	0.153 (0.161)

Work Experience	-0.022 (0.016)	-0.009 (0.016)	0.022 (0.016)	0.022 (0.016)
Annual Salary	-0.025 (0.063)	-0.043 (0.063)	-0.121 (0.066)	-0.025 (0.062)
Hours on SM	0.057 (0.030)	0.065 (0.036)	-0.008 (0.030)	0.024 (0.033)
Number of SM	0.059 (0.090)	-0.007 (0.090)	-0.008 (0.092)	-0.044 (0.089)
Amount of News	0.137 (0.096)	0.208 (0.099) *	0.134 (0.099)	0.259 (0.098) *
Information load	0.245 (0.230)	0.715 (0.235) **	0.921 (0.238) **	0.751 (0.235) **
Nature of information	-0.579 (0.231) *	-0.580 (0.232) *	-0.546 (0.237) *	-0.162 (0.229)
Veracity of information	0.316 (0.230)	0.302 (0.231)	0.124 (0.232)	0.046 (0.231)
AIC	905.289	888.576	823.237	893.498
observations	246	246	246	246

Values in parentheses represent standard error; *** p<0.01, ** p<0.05, * p<0.1

Table 14: Study 1 ordered logit analysis.

Variable	**Likeability**	**Shareability**	**Believability**	**Reference to Previous Information**
Gender	-0.319 (0.280)	-0.283 (0.282)	-0.208 (0.289)	0.426 (0.285)
Age	0.010 (0.013)	0.012 (0.013)	0.017 (0.013)	-0.004 (0.012)
Education Qualification	-0.057 (0.067)	0.017 (0.065)	0.032 (0.072)	0.117 (0.063)
Work Experience	-0.001 (0.001)	-0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Annual Salary	-0.050 (0.063)	-0.045 (0.066)	-0.009 (0.063)	-0.005 (0.062)

Hours on SM	0.121 (0.085)	0.112 (0.082)	0.009 (0.085)	-0.036 (0.081)
Amount of News	0.006 (0.103)	0.084 (0.101)	0.063 (0.102)	0.079 (0.101)
Profile	-0.356 (0.135) **	-0.167 (0.136) **	-0.272(0.138).	-0.125 (0.136)
Trustworthy	0.694 (0.114) ***	0.382 (0.112) ***	0.736 (0.117) ***	0.583 (0.110) ***
AIC	621.407	635.236	586.657	642.597
Observations	179	179	179	179

Values in parentheses represent standard error; *** p<0.01, ** p<0.05, * p<0.1

Table 15: Study 2 ordered logit analysis.

3.7 Robustness Tests

Multiple checks and tests were systematically conducted from both theoretical and analytical perspectives to ensure the stability and generalizability of the results. To assess the validity of the models, the Variance Inflation Factor (VIF) was computed to examine the presence of multicollinearity. The VIF values were found to be consistently below 3, indicating the absence or very low levels of autocorrelation between the variables. Additionally, linear regression was employed to compare the results with the ordered logit, The similarity of the results validates the findings; the regression analysis results are found in Appendix 9 and 10. Furthermore, residual analysis of regression revealed linear residuals with no evidence of heteroscedasticity.

Given the research's focus on comprehending how opinions and beliefs form among subjects consuming information on social media, the experimental design emerged as a critical factor influencing the study's credibility. To effectively explore opinion formation, it was imperative to present information unknown to subjects but of interest to them.

Consequently, information from the medical domain was selected for the experiment. A pilot study was conducted to pinpoint the ideal number of points constituting the critical information load. Information from the medical domain was presented and assessed for awareness and perceived interest by subjects. Based on the pilot study results, experimental topics were refined. Interestingly, subject behavior regarding information consumption believability exhibited minimal change after the presentation of five information points. Therefore, we hypothesized that the critical information load point is five, suggesting that opinions solidify after this threshold is reached.

Our research examined four dependent variables—likability, shareability, believability, and reference to previous information—reflecting user perceptions captured during the experiment. These variables were measured on a scale ranging from 1 to 7. Notably, our findings revealed that these dependent variables exhibited both left- and right-censoring, with values restricted to a minimum of 1 and a maximum of 7. Given these constraints, assessing the results beyond these limitations was imperative. Therefore, we employed a Tobit regression model, allowing us to compare and validate the regression results. The results of the Tobit regression model for likability, shareability, and believability are detailed in Appendix 11 and 12. Encouragingly, these results mirrored the regression analysis findings, providing reassurance that the censored values did not compromise the validity of our results.

3.8 Discussion and Implications

3.8.1 Discussion

The results from Table 14 underscore the significant impact of *information load* on user responses. The regression analysis reveals a positive influence of information load on shareability (coefficient 0.715, $p < 0.05$), believability (coefficient 0.921, $p < 0.01$), and reference to previous information (coefficient 0.751, $p < 0.05$). This suggests that as users

consume more information points, ranging from three to five, there is a marked increase in shareability, believability, and reference to previous information, supporting hypotheses H1b and H1c. However, although likability shows an increase with a coefficient of 0.245, this change is not statistically significant, failing to support hypothesis H1a.

According to Cognitive Load Theory, individuals allocate cognitive resources while processing new information, with less cognitive effort required for similar information, facilitating the formation and reinforcement of opinions (Hu et al., 2017). Moreover, individuals may experience cognitive consonance when exposed to information aligning with their beliefs, reinforcing confidence and promoting continued engagement (Klayman & Ha, 1987). These results align with the theory, indicating that as information load increases (i.e., with an increase in the number of information points), confidence in beliefs and engagement also significantly increase. This supports the argument that social media users form initial opinions after consuming five information points. Furthermore, this aligns with the proposition made by Miller (1967) regarding the capacity of working memory to hold seven plus or minus two information points, necessary for processing and storing information to form beliefs.

Hypotheses H2a, H2b, and H2c posited that beyond a critical information point, conflicting new information diminishes the likeability, shareability, and believability of initial information. From Table 14, it's evident that as the *nature of information* changes from reinforcing (1) to challenging (2), the likeability (coefficient -0.579, $p<0.1$), shareability (coefficient -0.580, $p < 0.05$) and believability (coefficient -0.546, $p < 0.1$) significantly decrease beyond the critical information load, i.e., after five information points, when encountering contradictory information. This implies that transitioning from

reinforcing to conflicting information leads to a notable reduction in likeability, shareability, and believability.

According to Cognitive Response Theory, exposure to opinion-reinforcing information strengthens preexisting beliefs, leading to confirmation bias and increased interaction. Conversely, encountering contradictory information induces cognitive dissonance, resulting in decreased interaction and consumption. These findings from Table 14 align with the literature on consumption patterns of reinforcing and conflicting information.

To assess hypotheses H2a, H2b, and H2c, a comparative analysis was conducted to determine the critical information point at which opinions are formed and serve as preexisting beliefs for subsequent information. Figure 6 depicts the average shareability and believability of information when presented with reinforcing and conflicting information among groups exposed to three and five information points. The results demonstrate that after consuming three information points, there is no significant variation in the average shareability and believability of subsequent information, regardless of whether it reinforces or conflicts with initial opinions. However, after consuming five information points, the average shareability significantly decreases ($p < 0.05$) from 4.017 to 2.951, and believability decreases significantly ($p < 0.05$) from 5.121 to 4.541 when encountering conflicting information. This provides support for the hypotheses H2a, H2b, and H2c. Further, this underscores that the critical information load is five, and consuming five opinion-consistent information points establishes opinions as preexisting beliefs for subsequent information consumption.

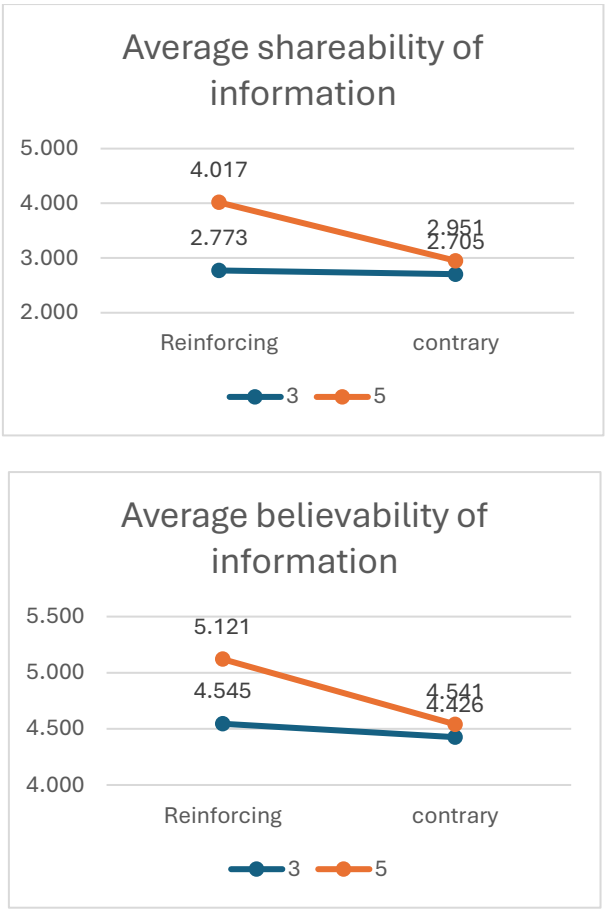

Figure 6: Average shareability and believability of information between groups presented with 3 and 5 information points

Table 15 offers compelling evidence that validates the third set of hypotheses, indicating that the digital identity of individuals (*profile*) influences the likability (coefficient -0.356, $p < 0.1$), shareability (coefficient -0.167, $p < 0.1$), and believability (coefficient -0.272, $p < 0.1$) of subsequent posts on digital social media platforms. These findings suggest that as the digital identity of the source value transitions across categories (1-Doctor with high following, 2-Influencer, 3-Doctor with low following, and 4-Common man), there is a significant decrease in both interaction and believability of the consumed information. This lends support to hypotheses H3a, H3b, and H3c, indicating that the digital identity of the information source plays a pivotal role in shaping user responses. Figure 7 provides

a visual representation of the shifting interaction dynamics with changes in the digital identity of the information source.

The dynamics of information consumption and interaction on social media platforms are deeply influenced by the credibility of information sources, a principle well-supported by Source Credibility Theory. However, our study transcends traditional conceptions of source credibility, which often rely on metrics such as follower count and content shared, by delving into the realm of digital identity. In doing so, we draw upon insights from Schema Theory and Digital Identity Theory to enrich our understanding of user behavior in online environments. As detailed in the hypothesis development section, individuals on social media construct digital identities that serve as manifestations of their personal interests, affiliations, and various cues. These digital identities, imbued with meaning and significance, are subject to interpretation by other users through the lens of their own information consumption schemas, as posited by Schema Theory. Consequently, digital identity emerges as a crucial schema influencing users' perceptions and interpretations of information shared by a given source (McVee et al., 2005).

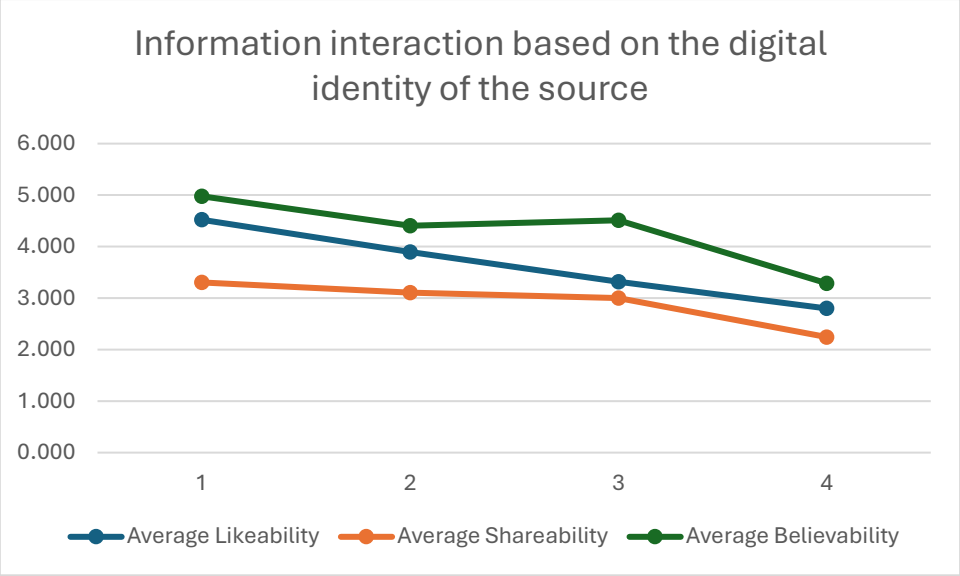

Figure 7: Information interaction of the subjects based on the digital identity of the information source.

Our analysis reveals a compelling correlation between shifts in a source's digital identity and corresponding variations in user interaction. Notably, upon closer examination, we observe that subjects demonstrate a higher propensity to believe information disseminated by an unverified doctor with a low follower count compared to content shared by a verified social media influencer. This intriguing finding underscores the complex interplay between digital identity and user behavior and has significant practical implications for social media platforms, as discussed in the implications section.

The results from Table 15 reveal a significant influence of trust in the digital identity (trustworthiness) of the source on users' reference to previous information on social media platforms (coefficient 0.583, $p < 0.05$). This suggests that as trust in the digital identity of the source increases, users are more likely to reference previous information provided by the source when consuming new information on similar topics. Study 1 elucidated that opinions are formed after consuming information up to the critical information load, serving as pre-existing beliefs for subsequent information consumption.

Aligned with the Cognitive Load Theory proposed by Sweller (2011), we argued that when encountering new information, users rely on existing beliefs, thus expending fewer cognitive resources. The results indicate that as trust in the source increases, there is a significant increase in reference to previous information or pre-existing beliefs. This finding offers valuable insight into information consumption on social media platforms, suggesting that users are inclined to refer to previous information provided by a source based on their trust in the source's profile.

In summary, our study provides robust statistical support for all hypotheses except H1a. These findings affirm the central proposition that users form opinions after consuming five information points on social media platforms, highlighting the significance of the fifth information point as the point of critical information load. This underscores the pivotal role of initial information veracity in shaping user opinions on social media topics.

Moreover, our results demonstrate that the digital identity of the source significantly influences information consumption and interaction. Additionally, we analyzed the impact of demographic features on information consumption. While our findings offer initial evidence suggesting that females tend to share and believe information more than males, further investigation is warranted. Furthermore, we observed that increased time spent on social media and higher information consumption correlate with heightened information shareability.

A significant finding of our research pertains to the veracity of initial information presented to the subjects. The categorical variable "veracity of information" denotes the nature of the initial information presented in the experiment, with category one indicating true information and category two indicating false information. Analysis from Table 14 indicates that the *veracity of information* does not significantly influence user interaction and believability. This suggests that beyond the point of critical information load, the initial information serves as the foundation for belief formation, acting as pre-existing beliefs. When subjects are exposed to false information, their beliefs align with this misinformation, highlighting the potential for false and misleading information to shape user perceptions.

3.8.2 Theoretical Implications

Extensive research on digital social media platforms focuses on various aspects, including information dissemination, fake news mitigation, platform-level interventions, and user

behavior. These studies often draw upon cognitive theories from psychology (Hu et al., 2017; A. Kim et al., 2019; Moravec et al., 2020). Literature highlights the influence of prior beliefs on user behavior (Modgil et al., 2021). However, in the social media landscape, users often encounter vast amounts of new information. As a result, their opinions and beliefs are shaped during the process of consuming this information (Kitchens et al., 2020). Consequently, this research seeks to investigate how opinions and beliefs are formed on social media platforms when users engage with new information of interest. Moreover, the study aims to determine how much information social media users need to form opinions and beliefs.

From a theoretical standpoint, results suggest that the sheer volume of available information exacerbates initial opinion formation and confirmation bias, prompting users to selectively engage with content that reinforces their beliefs. This finding validates arguments based on Cognitive Response Theory, which posits that individuals' information processing is influenced by their pre-existing beliefs and cognitive biases. Consequently, our research underscores the importance of considering cognitive mechanisms in understanding information consumption patterns on social media platforms.

This observation aligns seamlessly with the tenets of Cognitive Load Theory, as posited by Plass et al. (2010). According to this framework, when users are presented with novel information on social media platforms that pertains to their interests, they invest their cognitive resources to process the information effectively. Given the dynamic nature of the digital landscape, users are inevitably prompted to formulate opinions as they engage with this influx of information. Moreover, as users encounter information that resonates with their initial viewpoints, they tend to allocate their remaining cognitive resources accordingly. This allocation pattern ultimately reinforces and solidifies their beliefs

regarding the newfound topic of interest. Thus, the Cognitive Load Theory offers valuable insights into the cognitive processes underlying information consumption and opinion formation on social media .

After consuming five information points, subjects presented with information contradicting the initial five points experienced a notable reduction in both interaction and believability with the sixth information point compared to subjects consuming information aligned with the initial set. This underscores the notion that the initial five information points serve as pre-existing beliefs regarding new information, emphasizing their pivotal role in shaping user opinions. This finding aligns closely with the arguments proposed by Miller (1967), which suggest that individuals encounter cognitive dissonance when confronted with information that conflicts with their existing beliefs, and confirmation bias manifests when information aligns with pre-existing beliefs. Therefore, this result contributes significantly to the literature by validating this argument derived from Cognitive Response Theory.

This finding also holds significant practical implications for social media users, emphasizing the paramount importance of critical thinking when consuming information on these platforms. Social media platforms can play a pivotal role in promoting critical thinking skills among users by advocating for the importance of evaluating the credibility and veracity of information. Moreover, practical strategies for assessing information credibility can be integrated into educational curricula and public awareness campaigns. By equipping users with the necessary tools and techniques to discern reliable information from misinformation, these initiatives can empower individuals to make informed decisions and navigate the digital landscape more effectively. Ultimately, fostering a culture of critical thinking on social media platforms is essential for promoting digital literacy and mitigating the spread of misinformation.

3.8.3 Practical Implications

Our findings reveal compelling evidence for identifying a critical information point. This threshold marks the transition where social media users shift from novices to perceived experts based solely on the volume of information consumed. Remarkably, our research reveals that this critical information point occurs at five information points. This finding closely aligns with the argument advanced by Kruger and Dunning (1999), who posit that individuals consuming new information on social media platforms, particularly those with limited cognitive resources, may develop a false sense of confidence or perceived expertise on the topic. In such scenarios, the initial information consumed is pivotal in shaping initial opinions and beliefs about the new topic. Consequently, our research contributes to the validation of this argument, shedding light on the dynamics of information processing and belief formation on social media platforms.

In our experimental setting, we observed heightened user interaction with information shared by verified sources, such as doctors with a high following and influencers, compared to unverified sources, like doctors with a low following and common individuals. However, a key finding emerged: users trust information from unverified doctors more than from influencers. "This suggests that users perceive doctors as more credible than influencers, highlighting the role of perceived credibility in shaping information believability. Moreover, this finding carries practical implications for platforms, particularly in the medical domain, as it highlights the significant impact of having the prefix "Dr" or "Doctor" in the profile name on the believability of information from these sources.

Furthermore, the results of Study 1 indicate that the veracity of information did not significantly influence how users consume and believe information. This underscores the critical role of initial information points in shaping user opinions and beliefs on social

media platforms. Consequently, this calls for social media platforms to take responsibility for fostering critical thinking among users when consuming new information, thereby promoting a safe and responsible online environment. In light of these findings, it can be inferred that users tend to believe new information from doctors regardless of its veracity, potentially contributing to the proliferation of fake news. Therefore, a practical implication for social media platforms is to restrict the use of titles or prefixes such as "Doctor" or "Dr" to verified individuals to cultivate a safer information consumption environment.

The results of our study offer compelling evidence suggesting that the inference or reference to previous information is contingent upon the cognitive structures of users, which in turn are influenced by the level of trust in the digital identity of the information source. Specifically, our findings indicate that higher levels of trust in a profile correlate with increased reference to the information provided by that source when consuming new information on related topics. This observation validates arguments derived from Schema Theory (McVee et al., 2005), which posits that individuals interpret new information through the lens of their existing cognitive structures, shaped by past experiences and perceptions.

Moreover, our findings hold implications for social media users, urging them to be cognizant of biases when consuming information from new sources. Recognizing the influence of trust on information processing can empower users to critically evaluate the credibility of sources and mitigate the impact of biases on their decision-making processes. Additionally, our results underscore the importance of digital content creators prioritizing enhancing their credibility and trustworthiness by actively managing their digital identities. By cultivating a trustworthy online presence, content creators can foster greater trust among their audience, thereby increasing the likelihood of their information

being referenced and relied upon in the consumption of new content. This highlights the pivotal role of digital identity management in influencing user perceptions and behaviors in the online information ecosystem.

3.8.4 Opportunities for Future Work

As an initial step towards a broader understanding of human behavior within the IS context, our research offers valuable insights that can serve as a foundation for future investigations. This study opens avenues for interdisciplinary research at the intersection of psychology, sociology, and information systems, enriching our understanding of online information consumption. From an experimental perspective, our research focused on utilizing information points from the medical domain and digital identities of sources within the medical field. However, this framework may undergo significant transformation when applied to other domains such as politics, entertainment, and sports. This presents an opportunity for further research to explore how variations in information points and digital identities across different domains impact user behavior and belief formation on social media platforms.

Furthermore, users encounter various content formats on social media, including images, videos of varying lengths, and meta-information such as comments. In our study, we specifically utilized pictures as information points; however, there exists potential to expand this investigation to different formats and combinations of information points commonly encountered on social media platforms.

Additionally, the concept of critical information load intersects with Schema Theory, which posits that individuals interpret and organize information based on existing cognitive frameworks or schemas. This suggests that reaching the critical information load may trigger schema activation or modification, thereby influencing information interpretation and processing. Future research endeavors could investigate how users'

schemas evolve in response to information consumption on social media platforms and the consequent impact on belief formation and decision-making processes.

3.9 Conclusion

The findings of this research underscore the significant role of information load in shaping opinions and beliefs during information consumption on social media platforms. Specifically, the study revealed that opinions and beliefs begin to form in social media users after the consumption of five information points on a given topic, highlighting the critical importance of initial information points in influencing user perceptions. This underscores the need for users to critically evaluate new information and for platforms to promote critical thinking. Furthermore, the research provided compelling evidence that users place trust in information based on the perceived digital identity of the source. Interestingly, it was observed that users tend to believe information from profiles featuring titles such as "Dr." or "Doctor," even when the profile is unverified and has a low number of followers. This finding underscores the importance of authenticating the professional affiliations of users on social media platforms to ensure a safer and more regulated environment. These insights have significant implications for Information Systems (IS) research, providing a deeper understanding of how user beliefs and opinions form during information consumption on social media.

Chapter 4: Political discourse on social media platforms

4.1 Abstract

Social media platforms have become central to political discourse, transforming how emotions and multimedia shape narratives and influence public opinion. This study examines the dynamics of political discussions within Reddit's largest political subreddits, focusing on the interplay of emotional expression, multimedia amplification, and user engagement. Using a custom scraper, we collected a dataset of 17,000 posts and 1.5 million comments, capturing metadata, user interactions, and multimedia content. To analyze the emotional tone of this content, advanced sentiment, and emotion analysis was conducted using the BERT-based multilingual uncased sentiment model and the j-hartmann/emotion-english-distilroberta-base model, enabling the nuanced detection of emotions such as anger, fear, and joy embedded in user-generated content. The findings reveal that negative emotions, particularly anger and fear, are pivotal in driving emotional contagion and amplifying engagement, shaping the tone of political discussions.

Additionally, posts containing multimedia elements such as images and videos significantly enhance emotional resonance and increase the likelihood of content virality, underscoring the powerful influence of multimedia on user behavior. "These results emphasize how platform design amplifies emotional and political narratives. They provide empirical evidence that platform features and algorithms influence the spread of politically charged content. By demonstrating the impact of emotional cues and multimedia on polarized discourse, the study provides actionable insights for algorithmic moderation strategies aimed at mitigating harmful emotional amplification. Ultimately, this research bridges the gap between platform design and user behavior, offering practical guidelines for creating social media systems that balance user engagement with ethical governance in political communication.

Keywords: Emotional expression, political discourse, virality.

4.2 Introduction

In the sprawling digital landscape of social media, emotions are more than personal expressions—they are the pulse of user interactions and the currency of online engagement. Platforms like Reddit, Twitter, and Instagram thrive on the amplification of emotional content, where outrage sparks debates, joy fuels shares, and fear galvanizes communities. The intricate algorithms of these platforms are designed not only to spotlight emotionally charged content but to magnify its reach, creating a self-reinforcing cycle of interaction and influence. In this ecosystem, user emotions are no longer private—they become the driving force behind content visibility and the narratives that dominate digital discourse. *How do users' emotional expressions drive content interactions, shape engagement dynamics, and fuel the spread of information across social media platforms?*

A poignant example of this phenomenon can be seen in the aftermath of a failed assassination attempt on former President Donald Trump in July 2024 (CNN, 2024). During a campaign rally in Pennsylvania, the assailant's actions—though unsuccessful in claiming Trump's life—resulted in the tragic death of an audience member. The incident quickly went viral, sparking widespread emotional reactions across social media, from outrage and fear to grief and shock. Posts with emotionally charged language and graphic imagery of the event spread rapidly, dominating online discussions and amplifying political debates. This case underscores the power emotions wield in shaping online engagement, particularly in moments of political crisis, where emotionally resonant content not only amplifies certain narratives but also influences public opinion at an unprecedented scale. As emotions fuel the amplification of these narratives, it becomes imperative to understand how they function within online platforms, as they not only drive content virality but also shape the larger socio-political discourse in the digital age.

The core design of social media platforms inherently prioritizes content that triggers high engagement, with emotional expression being a key driver (Smith & Gallicano, 2015). Posts evoking strong emotions—whether through outrage, humor, or empathy—tend to garner more likes, comments, shares, and time spent engaging, making them more likely to be amplified by platform algorithms (Dolan et al., 2019). For example, Twitter’s algorithm promotes content based on retweets and replies, often pushing emotionally charged posts to the trending topics section or recommended feeds (Miller et al., 2024). Similarly, Reddit’s upvote system elevates content that resonates emotionally with its users, ensuring that emotionally driven posts gain greater visibility. This algorithmic behavior perpetuates a cycle where emotionally resonant content dominates online discourse, influencing how topics are discussed and how information spreads. Understanding the role of emotional triggers in algorithmic promotion is crucial for

comprehending the dynamics behind viral content and its influence on the tone and direction of digital conversations.

Once emotional content gains traction, it initiates a feedback loop wherein user engagement, driven by individual emotional states, amplifies the content further. This engagement manifests as likes, shares, and emotionally charged comments, reinforcing the initial emotional tone of the post and encouraging additional participation. For example, a post expressing political outrage may spur hundreds of similarly emotional comments, creating a cascade of engagement that deepens the emotional intensity of the conversation (Syed & Silva, 2023). This feedback loop not only alters the emotional tone of specific posts but also shapes the behavior of digital communities, creating echo chambers where individuals are exposed predominantly to content that aligns with their emotional beliefs. As such, understanding this emotional feedback loop is crucial for analyzing how digital discourse evolves—especially in the context of political discussions and social movements, where emotions often drive collective action and influence public sentiment.

In light of the central role emotions play in shaping online engagement, it is imperative to understand the mechanisms that govern how emotional content influences both user behavior and content visibility. Social media platforms increasingly prioritize content that generates engagement, making the emotional dynamics of user-generated content critical to the way information is disseminated. This paper seeks to explore two central research questions: First, *how do emotional expressions in user comments relate to the emotions expressed in the original posts?* Second, *how do the emotions embedded in user posts contribute to the virality of content across platforms?* By examining large-scale Reddit data, this research aims to investigate how specific emotions in posts influence the emotional tone of user comments and how different emotional cues impact the likelihood

of content going viral. These questions are pivotal to understanding the emotional forces at play in shaping social media discourse and content visibility.

To operationalize this research, two separate studies were conducted using vast amounts of data scraped from Reddit, focusing on political discourse. A total of 17,000 posts and 1.5 million comments from the 20 largest political subreddits were collected, encompassing both posts and all available metadata. Advanced sentiment and emotional analysis tools were employed to extract emotions and sentiments from these posts and comments. The first study examined the influence of emotional expression in posts on subsequent user interactions and engagement, while the second study explored the impact of emotional content on content virality. The findings reveal that negative emotions—particularly anger and fear—are the most influential in shaping political discourse, driving both engagement and virality. Moreover, engagement and virality are significantly influenced by the presence of peripheral cues, such as images and videos, which often accompany these emotionally charged posts. This research not only redefines the role of Information Systems in shaping societal narratives but also illuminates the profound impact emotions and multimedia have on engagement and virality in political discourse. By integrating behavioral theories with cutting-edge sentiment analysis, this study contributes to the field of Information Systems by demonstrating how emotions and multimedia elements can drive the spread of content in politically charged digital environments.

4.3 Research and Theoretical Background

4.3.1 The Evolution of Political Discourse on Social Media

Social media has fundamentally transformed political discourse, reshaping it from a localized, moderated exchange of ideas into a global and dynamic phenomenon (Sundararajan et al., 2013). Platforms like Twitter, Facebook, and Reddit have become

virtual public squares where political ideologies are debated, contested, and rapidly disseminated at unparalleled speeds (Ciriello et al., 2024). Unlike traditional media, which relies on editorial gatekeeping, social media democratizes communication, enabling individuals from diverse backgrounds to share their perspectives and influence public opinion. This shift has empowered grassroots activism, amplified marginalized voices, and fostered real-time engagement with political events, creating new opportunities for participatory democracy.

However, this democratization is not without challenges. While social media breaks down barriers to participation, it also fosters polarization. Platform algorithms, designed to prioritize engagement, often amplify emotionally charged and divisive content, exacerbating ideological divides (Vasist & Krishnan, 2022). Political discourse on these platforms frequently devolves into echo chambers, where users encounter viewpoints that reinforce their existing beliefs. This dual impact—facilitating democratic participation while deepening societal divisions—underscores the complexity of social media's role in shaping modern political communication and influencing societal narratives.

4.3.2 The Dynamics of Emotional Amplification

Social media exchanges mimic the interactive and participatory nature of traditional word-of-mouth communication but amplify these dynamics in the digital realm. Unlike face-to-face conversations, which are constrained by social norms and accountability, online interactions occur in an environment characterized by anonymity and minimal repercussions (Lapidot-Lefler & Barak, 2012). This lack of restraint heightens emotional expression, allowing users to share anger, joy, outrage, or fear with far greater intensity than they might in personal interactions. Consequently, emotionally charged posts capture

user attention and drive engagement through likes, shares, and comments, creating a feedback loop of emotional amplification (Tellis et al., 2019).

This phenomenon is particularly pronounced in politically charged contexts, where discussions often tap into deeply personal or ideological convictions (Ryan, 2014). Posts that evoke strong emotions generate reactions that mirror and magnify the original sentiment, triggering a cascade of emotional expressions across the platform. These emotional responses, in turn, increase the visibility and virality of the original post through engagement metrics, reinforcing its prominence and reach. This self-reinforcing cycle ensures that emotionally resonant content elicits individual reactions while shaping the collective tone of digital discourse.

4.3.3 Theoretical Perspectives on Emotional Contagion and Multimedia Amplification

The dynamics of emotional amplification can be understood through the lens of Emotional Contagion Theory, which posits that individuals unconsciously mimic and internalize the emotions of others, resulting in shared emotional states (Suh et al., 2018). On social media, this process is magnified by the platform's architecture, where emotional expressions are highly visible and can spread rapidly across networks. Strongly emotional posts act as catalysts, prompting users to adopt similar emotional tones in their responses, thereby reinforcing the salience of the original content (Matook et al., 2022). This ripple effect extends beyond the immediate audience, shaping broader interaction patterns and intensifying emotional narratives across the platform.

Social media platforms are uniquely designed to facilitate emotional contagion. Algorithms that prioritize engagement inadvertently amplify emotionally charged posts, creating an ecosystem where emotional expression thrives (Umar & Noman, 2024). This

interaction between platform design and human behavior drives the evolution of online discussions and determines the emotional climate of digital communities. By examining these dynamics through the Emotional Contagion Theory, researchers can better understand the mechanisms behind emotional amplification and content virality, particularly in high-stakes environments such as political discourse.

4.3.4 The Role of Multimedia in Amplifying Engagement

The prioritization of emotionally engaging content by platform algorithms is further enhanced by the inclusion of multimedia elements. According to the Elaboration Likelihood Model (ELM), users process information via two routes: the central route, which involves thoughtful deliberation, and the peripheral route, which relies on surface-level cues like visuals (Bhattacherjee & Sanford, 2006). Multimedia content—such as images and videos—operates primarily through the peripheral route, swiftly engaging users' emotions and reducing cognitive load (John & De'Villiers, 2020). By distilling complex ideas into visually striking formats, multimedia elements amplify emotional resonance and make content more likely to capture attention and drive engagement.

Social Influence Theory further explains how people are influenced to change their behavior, beliefs, or attitudes to match those of others (Joshi, 1991). This explains how multimedia-enhanced posts benefit from visible interaction metrics, such as likes, shares, and comments. These metrics serve as indicators of social validation, signaling that a piece of content resonates with a broader audience (Ciriello et al., 2024). When multimedia is present, these metrics are often amplified, as visually engaging content elicits stronger emotional responses. This feedback loop of social proof increases the post's visibility and reinforces its emotional tone within the broader discourse.

4.3.5 The Synergy of Algorithms, Multimedia, and Emotional Narratives

The interplay between algorithms, multimedia, and user behavior creates a synergistic effect that magnifies the emotional and persuasive power of content. Multimedia elements serve as potent emotional amplifiers, aligning seamlessly with algorithms designed to prioritize engagement (Durani et al., 2024). This synergy is especially impactful in politically charged environments, where emotionally resonant content can shape public opinion and mobilize collective action. By integrating Emotional Contagion Theory, the Elaboration Likelihood Model, and Social Influence Theory, this research extends our understanding of how digital platforms amplify emotional narratives, drive virality and shape societal discourse.

This framework provides a comprehensive perspective on the forces that shape emotional amplification in online spaces, bridging the gap between individual user behaviors and the emergent properties of algorithmically governed digital ecosystems. It highlights the transformative impact of social media on political communication, offering critical insights into the mechanisms that underlie emotional contagion, multimedia engagement, and content virality.

4.3.6 Research in Information Systems (IS): Emotional Dynamics, Multimedia Amplification, and Platform Governance

Research in Information Systems (IS) has extensively investigated the interplay between emotional dynamics, content characteristics, and platform algorithms to better understand user engagement and information diffusion. Stieglitz and Dang-Xuan (2013) demonstrated how sentiment in microblogs significantly influences sharing behavior, with negative emotions such as anger or fear driving higher virality. This highlights the role of emotional contagion in shaping social media interactions. Similarly, Berger and Milkman (2012) revealed that high-arousal emotions—whether positive or negative—are

critical drivers of viral content, emphasizing the importance of emotional resonance in digital communication. However, these studies lack integration with platform-specific algorithms, which play a pivotal role in amplifying or suppressing emotionally charged content.

Another major area of research focuses on content type and delivery mechanisms. For example, Goh et al. (2013) and Mishra et al. (2012) highlight the significant role of user-generated and personalized content in fostering engagement, with user-generated content exerting a stronger influence on consumer behavior compared to marketer-generated content. Dennis et al. (2008) further demonstrated that rich media enhances communication and decision-making processes, underscoring the importance of multimedia elements in shaping user interactions. Despite these contributions, many studies remain constrained to specific domains, such as brand communities or political campaigns, limiting the generalizability of findings to broader social media ecosystems.

The governance of emotional and multimedia content has also emerged as a critical area of study. He et al. (2024) explored algorithm-based content moderation on Reddit, showing its effectiveness in reducing harmful content while fostering trust in the platform. Wattal et al. (2010) complemented this by demonstrating how emotionally charged political content drives polarization and engagement, highlighting the ethical challenges of algorithmic amplification. Despite these advancements, there remains a gap in understanding how emotional dynamics, multimedia cues, and platform algorithms interact to shape long-term engagement and cross-platform behavior, particularly in high-stakes contexts like political discourse.

This study addresses gaps in prior research by focusing on the underexplored synergy between emotional and multimedia amplification. While prior research acknowledges the

individual effects of rich media and emotional content, limited attention has been paid to how these elements interact to influence engagement and virality. By integrating sentiment analysis with multimedia content evaluation, this research offers a comprehensive perspective on their combined impact. Additionally, existing studies often focus narrowly on specific domains, such as brand marketing or political events, thereby limiting their applicability across diverse contexts. This research overcomes such limitations by leveraging a dataset of 17,000 posts and 1.5 million comments from Reddit's largest political subreddits, capturing diverse and dynamic interactions across a broader social media environment.

Furthermore, this research addresses the lack of longitudinal analyses in the field by examining how emotional and multimedia dynamics influence sustained engagement and content virality over time. Through its integration of emotional, multimedia, and algorithmic factors, the study provides a nuanced understanding of how these elements interact to shape discourse, engagement, and societal narratives in digital ecosystems.

Author(s) and Year	Journal	Research Question	Theories Used	Findings	Gaps
Stieglitz and Dang-Xuan (2013)	*Journal of management information systems3*	How does sentiment in microblogs influence sharing behavior on social media?	Emotional Contagion Theory	Positive and negative sentiments both increase sharing, with negative content having higher virality.	Limited exploration of algorithmic amplification in the diffusion of sentiment-laden content.
Maier et al. (2015)	*European Journal of Information Systems*	How does social overload affect discontinuous social media usage?	Stressor-Strain-Outcome Model	Social overload leads to emotional exhaustion, which increases discontinuous usage intentions.	Does not explore the influence of multimedia content on emotional exhaustion or overload.
Goh et al. (2013)	*Information Systems Research*	How do user- and marketer-generated content affect consumer behavior?	Social Influence Theory	User-generated content has a stronger impact on consumer behavior than marketer-	Focused on brand communities; lacks broader insights into general user interactions.

				generated content.	
Dennis et al. (2008)	*MIS Quarterly*	How does media richness influence communication and decision-making processes?	Media Synchronicity Theory	Richer media enhances communication effectiveness and decision-making performance in groups.	Applicability to individual engagement and social media behavior is not explored.
Mallipeddi et al. (2021)	*Information Systems Research*	How does content created by human brands affect engagement on social media during elections?	Relationship Marketing Theory	Emotional and personalized content by human brands significantly increases engagement levels.	Limited to electoral contexts; lacks applicability to non-political social media scenarios.
He et al. (2024)	*Information Systems Research*	How does algorithm-based content moderation influence platform governance?	Algorithmic Governance Framework	Algorithm-based moderation reduces the spread of harmful content and fosters trust in the platform.	Limited insights into emotional dynamics or multimedia amplification.
Wattal et al. (2010)	*MIS Quarterly*	How does social media influence political discourse during elections?	Political Economy Theory	Emotional content drives polarization and engagement in political discourse on social media.	Does not address the role of multimedia elements in political discussions.
Beaudry & Pinsonneault (2010)	*MIS Quarterly*	How do emotions directly and indirectly affect IT use?	Appraisal Theory	Emotions significantly influence IT use, both directly and indirectly.	Focused on IT adoption contexts; lacks specific application to social media.
Berger & Milkman (2012)	*Journal of Marketing Research*	What makes online content viral?	Arousal Theory	High-arousal emotions (positive or negative) increase the likelihood of content going viral.	It does not explore the role of platform algorithms in amplifying viral content.
Brown et al. (2010)	*Journal of Advertising*	How does comedic violence impact viral advertising effectiveness?	Affective Conditioning	Comedic violence increases emotional arousal, leading to higher sharing intentions.	Limited to advertising contexts; lacks generalizability to other types of content.

Table 16: Literature review on Emotional Dynamics, Multimedia Amplification, and Platform Governance in IS

4.4 Hypotheses development

4.4.1 Emotional Engagement and Content Interaction

Political discourse is often laden with strong emotional expressions such as anger, joy, and trust, reflecting its inherently divisive nature (Bickford, 2011). These emotional dynamics are especially evident in digital platforms, where discussions surrounding political issues frequently evoke heightened sentiment. The intensity of a post's initial sentiment shapes subsequent interactions and audience responses. Strong emotional expressions in political discourse often lead to a dichotomous response—eliciting agreement and happiness from individuals whose beliefs align with the content while provoking counterarguments and anger from those who hold opposing viewpoints (Stieglitz & Dang-Xuan, 2013). Scholars have noted that political discourse tends to involve higher levels of sentiment and emotional expression compared to other types of discussions, reflecting the deep personal and ideological stakes often associated with political topics.

The nature of social media platforms exacerbate this phenomenon of heightened emotional engagement. Features such as real-time engagement, ease of content sharing, and relative anonymity lower the barriers to emotional expression, enabling users to express sentiments that they might otherwise suppress in face-to-face interactions (Srivastava & Chandra, 2018). These platforms create an environment where emotions—positive or negative—can be amplified and spread quickly. Moreover, political posts often tap into personal or group-level identity concerns, intensifying the emotional stakes of the discussion. For instance, a post celebrating a political victory might galvanize support and joy among proponents while simultaneously evoking anger and frustration among opponents. In this way, high-sentiment posts act as “emotional anchors,” drawing users into polarized camps of either strong agreement or fierce opposition.

Social media amplifies emotional content, further reinforcing this dynamic. The platform algorithms, designed to prioritize content that engages users, often elevate posts with strong emotional appeal, ensuring greater visibility and interaction (Kanuri et al., 2018). Additionally, the interconnected nature of online platforms allows emotions to cascade through networks, rapidly influencing a wide range of users. Political discourse, therefore, becomes not just a matter of exchanging ideas but an emotionally charged space where sentiments resonate and multiply across audiences. This dynamic aligns with the principles of Emotional Contagion Theory, which suggests that individuals unconsciously mimic the emotions they perceive in others (Elfenbein, 2014). In online contexts, this mimicry manifests as the replication of emotional tones in comments and interactions, creating an echo chamber effect.

Drawing on Emotional Contagion Theory, we posit that posts with high sentiment intensity—whether characterized by positive emotions like joy or negative ones like anger—are more likely to provoke polarized responses in user comments. Such posts act as catalysts for emotional contagion, where users engage with the content and amplify its sentiment through their reactions.

H1: Posts with higher post sentiment lead to greater polarization in comment sentiment.

Information consumption on social media is characterized by a diverse array of content formats, including text, images, videos (both short and long), and article links. Unlike traditional modes of information consumption, users on social media often operate in a hedonic mode, engaging with content in a passive, entertainment-driven manner rather than with the goal of active learning (Moravec et al., 2020). In this context, multimedia elements such as images and videos play a pivotal role. They supplement textual information with vividly rich visual stimuli, providing audiences with more accessible

and engaging representations of the topic. This phenomenon becomes particularly salient in political discourse, where the inclusion of multimedia can amplify emotional resonance and drive deeper audience engagement (Dennis et al., 2008).

Theoretical perspectives shed light on the mechanisms underlying this phenomenon. Drawing from the Elaboration Likelihood Model (ELM), multimedia content often functions as a peripheral cue (Benlian, 2015). Peripheral cues, such as visuals and auditory elements, do not require extensive cognitive elaboration, making them particularly effective in low-effort, hedonic information processing environments (Qiu & Benbasat, 2009). Unlike central cues, which rely on the quality and depth of argumentation, peripheral cues engage users on an emotional level, leveraging sensory impact to evoke immediate reactions. For instance, a political meme or a video clip of a public figure delivering a controversial statement can elicit emotions like anger, joy, or sadness with far greater intensity than text alone. These emotional reactions occur because visual stimuli are processed faster and more intensely than text, activating the brain's emotional centers and heightening engagement (Durani et al., 2024).

Empirical evidence from media psychology and information systems research supports this theoretical perspective. Studies demonstrate that multimedia posts consistently outperform text-only posts in terms of user interactions, including likes, shares, and comments (Bruni et al., 2012; Li & Xie, 2020). Visual elements serve as powerful tools for framing issues and shaping public opinion, especially in political contexts. Images and videos can encapsulate complex ideas succinctly, reducing the cognitive effort required for audience engagement (Shen & Pritchard, 2022). Moreover, in the attention-saturated ecosystem of social media, where users are constantly bombarded with competing stimuli, multimedia content captures attention more effectively, acting as a

gateway to deeper emotional and cognitive processing. The political context further accentuates the impact of multimedia.

Thus, from the theoretical lens of the Elaboration Likelihood Model, multimedia elements act as potent peripheral cues that elicit stronger emotional reactions and foster deeper audience engagement. This interplay of visual stimuli, hedonic consumption, and political context creates a fertile ground for heightened emotional interaction with multimedia content. Based on this rationale, we hypothesize that:

H2: Posts containing multimedia content (images or videos) evoke stronger emotional engagement in users.

A multitude of factors influence how information is consumed and engaged with on social media platforms. Among these, central and peripheral cues play a pivotal role in shaping user behavior. One notable peripheral cue is the level of interaction that a post garners, such as upvotes and comments. Within the digital platform ecosystem, high interaction levels serve as a form of social validation, amplifying the perceived significance and credibility of a post (Qiu & Kumar, 2017). These interactions act as proxies for social proof, signaling to users that the content is worthy of attention and engagement. This social proof, in turn, enhances the emotional salience of the content, encouraging users to engage more intensely with the post. In a political context, where posts often align with deeply held beliefs or ideologies, this phenomenon becomes even more pronounced, further amplifying emotional responses.

The theoretical underpinnings of this hypothesis can be traced to Emotional Contagion Theory, which posits that emotions can spread rapidly within a group, particularly in environments where social validation is prominent (Hatfield et al., 2014). Social

validation mechanisms on social media lower users' inhibitions, fostering a sense of community and shared purpose. This effect is particularly pronounced in high-engagement posts, where visible metrics such as likes and comments reinforce the perception that the post holds social significance. The result is a feedback loop: as users notice high interaction levels, they feel compelled to contribute their emotional reactions, attracting further engagement from others.

In political discussions, this dynamic becomes even more salient. Political posts often evoke strong emotions such as anger, joy, or outrage, which are closely tied to identity and ideological alignment (Duncombe, 2019). The visibility of engagement metrics like high comment counts or extensive sharing activity signals that the post resonates with a larger audience, further encouraging users to participate emotionally. Moreover, the feedback loop created by high interaction levels aligns with the attention economy model of social media platforms. Posts that garner substantial engagement are algorithmically prioritized, reaching even larger audiences and perpetuating the cycle of emotional amplification.

Building on Emotional Contagion Theory, this hypothesis explores the intricate relationship between post interaction levels (e.g., upvotes, comments) and the emotional intensity of subsequent user comments. It posits that high engagement metrics act as catalysts, amplifying the emotional resonance of a post and encouraging users to express their feelings more openly and intensely. Thus, we hypothesize that:

H3: Higher interaction levels on a post amplify the emotional intensity of subsequent user comments.

4.4.2 Content Virality and Emotional Drivers

Drawing on Emotional Contagion Theory, which asserts that emotions expressed by individuals or groups can influence the emotional states of others, fostering collective emotional responses, the phenomenon becomes particularly significant in the digital domain (Stieglitz & Dang-Xuan, 2013). On social media platforms, emotionally charged content tends to resonate deeply with audiences, provoking heightened engagement behaviors such as likes, comments, and shares. These behaviors are pivotal in amplifying the reach of such content.

Virality on social media refers to the rapid and widespread dissemination of content—such as posts, videos, memes, or challenges—across users' networks (Yoo et al., 2019). This phenomenon is driven by a complex interplay of psychological, social, and technological factors. Emotional posts serve as powerful stimuli, activating users' affective responses and motivating them to share content within their networks (Wakefield & Wakefield, 2016). Positive emotions, including joy and surprise, are particularly potent drivers of virality, as users often seek to propagate uplifting or captivating experiences. Conversely, negative emotions such as anger or fear can also spur virality, especially in politically charged contexts where outrage and urgency significantly enhance the dissemination of information.

In essence, this framework bridges Emotional Contagion Theory with the structural and functional design of digital platforms. It posits that posts eliciting intense emotional responses are inherently more likely to achieve viral status, particularly within politically engaged communities. Based on this theoretical synthesis, we hypothesize that:

H4: Posts characterized by stronger negative sentiment and emotional expression are more likely to go viral.

Building on the theoretical foundation of Hypothesis 2, which emphasizes multimedia content as potent peripheral cues for emotional engagement, Hypothesis 5 explores its role in driving virality. Virality, characterized by the rapid spread of content across social networks, depends on a post's ability to capture attention and evoke strong emotional responses (Tellis et al., 2019). Multimedia elements like images and videos amplify these effects by offering vivid, sensory-rich experiences that are more immediate and memorable than text alone.

From the perspective of the Elaboration Likelihood Model (ELM), multimedia elements function as peripheral cues, reducing cognitive effort and enabling low-effort information processing (Benlian, 2015). This mechanism aligns with social media sharing behaviors, where users are more likely to disseminate content that elicits strong emotional resonance. Empirical studies consistently show that posts with visual elements outperform text-only posts in engagement metrics such as likes, shares, and comments.

In the political context, multimedia elements frame issues in ways that evoke collective emotions such as outrage or solidarity—key drivers of viral dissemination. Thus, this hypothesis extends the rationale of Hypothesis 2, proposing that multimedia content is not only engaging but also a significant determinant of virality.

H5: Posts containing multimedia content (images or videos) have distinct impacts on virality.

This hypothesis integrates Social Influence Theory and the Elaboration Likelihood Model (ELM) to examine how social proof—measured by subreddit size, upvotes, and comments—amplifies the reach of posts. Social proof acts as a powerful signal of popularity and importance, influencing user behavior by attracting additional engagement

(Noone & Lin, 2024). In the context of political communication, where content is abundant and attention is scarce, these metrics guide users in identifying relevant and credible information, driving further interactions.

Social Influence Theory emphasizes the role of social validation in shaping online behavior (Gass & Seiter, 2022). Posts with higher upvotes or extensive comment activity are perceived as more valuable, prompting users to engage through likes, shares, and additional comments (Noguti, 2016). Subreddit size further bolsters this effect, offering a larger, more diverse audience that increases visibility and potential interactions. For instance, political posts in large subreddits often attract widespread attention, fostering debates and discussions that contribute to the virality of the content.

From an ELM perspective, social proof operates as a peripheral cue that simplifies decision-making in low-effort processing environments. In political discourse, where users may lack the time or resources for in-depth evaluation, engagement metrics provide an accessible indicator of content significance (Lalmas et al., 2022). Together, Social Influence Theory and the ELM underscore the pivotal role of subreddit size and engagement in amplifying the reach of posts. Thus, we hypothesize:

H6: Posts in larger subreddits are more likely to go viral.

4.5 Data

The dataset for this research was sourced from Reddit, a widely recognized platform for community-driven discussions and information exchange. The focus of the study is U.S. politics, and data collection is centers on subreddit communities dedicated to political discourse in the United States. To ensure relevance and representation, the selection of subreddits was guided by community size, as ranked by Reddit according to subscriber

count. The top 20 U.S. politics-focused subreddits were identified for analysis, representing a diverse yet substantial segment of politically engaged Reddit users.

The data extracted from these subreddits includes post text, comment threads, metadata associated with both posts and comments (e.g., timestamps, upvotes, and downvotes), and user-generated information where available. This range of data provides a holistic view of interactions and discussions within these communities, providing valuable insights into political conversations and user behavior.

To facilitate data collection, a custom scraper was developed in Python. The scraper was designed to interface with Reddit's API and extract the specified data efficiently. While Python's versatility allowed for robust data acquisition, inherent limitations on Reddit's platform constrained the accessible data volume. Specifically, Reddit imposes a cap of approximately 1,000 posts per subreddit, regardless of whether the data are retrieved through manual scrolling, automated scraping, or via the Pushshift API. As a result, the dataset is bounded by this restriction, reflecting the most recent and visible discussions within each selected subreddit.

The data collection process utilized a Python script leveraging Reddit's API through the Praw library to extract structured data from political subreddits. The script systematically retrieved information about posts and comments, organizing them into two comprehensive datasets. The post-level dataset includes attributes such as post titles, authors, upvotes, downvotes, scores, creation timestamps, metadata (e.g., NSFW status, spoiler tags, and whether the post is locked or archived), and indicators for multimedia content (e.g., presence of images or videos). Additionally, subreddit-level statistics, such as the number of subscribers and active users, were recorded. The comment-level dataset captures details such as the comment body, author, scores, creation timestamps, and

parent-child relationships within the comment thread. To comply with Reddit's API usage policies and avoid rate-limiting, delays were introduced between requests. The extracted data were converted into Pandas DataFrames, facilitating structured storage and enabling subsequent analysis.

The dataset was collected using the Reddit Pushshift API and organized into three distinct sections. The first phase involved extracting post-level data from each subreddit. This included information such as the text of the posts, the presence of photos, videos, or other multimedia, the author of each post, the number of comments, and various metadata attributes. The number of posts available for each subreddit ranged from 666 to 992. Despite its high ranking by user count, one subreddit was excluded due to low activity, with fewer than 100 posts and minimal engagement in comments and votes. Consequently, 19 subreddits were included in the study, resulting in 19 separate data files.

In the second phase, comment-level data was collected for each post using the post IDs from the first phase. This dataset included the text of the comments, author details, upvotes, and additional metadata**.** Due to the selection of the largest U.S. politics subreddits based on user numbers, the engagement levels were substantial, with some subreddits generating up to 285,139 comments for 992 posts. Across the 19 subreddits, the total number of comments amounted to 1,517,196, stored in 19 separate files. Details of the subreddits, including the number of posts and comments scraped, are provided in Appendix 13**.**

The final phase of data collection focused on user-level data. Unique usernames extracted from the post dataset for each subreddit were compiled, and the Pushshift API was employed to gather user information. This included the user's date of joining Reddit

("cake day"), total karma, moderator status, availability status, and any trophies earned on the platform.

4.5.1 Curation

4.5.1.1 BERT

Once the data has been collected, sentiment analysis of the posts and comments was conducted using the BERT-based multilingual uncased sentiment model. This model, built upon the Bidirectional Encoder Representations from Transformers (BERT) architecture, is a sophisticated natural language processing tool that excels at understanding the contextual meaning of text. Unlike traditional models, BERT analyzes words in relation to their surrounding context in a bidirectional manner, making it highly effective for understanding the nuances of language. The multilingual capability of the model, which is derived from extensive pretraining on diverse language datasets, is particularly important for this research. Given the informal nature of Reddit language, which often includes slang, emojis, and multilingual expressions, the model's versatility ensures that sentiment analysis remains accurate across a heterogeneous text corpus.

The BERT-based model provides a distinct advantage over traditional lexicon-based sentiment analysis tools such as Bing and AFINN. While lexicon-based methods rely on predefined word-sentiment associations, the BERT-based model uses deep learning techniques to dynamically infer sentiment from the context. This approach allows the model to capture complex linguistic features, such as negation, sarcasm, and idiomatic expressions, which are common in online discourse. For instance, phrases like "not good" (negative) and "not bad" (positive) are accurately differentiated by the BERT model, whereas lexicon-based models might misinterpret or oversimplify the sentiment. This contextual awareness makes the BERT-based model particularly well-suited for this

study, where the language used in Reddit posts and comments is varied and context-dependent.

When applied to the textual data in this research, the model generates a probability distribution over sentiment classes, which allows for fine-grained sentiment analysis. This output helps uncover subtle sentiment variations across posts, comments, and subreddits, providing deeper insights into online political discourse. The research benefits from a precise and comprehensive understanding of sentiment expressed in dynamic online environments by utilizing this advanced sentiment model. The result is the generation of two key sentiment variables for each post: positive and negative. Similarly, for comments, the sentiment analysis generates positive comment sentiment and negative comment sentiment, offering a detailed view of user engagement and sentiment in online political discussions.

4.5.1.2 j-Hartman

Next, the emotions of the posts and comments text are extracted using the j-hartmann/emotion-english-distilroberta-base model. This state-of-the-art natural language processing tool is designed explicitly for emotion classification in textual data. Built on the DistilRoBERTa architecture, a lighter and more efficient variant of the transformer-based RoBERTa model, this tool analyzes emotional expressions in written content. DistilRoBERTa's bidirectional understanding of language, combined with its fine-tuning of emotion-specific datasets, allows the model to accurately classify text into various emotional categories, such as joy, sadness, anger, fear, and others, depending on the scope of the analysis. This model's design is particularly suited for the informal and multifaceted language often found on platforms like Reddit, where expressions of emotion are varied and complex.

The j-hartmann model offers substantial advantages over traditional lexicon-based methods, which rely on static word-emotion dictionaries. Instead, it employs advanced deep-learning techniques to understand the broader context in which emotions are expressed. This allows the model to capture nuances such as sarcasm, idiomatic expressions, and tonal shifts—features commonly present in user-generated content. Its contextual embeddings also enable the identification of complex emotional states, such as simultaneously detecting both anger and sadness in a single text, which traditional lexicon-based approaches often overlook. Additionally, the model's ability to adapt to informal and evolving language trends makes it especially valuable for analyzing contemporary platforms like Reddit, where language continuously evolves.

When applied to textual data, the j-hartmann model generates a probability distribution over predefined emotional categories for each text input. This output quantifies the likelihood of the text expressing each emotion, providing a nuanced interpretation of emotional content. In the context of this research, the model not only highlights the dominant emotions expressed in Reddit posts but also captures secondary emotional tones, offering a multidimensional understanding of user sentiment. This ability to analyze and quantify emotions in user-generated content is essential for the research, as it allows for a comprehensive exploration of emotional expression in online political discourse.

4.5.2 Merging

Once the sentiment and emotions for the posts and comments were extracted, the data amalgamation process was carried out. Initially, comment-level features such as emotions, sentiments, and upvotes were aggregated based on the post ID for each

comment. This aggregation resulted in the average emotion, sentiment, and upvote values for the comments corresponding to each post.

Next, the aggregated comment-level data was merged with the post-level data on the post ID, and then the user-level data was integrated with the posts and aggregated comments data based on the user ID. This process culminated in a dataset with 42 columns for each subreddit. These individual subreddit data files were then combined into a single comprehensive file, which included 42 columns and a total of 16,000 rows across all subreddits. This aggregated dataset provided a robust foundation for testing the research hypotheses, enabling a thorough analysis of the interplay between sentiments, emotions, and user engagement within the context of online political discourse.

4.6 Results and Discussions

Table 17 presents the descriptive statistics and correlation of the variables used in the study. There is a correlation between user engagement metrics and, studies by Hajli et al. (2015) and Nikitkov and Sainty (2014) presents the same results. Similarly, there is a correlation between the number of trophies earned and the total karma points obtained on Reddit. This is expected as the karma points are earned based on the interaction in the Reddit platform, and the higher the interaction, the higher the number of trophies earned. Therefore, these two correlations are expected to provide support for the validity of the data.

	mean	stdev	1	2	3	4	5	6	7	8	9	10	11	12
Upvotes	962.407	3358.781	1.000											
Comments	91.279	204.441	0.642	1.000										
Subscribers	1110571.363	1984905.092	0.084	0.127	1.000									
Negative Sentiment	0.302	0.299	0.037	0.091	0.040	1.000								

Post anger	0.049	0.104	0.058	0.026	0.020	0.259	1.000							
Post disgust	0.038	0.076	0.046	0.037	0.012	0.232	0.145	1.000						
Post fear	0.033	0.089	-0.009	0.028	0.047	0.087	-0.066	-0.104	1.000					
Post joy	0.015	0.054	-0.018	-0.056	-0.035	-0.302	-0.153	-0.141	-0.113	1.000				
Post sadness	0.028	0.057	0.009	0.016	0.000	0.163	-0.076	-0.044	-0.047	-0.087	1.000			
Post surprise	0.033	0.062	0.015	0.011	-0.020	-0.029	-0.190	-0.175	-0.136	0.013	-0.095	1.000		
Total karma	431901.330	935136.631	0.062	-0.005	0.120	0.020	0.053	0.027	0.047	0.016	0.035	-0.030	1.000	
Trophies	3.435	3.833	0.054	0.010	0.107	-0.013	0.001	-0.016	0.009	0.018	0.001	0.002	0.610	1.000

Table 17: Descriptive statistics

4.6.1 Emotional engagement and content interaction

To examine the relationship between emotional engagement and content interaction, we used Ordinary Least Squares (OLS) regression models. Table 18 displays the regression results, where the dependent variable in each model represents the average intensity of negative emotions expressed in the comments associated with each post. The independent variables encompass various metadata attributes of the posts, including upvotes, comment counts, spoiler status, NSFW (Not Safe for Work) designation, and whether the posts were archived or locked. Additionally, we incorporated the emotional content of the text within each post, as well as user-level details, to capture a comprehensive perspective. This approach integrates post-level, subreddit-level, and user-level factors to elucidate the dynamics influencing emotional engagement with posts in political communities on Reddit.

	Anger in comments	**Surprise in comments**	**Fear in comments**	**Disgust in comments**
(Intercept)	0.092 (0.002) ***	0.072 (0.002) ***	0.046 (0.001) ***	0.089 (0.002) ***
Upvotes	0.000 (0.000)	0.000 (0.000) *	-0.000 (0.000) ***	-0.000 (0.000) ***
Comments	0.002 (0.000) ***	0.000 (0.000)	0.001 (0.000) ***	0.006 (0.000) ***
NSFW	-0.012 (0.014)	-0.004 (0.013)	-0.003 (0.010)	0.031 (0.015) *
Spoiler	-0.030 (0.016) .	0.029 (0.014) *	-0.022 (0.011) .	-0.018 (0.017)
Locked	-0.003 (0.010)	-0.014 (0.009)	0.001 (0.007)	-0.054 (0.010) ***

	Anger in comments	Surprise in comments	Fear in comments	Disgust in comments
Archived	0.007 (0.003) *	-0.012 (0.003) ***	-0.001 (0.002)	0.014 (0.003) ***
Subreddit subscribers	0.000 (0.000) ***	0.000 (0.000) .	0.000 (0.000) ***	0.000 (0.000) ***
Image	0.018 (0.001) ***	0.012 (0.001) ***	0.005 (0.001) ***	0.031 (0.001) ***
Video	0.015 (0.003) ***	0.006 (0.002) *	0.008 (0.002) ***	0.015 (0.003) ***
Negative Sentiment	0.023 (0.002) ***	0.007 (0.002) **	0.003 (0.002) .	0.016 (0.003) ***
Post anger	0.052 (0.003) ***	-0.004 (0.003)	0.000 (0.002)	0.025 (0.003) ***
Post disgust	0.020 (0.004) ***	0.002 (0.003)	-0.001 (0.002)	0.073 (0.004) ***
Post fear	0.013 (0.003) ***	0.005 (0.003) .	0.037 (0.002) ***	0.011 (0.003) **
Post joy	0.001 (0.005)	0.014 (0.004) **	-0.009 (0.003) **	-0.000 (0.005)
Post sadness	0.002 (0.004)	0.020 (0.004) ***	0.001 (0.003)	0.010 (0.004) *
Post surprise	-0.013 (0.004) **	0.038 (0.004) ***	-0.007 (0.003) *	0.005 (0.005)
Total karma	0.000 (0.000) *	-0.000 (0.000) **	-0.000 (0.000)	0.000 (0.000)
Moderator	-0.003 (0.001) *	-0.008 (0.001) ***	-0.002 (0.001) *	-0.008 (0.001) ***
Verified email	-0.007 (0.002) ***	0.000 (0.002)	-0.003 (0.001) *	0.005 (0.002) *
Gold	0.003 (0.004)	0.007 (0.003) *	0.003 (0.002)	0.006 (0.004)
Unavailable	-0.005 (0.002) .	-0.001 (0.002)	-0.000 (0.001)	0.000 (0.002)
trophies	0.000 (0.000)	0.001 (0.000) ***	0.000 (0.000)	-0.000 (0.000)
R^2	0.072	0.023	0.027	0.087
Adj. R^2	0.071	0.021	0.026	0.086
Num. obs.	17548	17548	17548	17548

Table 18: Regression results of emotions in comments

The analysis aimed to explore the relationship between the emotional tone of social media posts and their engagement outcomes, focusing specifically on user comment sentiment. The results shed light on the impact of key variables, including multimedia content, interaction metrics, and emotional attributes of posts, on the intensity and type of sentiment in user comments.

The findings presented in Table 18 reveal that negative emotions such as anger, fear, and disgust expressed within a post strongly influence the elicitation of similar emotional responses among users engaging with the post. Specifically, the variable Post Anger

(coefficient: 0.05241, $p < 0.05$) demonstrates a significant effect on the average level of anger expressed in the comments. Likewise, Post Fear (coefficient: 0.03704, $p < 0.05$) significantly impacts the average fear evident in user interactions, while Post Disgust (coefficient: 0.07338, $p < 0.05$) exerts a notable influence on the average disgust articulated in the comments. These results substantiate Hypothesis H1, which posits that posts characterized by strong negative emotions not only elicit similar emotional tones in user interactions but also amplify these emotions within the community.

This alignment with Emotional Contagion Theory underscores the role of shared digital spaces, such as Reddit, facilitating emotional resonance among users. The theory's premise is further reinforced by how emotional signals in posts propagate through comment threads, suggesting that user-generated content can catalyze collective emotional experiences. These findings highlight the pervasive nature of emotional contagion in online environments, where textual expressions of anger, fear, and disgust resonate and proliferate, influencing the overall emotional climate of discussions.

Data was collected to examine the impact of multimedia presence on users' emotional expressions in response to a post with categorical variables indicating the presence of images or videos (where 0 denotes absence and 1 denotes presence). From the results presented in Table 18, the coefficients for Image (average comment anger: 0.01886, average comment fear: 0.00514, average comment disgust: 0.03192) and Video (average comment anger: 0.01519, average comment fear: 0.00643, average comment disgust: 0.01513) are both positive and statistically significant. These findings demonstrate that the presence of multimedia content in posts significantly amplifies the emotional expressions of users engaging with the post.

The results provide strong evidence that multimedia elements serve as emotional amplifiers, intensifying users' reactions and interactions. This supports the second hypothesis, H2, which posits that posts featuring multimedia content—such as images or videos—elicit stronger user emotional engagement. By validating this hypothesis, the study highlights the decisive role of multimedia in shaping emotional dynamics within online discussions, underscoring the influence of non-textual elements on collective user behavior in digital environments.

The findings regarding the impact of multimedia on emotional expression align closely with the Elaboration Likelihood Model (ELM), which posits that persuasive communication operates through two distinct routes: the central route, driven by cognitive elaboration, and the peripheral route, influenced by superficial cues (Benlian, 2015). Multimedia elements such as images and videos primarily engage the peripheral route by acting as vivid, attention-grabbing stimuli that evoke immediate emotional responses. These visual and audiovisual features reduce the cognitive effort required to process textual information, enhancing emotional engagement and user interaction. In this study, the positive and significant influence of multimedia on users' emotional expressions validates the role of peripheral cues in shaping online discourse, demonstrating that emotionally charged, multimedia-enhanced posts effectively amplify user reactions and intensify the emotional resonance within comment threads.

The third hypothesis, H3, posits that higher interaction levels on a post amplify the emotional intensity of subsequent user comments, which aligns with the principles of Emotional Contagion Theory. According to this theory, emotions can spread among individuals, with increased interaction facilitating the transmission of emotional states. However, results from Table 18 suggest that while there is statistical significance, the

coefficients are near zero, indicating only partial support for the hypothesis. This implies that while emotional contagion could theoretically occur, the lack of substantial practical influence suggests that higher interaction levels—through upvotes and comments—do not significantly amplify emotional intensity in user comments. This weak amplification of emotional expression challenges the stronger expectations of emotional contagion within highly interactive posts.

The regression results in Table 18 indicate modest R^2 values (ranging from 2% to 7%), which may seem low but are not uncommon in observational studies examining psychological and behavioral outcomes on social media. The complexity of emotional expression, shaped by individual differences, situational factors, and cultural norms, means that much variance remains unexplained in such models. Nonetheless, the key predictors—particularly upvotes and content-based emotional variables—are consistently significant, suggesting systematic patterns worthy of further scrutiny.

To address potential endogeneity—particularly with respect to the *upvotes* variable—we employed a Gaussian copula correction approach (Park & Gupta, 2024). This method is suitable when valid instruments are not readily available, as is often the case with social media data. Specifically, we transformed the empirical distribution of upvotes using a copula correction term and re-estimated the models. The copula term was statistically significant in most cases, indicating the presence of endogeneity. Importantly, even after correction, the direction and significance of the upvotes coefficient remained stable, reinforcing the robustness of the findings.

Additionally, we examined the distributions of the residuals and confirmed that they approximate normality without major skewness or heteroscedasticity. We conducted Shapiro-Wilk and Breusch-Pagan tests, and visual diagnostics (Q-Q plots, residual-vs-

fitted plots) to validate these assumptions. Finally, while the upvote coefficient appears numerically small (e.g., 0.000), the extremely large scale of the variable—ranging from 0 to hundreds of thousands—renders these effects practically meaningful. Even marginal changes in user engagement, when scaled, can reflect significant shifts in emotional expression. Overall, the revised analysis strengthens confidence in the results and demonstrates that the associations observed are not artifacts of endogeneity or model misspecification.

4.6.2 Content Virality and Emotional Drivers

On social media platforms, emotionally charged content often garners significant attention and becomes viral. To examine virality within Reddit's political discussions, we created a binary variable, virality, where 0 represents non-viral posts, and 1 indicates viral posts. This classification was determined based on the number of upvotes, with the top 10% of posts by upvotes categorized as viral, while the remaining 90% were labeled non-viral. The rationale for defining virality as the top 10% of posts with the highest upvotes lies in its ability to capture content that stands out significantly in terms of user engagement. This threshold ensures that only posts receiving exceptional attention and approval—reflective of their widespread appeal or emotional resonance—are classified as viral. By focusing on the top decile, we effectively isolate posts that have gained a disproportionate level of visibility and interaction, aligning with the concept of virality as an outlier phenomenon in social media dynamics while maintaining a manageable and analytically meaningful distinction between viral and non-viral content. Additionally, this approach resonates with Emotional Contagion Theory, which posits that emotions spread rapidly through social networks, influencing user behaviors and reactions (Ferrara & Yang, 2015). By focusing on viral posts that elicit strong emotional responses, we capture

the emotional resonance that drives the amplification and spread of content, thereby validating the central role of emotional contagion in the virality of online discussions.

To examine the influence of emotional drivers on content virality, we employed a logistic regression model, with virality as the dependent variable. The model incorporated post-level factors, including the presence of images, videos, and attributes such as whether the post is archived, contains spoilers, or is classified as NSFW (Not Safe for Work). Additionally, we accounted for negative sentiments and emotions expressed within the posts, specifically targeting anger, disgust, fear, and surprise, which are hypothesized to drive user engagement by invoking or appealing to emotional responses. Moreover, user-level factors were included in the analysis, such as the total karma points, the number of trophies earned, whether the user is a moderator, and whether the user possesses a verified email. These factors collectively provide a comprehensive framework for understanding the diverse elements that contribute to the virality of a post. The logistic regression results, with virality as the dependent variable, are presented in Table 19.

	Virality
(Intercept)	-4.489 (0.111) ***
Subreddit subscribers	0.000 (0.000) ***
Comments	0.007 (0.000) ***
Image	2.218 (0.075) ***
Video	0.805 (0.203) ***
NSFW	-0.275 (0.725)
Spoiler	-11.478 (155.992)
Total karma	0.000 (0.000) **
moderator	-0.266 (0.080) ***
Verified email	-0.844 (0.079) ***
Trophies	0.033 (0.011) **
Post anger	0.939 (0.138) ***

	Virality
Post disgust	0.362 (0.169) *
Post fear	0.251 (0.168)
Post surprise	0.406 (0.207) *
Negative sentiment	0.465 (0.129) ***
AIC	7322.738
BIC	7447.101
Log Likelihood	-3645.369
Deviance	7290.738
Num. obs.	17548

Table 19: Logistic regression of virality

Results from Table 19 reveal that post anger (coefficient 0.939, $p<0.001$), post disgust (coefficient 0.362, $p<0.05$), and negative sentiment (coefficient 0.456, $p<0.001$) significantly influence the likelihood of a post going viral. These findings suggest that posts with stronger negative emotions and sentiments are more likely to achieve virality, supporting hypothesis **H4** that higher levels of negative sentiment and emotions in a post increase the probability of it going viral. This aligns with the Emotional Contagion Theory, which posits that emotional expressions in one individual can trigger similar emotional responses in others. In the context of social media, emotionally charged content, particularly negative emotions such as anger and disgust, can resonate with users, evoking strong reactions and increasing engagement, thereby amplifying the content's viral potential.

Hypothesis H5, based on the Elaboration Likelihood Model (ELM), suggests that the presence of multimedia elements, such as images or videos, influences the virality of a post by acting as peripheral cues that enhance emotional engagement. According to ELM, when users are not motivated or able to engage deeply with content, they are more likely

to be influenced by these peripheral cues. Images and videos capture attention, evoke emotions, and encourage greater interaction, which in turn increases the visibility and potential virality of a post. The results from Table 18 support this hypothesis, showing that both the presence of an image (coefficient = 2.218, $p < 0.001$) and a video (coefficient = 0.805, $p < 0.001$) significantly increase the likelihood of a post going viral.

These findings align with Emotional Contagion Theory, which suggests that emotions can spread through social interactions, especially when individuals are exposed to emotionally charged content. Since images and videos convey emotions more vividly and quickly than text, they enhance emotional engagement, leading to higher interaction rates such as upvotes, comments, and shares. This increased engagement is essential for virality, as it boosts the post's visibility across users' networks. Additionally, multimedia content captures users' attention more effectively than text-based posts, further increasing the likelihood of viral spread. Thus, the presence of images and videos serves as a powerful tool in driving content virality on social media platforms.

The sixth hypothesis examines the intuitive relationship between a post's exposure and its virality, positing that the size of the subreddit, measured by the number of subscribers, influences a post's likelihood of going viral. Drawing on the Elaboration Likelihood Model (ELM), this hypothesis highlights that the broader reach of a subreddit acts as a peripheral cue, increasing a post's visibility and enhancing user interaction. In large subreddits, the greater number of potential viewers can amplify the engagement, which aligns with the ELM framework that peripheral cues such as visibility significantly influence user behavior when direct message elaboration is limited.

The results from Table 19 confirm that subreddit subscribers significantly influence the virality of a post ($p < 0.001$), providing statistical support for Hypothesis H6. However,

the magnitude of this influence, as indicated by the coefficient, is minimal, suggesting limited practical relevance in the context of political communication on Reddit. While larger subreddit sizes offer higher exposure, this does not necessarily translate into meaningful engagement or virality for political posts, indicating that other factors, such as the content's emotional or multimedia appeal, may play a more critical role in driving viral success.

The analysis further reveals that subreddit size significantly influences emotional engagement, albeit with small coefficients. This suggests that larger subreddits, which cater to a broader audience, are more likely to generate emotional responses in the comments. While the effect size is modest, the statistical significance highlights the role of audience size in amplifying emotional engagement. Posts flagged as NSFW or Spoilers show mixed effects, with NSFW content positively associated with disgust but not significantly influencing other emotions. This indicates that sensitive content may provoke specific emotional reactions, such as disgust, without broadly affecting overall engagement. Negative sentiment in posts emerges as a strong driver of anger, disgust, and other negative emotions in comments, supporting the theory of emotional contagion, where the emotional tone of the post cascades into user responses.

Moderator status demonstrates a consistent negative effect on emotional engagement across all emotions, suggesting that posts from moderators are perceived with greater neutrality or authority, Which, in turn, reduces strong emotional reactions. Additionally, user achievements, represented by trophies, significantly correlate with surprise in comments, implying that posts from highly accomplished users elicit curiosity or awe among readers. These findings provide a nuanced understanding of how content

characteristics, user attributes, and audience size collectively shape emotional dynamics in online discussions.

4.7 Contributions and Limitations

4.7.1 Theoretical Contributions

This research advances Emotional Contagion Theory by demonstrating how emotional tones systematically influence user engagement within text-based online communities like Reddit. Emotions such as anger and fear significantly shape engagement levels, reflecting their role in propagating digital behaviors. The findings validate earlier theoretical arguments about emotional dynamics in decentralized digital platforms and extend them with empirical evidence. By supporting the hypothesis that emotional tone influences engagement (H1), this study provides a nuanced understanding of how emotional expressions foster collective behaviors—an essential aspect of understanding how public opinion and community norms evolve in digital ecosystems.

The interplay between textual and visual content in amplifying emotional engagement emerges as a critical contribution of this research. Building on the Elaboration Likelihood Model (ELM), the study reveals that multimedia content significantly enhances the relationship between emotional tone and user engagement. This contribution underscores the importance of multimedia elements—such as images and videos—in deepening emotional resonance and creating richer user experiences on social media platforms. By substantiating the hypothesis that multimedia enhances emotional engagement (H3), this study introduces a theoretical perspective that bridges the gap between content modalities and emotional dynamics, setting the stage for future research on multimedia-driven interactions in digital environments.

One of the key contributions of this research lies in its investigation of emotional contagion on social media, particularly the predominance of negative emotional expressions in response to negative content. While prior studies have explored how emotional content—especially negative or sensationalist stimuli—tends to be more engaging and widely disseminated online, relatively little attention has been paid to the emotional states elicited *in users* who interact with such content. This distinction is crucial: rather than focusing solely on the emotional tone of the content itself, this study examines how users' own emotional expressions in comments are shaped by the negativity embedded in the original posts. Notably, the finding that negative emotions such as anger, fear, and disgust are more commonly expressed than positive ones provides empirical support for the idea that certain emotions are more universally resonant and contagious in digital spaces. This nuanced understanding of emotional contagion enhances our ability to design more impactful and socially responsible communication strategies on social platforms—a topic that has thus far received limited scholarly attention.

This study enriches the literature on content diffusion and emotional amplification by exploring the mechanisms driving the disproportionate spread of emotionally charged content. Emotions like anger and fear were identified as strong predictors of virality, offering insights into why specific types of emotional content resonate more widely and deeply across user bases. By confirming the hypothesis that highly emotional posts are more likely to achieve virality (H4), the research provides an essential theoretical framework for understanding information dissemination in high-stakes contexts, including political movements and crisis communication. These insights are particularly relevant for interdisciplinary studies intersecting communication, behavioral psychology, and computational social science.

The findings reveal how user-specific attributes, such as credibility markers (e.g., Reddit karma and trophies), influence the extent to which emotional tone affects engagement. This multi-level perspective integrates individual user traits with broader platform-level behavioral patterns, providing a more comprehensive framework for understanding digital interactions. Supporting the hypothesis that user attributes moderate the emotional engagement relationship (H2), the study bridges micro-level user characteristics with macro-level engagement trends. These contributions are crucial for advancing theories that aim to explain personalized user experiences in the context of emotional dynamics in digital ecosystems.

4.7.2 Practical Contributions

The findings underscore the importance of content moderation systems capable of managing emotionally charged posts to reduce conflict and polarization. By identifying the role of emotional tone in shaping engagement and driving virality (as supported by H1 and H4), the research offers actionable strategies for designing algorithms that detect and regulate potentially harmful content. These insights can aid platform administrators in fostering constructive and inclusive digital environments, reducing toxicity, and promoting healthier community interactions. Such systems are vital for ensuring long-term user retention and trust.

This research provides digital marketers with a roadmap for crafting emotionally resonant campaigns by leveraging multimedia elements. The findings demonstrate that multimedia content, such as images and videos, amplifies the emotional impact of textual messages (H3), enabling marketers to evoke stronger emotional responses. This can be instrumental in designing campaigns that drive consumer engagement, strengthen brand loyalty, and maintain a competitive edge in crowded digital marketplaces. The study highlights the importance of integrating emotional dynamics into marketing strategies to foster

authentic audience connections.

"The research provides social media managers with strategies to foster positive engagement and mitigate conflict. By understanding how emotional tones and user credibility influence interaction dynamics (as revealed through H2 and H4), managers can design interventions to improve community health. For example, personalized content recommendations and incentives for constructive contributions can be implemented to counteract polarizing behaviors. These strategies are essential for cultivating vibrant online communities that promote meaningful and respectful interactions.

The study provides policymakers with valuable insights into the amplification of emotionally charged content and its implications for social media governance. The role of emotional tones and multimedia in driving virality (H1, H3, and H4) highlights the need for regulations that promote transparency in algorithmic amplification practices. Policymakers can leverage these findings to advocate for ethical design in recommendation systems, ensuring users are protected from manipulative practices and polarizing content. By implementing these recommendations, platforms can create a more equitable and inclusive digital ecosystem that balances user engagement with societal well-being.

4.7.3 Limitations

While this study provides critical insights into emotional dynamics, multimedia amplification, and platform algorithms, it has limitations that open avenues for innovative research. The focus on Reddit, a text-heavy and community-driven platform, narrows its applicability to other platforms with distinct content ecosystems, such as Instagram or TikTok, emphasizing visual and ephemeral interactions. Future research could examine

how the unique design and user behavior of these platforms influence emotional amplification and engagement dynamics. Additionally, the research primarily investigates political subreddits, limiting the scope to politically charged discourse. Emotional and multimedia dynamics in non-political contexts—such as entertainment, education, or brand marketing—may differ significantly, offering a valuable opportunity for further exploration into diverse social media landscapes.

Moreover, this study is constrained by the number of posts analyzed from each subreddit, which restricts the temporal dimension of the findings. A broader dataset capturing longer timeframes could reveal how emotional and multimedia content evolves over time and its sustained impact on user engagement. Finally, while the research emphasizes algorithmic amplification, it does not explore the effectiveness of user-driven moderation models, such as crowd-sourced or participatory governance. Future studies could assess the effectiveness of community-based moderation in countering emotional polarization, providing actionable strategies for platforms to balance engagement with ethical responsibilities. These research directions promise to deepen our understanding of digital ecosystems and their role in shaping online discourse.

4.8 Conclusion

This study advances the understanding of how emotional dynamics, multimedia amplification, and platform algorithms influence user engagement and content virality on social media. A key finding reveals that emotionally charged posts—particularly those invoking outrage or fear—consistently garner higher engagement through algorithmic prioritization, regardless of ideological bias. This underscores the pivotal role of emotional salience in driving user interactions, even within polarized digital environments.

This research highlights the need for platforms to balance engagement-focused algorithms with measures that curtail the spread of divisive content. Platforms can create a more constructive and less divisive online space by developing mechanisms to detect and moderate highly polarizing emotional narratives. This is particularly critical for political discourse, where unchecked emotional amplification risks deepening societal divisions. For the Information Systems (IS) field, this study integrates emotional contagion and algorithmic governance theories, offering a framework for exploring the ethical and practical challenges of platform design. It underscores the role of IS research in addressing the dual priorities of enhancing user engagement while fostering healthier and more inclusive digital ecosystems.

Chapter 5: Conclusion

5.1 Integration and Summary of the Studies

This thesis has examined the complexities of information consumption and dissemination on digital social platforms, addressing three critical research problems: (1) the formation and disruption of echo chambers, (2) the mechanisms of initial opinion formation in the absence of pre-existing beliefs, and (3) the role of emotions and multimedia in amplifying engagement and virality in political discourse. While each study presents an independent inquiry into a specific facet of digital engagement, collectively, they offer a multi-faceted understanding of how social media shapes user cognition, belief systems, and public discourse.

The first study, presented in Chapter 2, explored how echo chambers emerge through algorithmic filtering, selective exposure, and social reinforcement. It introduced cognitive friction as a mechanism to interrupt passive engagement and promote epistemic openness, demonstrating that subtle cognitive challenges can reduce ideological rigidity and encourage users to engage with diverse perspectives.

The second study, detailed in Chapter 3, shifted focus from entrenched beliefs to the early-stage formation of opinions on social media. It identified the point of critical information load, beyond which users begin to develop stable beliefs, and examined how digital identities (e.g., verification status, engagement metrics, and self-proclaimed expertise) influence trust and belief formation. This study provided key insights into how users process new information when they lack prior knowledge, revealing the significant role of heuristics and perceived credibility in shaping early-stage opinions.

The final study, in Chapter 4, examined how emotions and multimedia amplify engagement and virality in political discourse. It demonstrated that negative emotions—

particularly anger and fear—drive engagement, reinforcing polarization and intensifying political narratives. Furthermore, it showed how multimedia elements enhance emotional resonance, making content more likely to spread across digital platforms. By integrating Emotional Contagion Theory and the Elaboration Likelihood Model, this study provided a nuanced understanding of how affective and visual cues influence online discourse.

Together, these three studies offer a comprehensive perspective on the cognitive, behavioral, and emotional mechanisms that drive digital engagement, with implications for both theoretical development and practical interventions to foster healthier online ecosystems.

5.2 Theoretical Contributions

This thesis makes significant theoretical contributions by advancing existing theories in Information Systems (IS), media studies, and social psychology. While prior research has extensively examined echo chambers, digital engagement, misinformation, and emotional amplification, this thesis provides empirical validation and theoretical refinements that enhance our understanding of how individuals consume and process information in algorithmically driven environments. By integrating cognitive, behavioral, and emotional perspectives, this work expands the scope of established theories and introduces new conceptual frameworks for studying digital information ecosystems.

Existing research in Information Systems and media studies has largely focused on the mechanisms that reinforce echo chambers, yet little attention has been paid to how they might be disrupted. This thesis extends the Cognitive Response Theory (Greenwald, 1968) by demonstrating that cognitive friction—induced through exposure to opinion-challenging content—can reduce engagement with subsequent misinformation.

Contrary to the assumption that exposure to dissonant content leads to disengagement, this research empirically shows that cognitive discomfort can shift users' processing strategies, promoting greater scrutiny of subsequent content. These findings refine selective exposure dynamics in the context of algorithmically curated information streams, providing a more nuanced understanding of ideological reinforcement in social media ecosystems. By establishing cognitive friction as a scalable intervention, this research presents an underexplored pathway for breaking ideological echo chambers.

Prior research has extensively examined confirmation bias and selective exposure, but little is known about the formation of initial opinions in the absence of pre-existing beliefs. This thesis introduces Critical Information Load (CIL)—a threshold beyond which users transition from passively consuming information to forming stable, cognitively anchored opinions.

This study extends Cognitive Load Theory (Sweller, 2011) by demonstrating that the sheer volume of available information exacerbates initial opinion formation and reinforces confirmation bias tendencies, leading users to selectively engage with content that aligns with their emerging beliefs. Furthermore, it highlights how heuristics, cognitive strain, and information volume shape digital decision-making, providing new insights into how social media platforms influence belief construction at the early stages of information exposure.

Social Identity Theory (Tajfel et al., 1979) has been widely used to explain group-based identity formation, yet its application to digital trust and information credibility remains underexplored. This research extends Social Identity Theory by demonstrating that users are more likely to trust individuals who project authority through unverified status markers (e.g., self-proclaimed experts) rather than established, verified institutions.

This finding challenges traditional notions of credibility and expertise by showing that perceived expertise often outweighs actual expertise in online trust dynamics. It also highlights how digital self-presentation—through engagement metrics, profile verification, and identity signaling—shapes belief formation in algorithmic environments. These results contribute to a growing discourse on how users evaluate credibility in decentralized, user-driven digital ecosystems.

This thesis advances the Emotional Contagion Theory (Hatfield et al., 2014) by demonstrating how emotional tones systematically influence user engagement in text-based online communities. The research establishes that anger and fear are the most influential emotional triggers driving engagement and virality, reinforcing earlier arguments about the role of emotions in shaping digital behaviors.

Furthermore, by integrating the Elaboration Likelihood Model (Petty et al., 1986), this study explains why emotionally charged multimedia content spreads rapidly in political discourse. Negative sentiment combined with multimedia elements (e.g., images and videos) amplifies engagement by activating peripheral processing routes, making content easier to consume and more persuasive. This dual-theory approach contributes to a richer understanding of how emotional expressions drive collective behaviors and influence public discourse in digital environments.

While prior studies have examined cognitive, behavioral, and emotional mechanisms in isolation, this thesis proposes a comprehensive framework that synthesizes these perspectives to explain how users consume, process, and engage with information on social media. This integrated model:

- Explains how ideological reinforcement (echo chambers), initial opinion formation, and emotional contagion interact within algorithmic environments.

- Provides a multi-level analysis of digital discourse, bridging gaps between cognitive decision-making, emotional engagement, and platform-driven amplification.
- Offers a new foundation for studying information dissemination in algorithm-driven spaces, with implications for misinformation detection, digital literacy interventions, and social media governance.

By framing digital information consumption as a dynamic interplay between cognitive resistance, emotional resonance, and behavioral reinforcement, this research lays the groundwork for future studies on how digital ecosystems shape societal discourse and belief formation.

Contribution	**Study**	**Theory Expanded**	**Key Findings**
Cognitive Friction and Echo Chambers	Study 1	Cognitive Response Theory	Cognitive dissonance disrupts ideological entrenchment, reducing engagement with misinformation.
Critical Information Load in Initial Opinion Formation	Study 2	Cognitive Load Theory	Users develop stable opinions after an information threshold, reinforcing early-stage confirmation bias.
Digital Trust and Perceived Expertise	Study 2	Social Identity Theory	Users trust perceived expertise over verified credibility, influencing belief formation.
Emotional Contagion and Multimedia Virality	Study 3	Emotional Contagion Theory, Elaboration Likelihood Model	Negative emotions and multimedia amplify engagement via peripheral processing.
Integrated Framework for Digital Information Consumption	All Studies	Multi-Theoretical Approach	Synthesizes cognitive, behavioral, and emotional mechanisms to explain online discourse dynamics.

Table 19: Summary of Theoretical Contributions

5.3 Practical Contributions

The findings of this thesis provide valuable insights for social media platforms, policymakers, and digital literacy initiatives, offering actionable strategies to mitigate misinformation, enhance critical engagement, and promote healthier online discourse. While prior efforts have largely focused on fact-checking and algorithmic transparency, this research demonstrates that misinformation engagement, belief formation, and emotional amplification are complex phenomena requiring tailored interventions. By integrating insights from cognitive, behavioral, and emotional mechanisms, this study proposes practical solutions that can be implemented at both the platform and regulatory levels to reduce misinformation spread, improve content moderation, and cultivate digital resilience among users.

One of the most significant contributions of this research is the identification of an ideological asymmetry in misinformation engagement. The study finds that right-leaning users exhibit higher engagement with identity-based narratives, which suggests that corrective strategies should align with their moral foundations—such as loyalty, authority, and purity—rather than overtly contradicting their worldview. On the other hand, left-leaning users, who are generally more receptive to fact-based rebuttals, still require emotionally engaging storytelling to sustain attention and prevent disengagement. Beyond ideological factors, personality traits also play a crucial role in shaping engagement patterns with misinformation. Extroverted users, who exhibit higher levels of digital interaction, may respond better to social debunking interventions where misinformation corrections are integrated into peer discussions rather than presented as isolated fact-checks. Introverted users may benefit from personalized misinformation resistance tools, such as private accuracy prompts encouraging reflection before sharing content. Additionally, analytical thinkers scoring high on the "Thinking" personality trait

may be more responsive to interactive friction prompts such as "Are you sure?" nudges encouraging them to evaluate sources before disseminating information. Emotionally driven users, characterized by a higher "Feeling" trait, are more likely to be influenced by narrative-based misinformation corrections rather than raw factual rebuttals. By integrating political identity and cognitive styles into misinformation interventions, social media platforms can enhance engagement with corrective content rather than triggering defensive resistance.

This research emphasizes that increased social media use correlates with higher engagement but does not necessarily lead to improved critical thinking. Consequently, digital literacy initiatives must go beyond traditional fact-checking guidance and train users to recognize cognitive dissonance as a cue for critical evaluation. This can be operationalized through platform-integrated literacy tools that subtly indicate when content may trigger confirmation bias, such as notifications prompting users to consider alternative viewpoints before sharing. Another key intervention is discomfort recognition training, which educates users to identify cognitive friction as an indicator that they should pause and reflect rather than reactively reject information. Embedding critical engagement nudges into digital literacy programs, platforms, and educators can cultivate long-term epistemic resilience rather than relying on short-term corrective interventions. These findings offer a roadmap for fostering critical thinking in digital environments and ensuring users engage more thoughtfully with online content.

Another practical implication of this study is the identification of the critical information threshold at which users transition from being passive consumers to perceived experts on a topic solely based on the volume of content they consume. The research finds that this critical information point occurs at five information exposures, aligning closely with the argument advanced by (Kruger & Dunning, 1999), which suggests that individuals with

limited cognitive resources tend to develop a false sense of confidence or perceived expertise on a subject. This insight has significant implications for social media platform design. Given that users' initial exposure to information significantly shapes their long-term beliefs, platforms should consider restricting misleading identity markers, such as the use of titles like "Doctor" or "Dr." in usernames unless the account is verified. This policy could help curb the spread of fake medical information and enhance public trust in legitimate sources. Additionally, limiting the visibility of engagement metrics, such as likes and shares, on politically charged content could prevent heuristic-driven trust formation and reduce the tendency for users to overestimate the credibility of information based on its popularity rather than its accuracy. Providing contextual credibility signals, such as source expertise indicators, could further assist users in differentiating between genuine authorities and self-proclaimed experts.

The research also underscores the role of emotional tone in shaping engagement and driving virality in political discourse. The findings highlight that emotionally charged posts, particularly those expressing anger and fear, significantly influence user engagement, reinforcing polarization and intensifying political narratives. In response, social media platforms should implement emotion-sensitive content moderation systems capable of detecting and regulating highly emotional content to reduce ideological extremism and mitigate conflict escalation. AI-driven sentiment moderation tools could be deployed to identify potentially harmful emotional amplification while preserving free speech. Additionally, platforms should prioritize balanced engagement by reducing the visibility of sensationalized or outrage-driven content, fostering more constructive and inclusive digital environments. These moderation strategies are critical for ensuring long-term user retention and trust in online communities.

Finally, this study provides policymakers with valuable insights into the amplification of emotionally charged content and its implications for social media governance. The role of emotional tones and multimedia in driving virality highlights the need for regulations that promote transparency in algorithmic amplification practices. Policymakers can leverage these findings to advocate for ethical design in recommendation systems, ensuring that users are protected from manipulative practices and polarizing content. Implementing these recommendations would enable platforms to create a more equitable and inclusive digital ecosystem that balances user engagement with societal well-being. Greater transparency in recommendation systems is necessary to ensure that users are aware of how content is prioritized in their feeds, while regulatory oversight of algorithmic design can prevent platforms from excessively favoring divisive content that fuels political polarization. Ethical content curation policies should also be considered to balance engagement incentives with the public interest, reducing the manipulation of public sentiment through algorithmic incentives.

Contribution	**Application**	**Key Findings & Recommendations**
Misinformation Interventions Based on Political and Personality Differences	Social Media Platforms	Corrective strategies should align with users' moral frameworks. Right-leaning users respond better to identity-based narratives while left-leaning users require emotionally engaging storytelling. Personality traits influence receptiveness to different misinformation interventions.
Enhancing Digital Literacy Through Cognitive Friction & Critical Engagement Nudges	Educational Initiatives, Platform Governance	Users should be trained to recognize cognitive dissonance as a signal for deeper reflection. Platform-integrated literacy tools and discomfort recognition training can foster critical thinking.
Managing "Critical Information Load" to Prevent False Expertise	Social Media Design	Users form premature confidence in misinformation after consuming a small volume of information. Platforms should restrict misleading identity markers and provide contextual credibility signals to improve trust accuracy.

Contribution	Application	Key Findings & Recommendations
Improving Content Moderation to Reduce Polarization and Toxicity	AI-Driven Content Regulation	Emotion-sensitive moderation tools should be used to regulate highly emotional content. Reducing the visibility of sensationalized content can foster constructive discourse.
Policy Implications for Algorithmic Transparency and Governance	Regulatory Frameworks	Algorithmic transparency and ethical recommendation systems should be implemented to prevent manipulative engagement incentives and reduce polarization.

Table 20: Summary of Practical Contributions

5.5 Final Reflections: Advancing the Understanding of Digital Information Ecosystems

This research offers a comprehensive exploration of information consumption and dissemination on digital social platforms, addressing critical gaps in how users form beliefs, engage with content, and navigate emotionally charged digital environments. By integrating insights from cognitive, behavioral, and emotional mechanisms, this thesis advances theoretical understanding while providing actionable solutions to combat misinformation, mitigate ideological polarization, and promote responsible digital engagement.

The findings contribute to Information Systems research by refining existing theories on echo chambers, initial opinion formation, and emotional contagion. Through empirical validation, this work demonstrates that cognitive friction can disrupt ideological entrenchment, early exposure to information shapes long-term belief formation, and multimedia-driven emotional amplification influences political discourse. These insights challenge conventional assumptions about digital engagement, showing that users are not merely passive consumers of content but active participants in shaping online discourse.

Beyond academia, the practical implications of this research extend to social media platforms, policymakers, and digital literacy educators. The proposed interventions—

ranging from personality-driven misinformation correction strategies to algorithmic transparency and emotion-sensitive content moderation—offer a roadmap for fostering a more informed and resilient digital society. As online platforms continue to evolve, these insights can guide the development of more ethical and inclusive digital ecosystems, ensuring that technological advancements align with societal well-being.

In an era where digital misinformation, polarization, and algorithmic influence shape public discourse, understanding how information spreads, how opinions solidify, and how engagement dynamics evolve is more critical than ever. By bridging gaps in theory, practice, and policy, this research provides a foundation for future studies and interventions that can help create a more balanced, transparent, and constructive online information landscape.

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Appendix

Appendix 1: Experiment questionnaire

MBTI Personality test questionnaire

1. Freely follow your gut instincts and exciting physical impulses as they come up.
2. Offer various unrelated ideas and see what potential they might suggest.
3. Determine success by measurement or other objective method such as the time taken.
4. Feel inclined to be responsible for, and take care of, others' feelings.
5. Experience a premonition or foresee the distant future.
6. Notice whether the details in front of you match what you are accustomed to.
7. Be guided by a definition, logical deduction, or other nugget of reasoning.
8. Feel strongly that something is good or bad.
9. Compassionately take on someone else's needs as your own.
10. Construct an argument to convince someone using evidence clearly in front of you both
11. Achieve a metamorphosis, definitive insight, or powerful vision of change.
12. Compare an experience against a storehouse of familiar experiences to find what's reliable.
13. Remain in touch with what you want for yourself, what motivates you, and what is good.
14. Apply leverage to a situation to solve a problem impersonally using minimal effort.
15. Enjoy the thrill of action and physical experience in the present moment.
16. Enjoy playing with random interconnections and patterns.
17. Recognize and usually adhere to shared values, feelings, and social norms to get along.
18. Conceive of a comprehensive plan to maximize progress toward multiple goals at once.
19. Freely enjoy doing what you want for your own personal happiness.
20. Concisely reference multiple frameworks at once while problem solving.
21. Gain a profound realization from a mystical state or sudden release of emotions.
22. Follow steps to ensure tasks are predictable and completed correctly.
23. Engage life's magical moments and meaningful coincidences as they happen.
24. Quickly move to take advantage of immediate options for action.
25. Always remain true to what you want for yourself or others.
26. Analyze and critique what doesn't fit with a well-defined principle.
27. Review a lot of information over time to confirm what is customary or standard.
28. Feel attracted to the symbolic, archetypal, or mysterious.
29. Instantly read visible cues to see just how far you can go.
30. Keep following tangents and new ideas without limiting yourself to one.
31. Follow a straight line of reasoning.
32. Help make people feel comfortable by engaging in hosting and care-taking.
33. Lay out methods for others to complete tasks in time- and resource-efficient ways.
34. Readily communicate personally to all members of a group to feel unity.

35. Fine-tune a definition or concept to support a theory, perspective or framework.
36. Evaluate what is worth believing in and most important to who you really are inside.
37. Weave into the current dynamics of a situation aspects of other, random contexts.
38. Spur action and pull off results simply by making your presence felt.
39. Transform yourself by focusing inward on a specific way you foresee you will need to be.
40. Fulfill the same regular work or activity everyday at a comfortable pace.
41. Merge and feel intimate oneness with other people.
42. Stick to making decisions based on impersonal measures such as points earned.
43. Continually examine if choices harmonize with important beliefs.
44. Take apart something to figure out the principles on which it works.
45. Push your mental limits to complete an array of innovative achievements.
46. Point out discrepancies between how things are and the way they have always been.
47. Trust what emerges from brainstorming.
48. Easily get in sync physically with people and things around you.

Appendix 2:Five Factor model personality questions for Extroversion

	Questions
1	Am the life of the party.
2	Feel comfortable around people.
3	Start conversations.
4	Talk to a lot of different people at parties.
5	Don't mind being the center of attention.
6	Don't talk a lot.
7	Keep in the background.
8	Have little to say.
9	Don't like to draw attention to myself.
10	Am quiet around strangers.

Appendix 3: Experiment stimuli

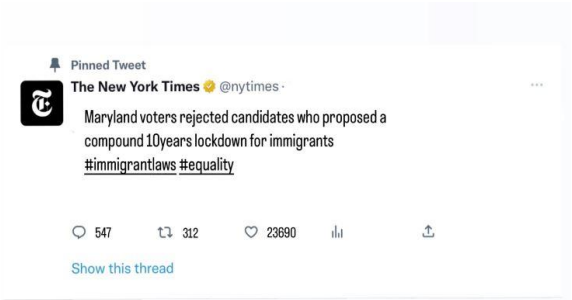
Sample of information points used in the experiment

Pinned Tweet
The New York Times @nytimes ·
Biden administration revokes Trump visa ban, says it harms the United States on unprecedented levels #immigrantlaws #revokevisas
547 312 23690
Show this thread

Pinned Tweet
CNN @CNN ·
US Citizen act of 2021 to provide path to citizenship for 11 million undocumented immigrants.
#immigrantrights
#immigrationlaws
981 1022 23118
Show this thread

Pinned Tweet
The New York Times @nytimes · 18/11/22
Massachusetts voters uphold a new law that allows undocumented immigrants to apply for driver's license.
#immigrantlaws #equality
657 422 45777
Show this thread

Pinned Tweet
CNN @CNN ·
Arizona voters approved a bipartisan ballot measures that allows immigrant students to pay reduced in-state tuition.
#immigrant rights
#immigrationlaws
1124 2341 43124
Show this thread



Appendix 4 : Design of the supplementary experiment

		Political orientation		
		Left-wing	Right-wing	No Echo Chamber
Information nature	Opinion-reinforcing	Group-1	Group-3	Group-5
	Opinion-challenging	Group-2	Group-4	

Appendix 5: Regression coefficients for Models where DV is likeability, shareability and believability for supplementary experiment.

	Model 3a	**Model 3b**	**Model 3c**
(Intercept)	2.503 (0.539)***	2.158 (0.571)***	3.396 (0.522)***

Gender	0.258* (0.109)	0.138 (0.116)	0.248 (0.110)*
Age	0.003 (0.005)	0.006 (0.005)	0.007 (0.005)
Industry	-0.068 (0.024)**	-0.012 (0.026)**	-0.069 (0.024)**
Work experience	-0.002 (0.000)**	-0.003 (0.000)**	-0.002 (0.000)**
Hours on SM	-0.018 (0.106)	0.153 (0.112)	-0.034 (0.107)
Amount of news	0.435 (0.047)***	0.420 (0.050)	0.364 (0.048)***
Political orientation	0.21 (0.157)*	0.298 (0.103)*	0.296 (0.097)**
Information Nature	-0.314 (0.095)**	-0.297 (0.101)**	-0.286 (0.096)**
E/I index	0.010 (0.015)	0.010 (0.016)	0.027 (0.015)
F/T index	-0.032 (0.019)	-0.031 (0.020)	-0.002 (0.019)
E/I Category	-0.119 (0.169)	-0.132 (0.179)	-0.360 (0.171)*
F/T Category	0.346 (0.166)*	0.245 (0.176)	0.218 (0.167)*
PO*IN			
PO* E/I Index			
PO* F/T Index			
R^2	0.260	0.243	0.221
Adj. R^2	0.240	0.223	0.200
Num. obs.	464	464	464

Values in parentheses represent standard error; *** p<0.001, ** p<0.01, * p<0.05

Appendix 6: Tobit Regression coefficients for Models where DV is likeability, shareability and believability for 6th and 8th information points.

	Information point 6 likeability	**Information point 6 shareability**	**Information point 6 believability**	**Information point 8 likeability**	**Information point 8 shareability**	**Information point 8 believability**
(Intercept)	0.674 (0.805)	-0.248 (0.835)	2.089 (0.659)**	1.968 (0.758)**	1.213 (0.784)	3.350 (0.573)***
Gender	0.100 (0.282)	-0.013 (0.288)	-0.041 (0.232)	0.248 (0.266)	0.192 (0.275)	0.321 (0.203)
Industry	0.099 (0.053).	0.045 (0.054)	0.092 (0.043)*	0.042 (0.049)	-0.056 (0.051)	-0.016 (0.038)
Work experience	0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)	-0.001 (0.001)
Hours on sm	0.145 (0.058)*	0.171 (0.059)**	0.114 (0.048)*	0.233 (0.056)***	0.254 (0.057)***	0.116 (0.042)**
Amount of news	0.370 (0.111)***	0.406 (0.116)***	0.196 (0.091)*	0.234 (0.105)*	0.259 (0.109)*	0.166 (0.080)*
Left wing	0.702 (0.373)*	0.354 (0.386)*	0.753 (0.308)*	0.218 (0.354)	0.089 (0.368)	0.037 (0.269)

	Information point 6 likeability	Information point 6 shareability	Information point 6 believability	Information point 8 likeability	Information point 8 shareability	Information point 8 believability
Right wing	0.876 (0.393) *	1.203 (0.405) **	0.899 (0.324) **	0.370 (0.373)	0.589 (0.387)	-0.104 (0.285)
Information nature	-1.455 (0.277) ***	-0.893 (0.282) **	-1.405 (0.227) ***	-1.396 (0.262) ***	-1.077 (0.270) ***	-1.289 (0.199) ***
Extroversion	0.623 (0.276) *	0.529 (0.282) *	0.376 (0.227) *	0.539 (0.261) *	0.957 (0.270) ***	0.674 (0.198) ***
Thinking/Feeling	0.146 (0.315)	0.229 (0.321)	0.195 (0.258)	-0.018 (0.296)	0.437 (0.306)	0.360 (0.225)
logSigma	0.813 (0.053) ***	0.825 (0.054) ***	0.626 (0.049) ***	0.759 (0.051) ***	0.786 (0.053) ***	0.498 (0.047) ***
AIC	1124.341	1096.962	1094.791	1123.629	1103.969	1061.453
BIC	1168.213	1140.834	1138.663	1167.501	1147.841	1105.325
Log Likelihood	-550.170	-536.481	-535.395	-549.815	-539.984	-518.727
Num. obs.	286	286	286	286	286	286
Left-censored	43	69	33	39	59	23
Uncensored	210	203	231	219	209	244
Right-censored	33	14	22	28	18	19

Values in parentheses represent standard error; *** p<0.001, ** p<0.01, * p<0.05

Appendix 7: Stimuli Development

Medical sciences encompass a vast and intricate field, branching into numerous specializations, often delving beyond the scope of general human understanding. Among these complexities, the study of human anatomy unveils a remarkable and sophisticated structure, one that remains largely unfamiliar to the broader public. Within this framework, certain anatomical features, such as the atlas bone and the mental nerve, stand out as lesser-known yet fascinating elements, often overlooked in conventional discourse.

The atlas bone, positioned at the top of the cervical vertebrae, plays a critical role in supporting the skull and enabling the nodding motion of the head. Unique in its structure, it lacks a traditional vertebral body, taking on a ring-like shape (Dimon, 2001). Despite its essential role in head movement and support, it is seldom discussed in mainstream

anatomy. Similarly, the mental nerve, a key branch of the trigeminal nerve, is responsible for the sensory innervation of the lower face. Emanating from the mental foramen, it provides sensation to the chin and lower lip (Liu et al., 2019). While crucial to everyday sensory experiences, the mental nerve remains a relatively obscure anatomical concept to the general public.

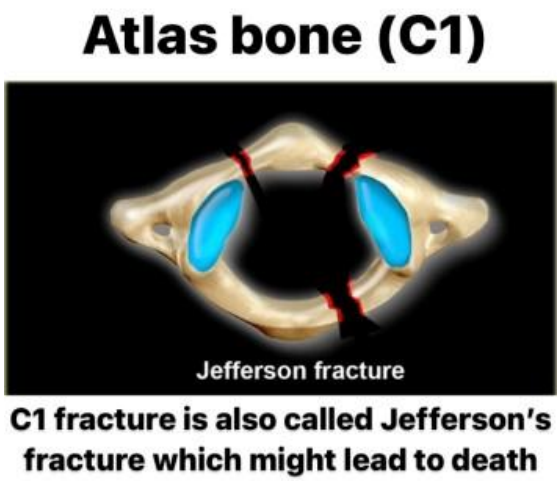
In this study, the selection of less familiar anatomical concepts, such as the atlas bone and mental nerve, was intentional. These concepts were strategically chosen to mitigate any pre-existing beliefs or biases that participants may hold regarding more commonly known anatomical structures. This approach provided a neutral foundation for examining how beliefs and opinions are formed as individuals consume new information.

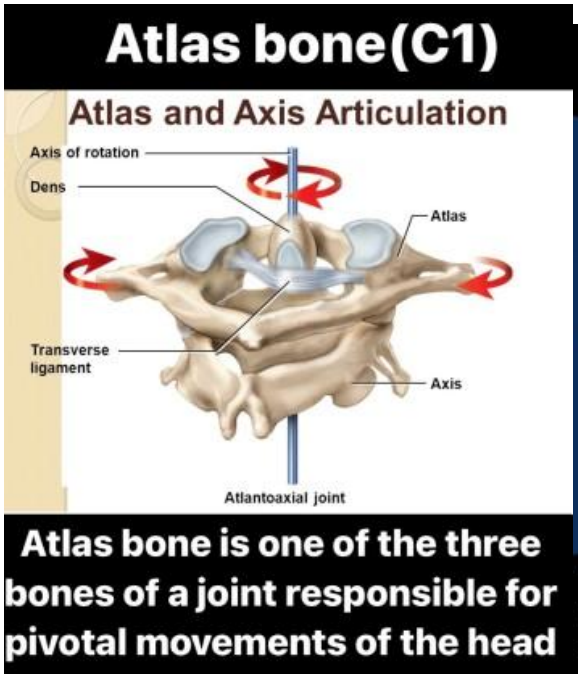
The study's design tested the formation of beliefs by presenting subjects with several consistent information points. The final information point was pivotal in determining whether subjects had formed opinions. For participants in the opinion-reinforcing groups, the last information point was consistent with the previous ones. Conversely, for those in the opinion-challenging groups, the final point contradicted the earlier information, allowing researchers to observe how belief systems were influenced by either consistent or contradictory information. Further, the false information points are curated based on the true information points by altering their anatomical accuracy.

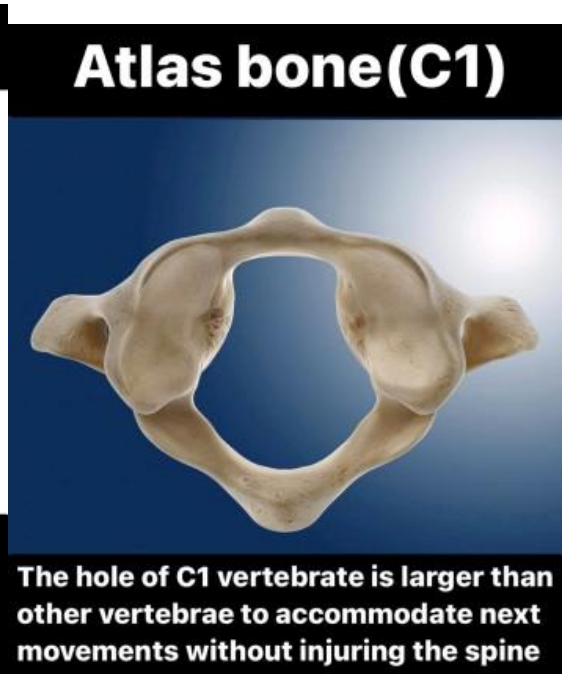
To ensure the selection of the most effective information points for the study, a diverse set of topics—such as the atlas bone, mental nerve, Achilles heel, and pituitary gland—was considered. Pre-tests were administered to a pilot group (n=30) to gauge familiarity and determine which topics would best minimize the influence of pre-existing opinions. Based on the results, the atlas bone and mental nerve were selected as the focal topics due

to participants' limited familiarity, thus minimizing the risk of preconceptions affecting the study's outcome.

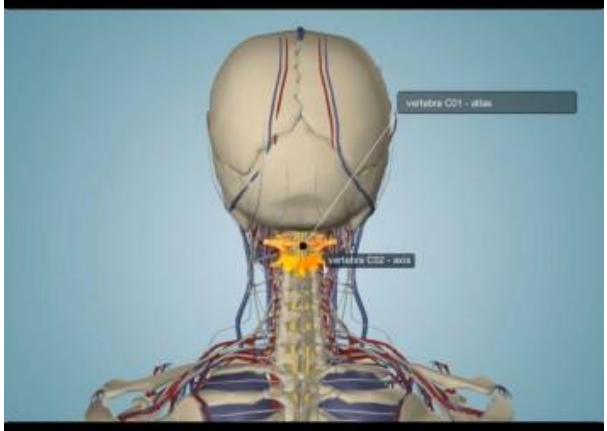
Appendix 8: Experiment stimuli.





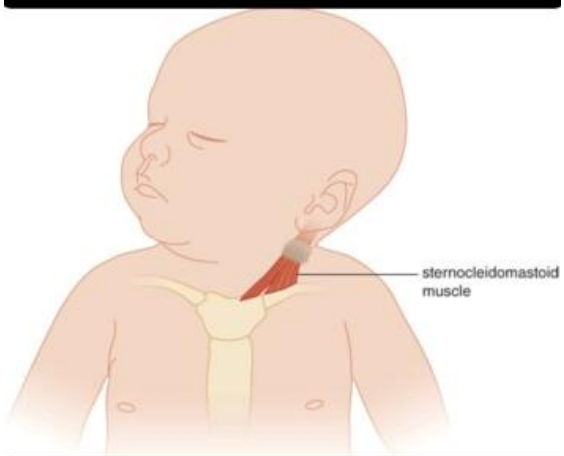


Atlas bone(C1)

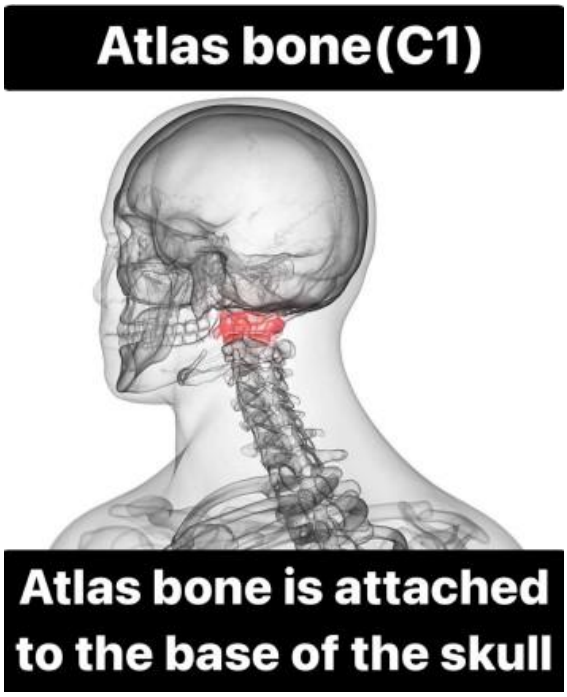


Atlas bone(C1)supports the human head over the body

Atlas bone(C1)



Despite of the popular belief, the head of the babies should be supported not because of the under development of atlas bone(C1) but due to the under development of the neck muscles



Appendix 9: Study 1 regression analysis.

	Likeability	**Shareability**	**Believability**	**reference to previous information**
(Intercept)	3.623***(1.000)	1.750*(0.984)	4.202***(0.794)	3.077**(0.961)
Gender	-0.481*(0.207)	-0.501*(0.203)	-0.160(0.164)	-0.228(0.199)
Age	0.014(0.013)	0.011(0.013)	-0.008(0.010)	-0.007(0.013)
Education qualification	-0.049(0.149)	0.140(0.146)	0.121(0.118)	0.136(0.143)
Work experience	-0.181(0.014)	-0.011(0.014)	0.014(0.011)	0.022(0.014)
Annual salary	-0.026(0.056)	-0.0422(0.055)	-0.089*(0.045)	-0.024(0.054)
Hours on Sm	0.050(0.031)	0.069*(0.030)	-0.000(0.024)	0.027(0.030)
Number of SM	0.036(0.083)	0.000(0.081)	0.008(0.066)	-0.048(0.080)
Amount of news	0.119(0.088)	0.179*(0.086)	0.067(0.070)	0.189*(0.084)
Information load	0.232(0.212)	0.659**(0.208)	0.678***(0.168)	0.609**(0.204)
Nature of information	-0.525(0.212)	-0.542**(0.208)	-0.406*(0.168)	-0.132(0.203)
Veracity of information	0.280(0.212)	0.272(0.208)	0.029(0.168)	-0.079(0.204)
R^2	0.093	0.155	0.109	0.086
Adj. R^2	0.050	0.116	0.067	0.043
Num. obs.	246	246	246	246

Values in parentheses represent standard error; *** p<0.01, ** p<0.05, * p<0.1

Appendix 10: Study 2 regression analysis.

	Likeability	**Shareability**	**Believability**	**reference to previous information**
(Intercept)	2.524**(0.802)	1.568**(0.862)	2.960**(0.72)	2.273**(0.858)
Gender	-0.237(0.234)	-0.224(0.251)	-0.204(0.21)	0.280(0.251)
Age	0.005(0.010)	0.011(0.011)	0.008(0.009)	-0.008(0.011)
Education qualification	-0.026(0.053)	0.018(0.057)	0.024(0.048)	0.102(0.057)
Work experience	0.000(0.000)	0.000(0.001)	0.000(0.000)	-0.001(0.001)
Annual salary	-0.029(0.051)	0.001(0.055)	0.000(0.046)	0.001(0.055)
Hours on sm	0.088(0.070)	0.113(0.075)	0.013(0.063)	-0.022(0.075)
Amount of news	0.000(0.083)	0.064(0.089)	0.008(0.074)	0.024(0.088)
Profile	-0.283*(0.111)	-0.164*(0.119)	-0.220*(0.099)	-0.101(0.118)
Trustworthy	0.491***(0.083)	0.268**(0.089)	0.458***(0.074)	0.447***(0.089)
R^2	0.317	0.145	0.320	0.218
Adj. R^2	0.281	0.097	0.284	0.176
Num. obs.	179	179	179	179

Values in parentheses represent standard error; *** p<0.01, ** p<0.05, * p<0.1

Appendix 11:Study 1 tobit regression analysis.

	Model 1	**Model 2**	**Model 3**	**Model 4**
(Intercept)	3.708** (1.152)	1.490 (1.279)	4.169*** (0.836)	2.908** (1.063)
Gender	-0.578* (0.239)	-0.722** (0.268)	-0.181 (0.173)	-0.269 (0.220)
Age	0.016 (0.016)	0.010 (0.017)	-0.009 (0.011)	-0.010 (0.014)
Education qualification	-0.069 (0.172)	0.230 (0.191)	0.135 (0.125)	0.181 (0.159)
Work experience	-0.021 (0.017)	-0.013 (0.019)	0.016 (0.013)	0.028 (0.016)
Annual salary	-0.035 (0.066)	-0.068 (0.073)	-0.089 (0.048)	-0.023 (0.061)
Hours on Sm	0.054 (0.036)	0.082* (0.039)	-0.001 (0.026)	0.027 (0.033)
Number of SM	0.022 (0.096)	-0.019 (0.107)	0.015 (0.070)	-0.044 (0.088)
Amount of news	0.135 (0.102)	0.250* (0.114)	0.059 (0.074)	0.213* (0.094)
Information load	0.327 (0.245)	0.798** (0.272)	0.757*** (0.178)	0.730** (0.226)

	Model 1	Model 2	Model 3	Model 4
Nature of information	-0.658** (0.245)	-0.747** (0.271)	-0.429* (0.177)	-0.199 (0.226)
Veracity of information	0.326 (0.245)	0.330 (0.272)	0.051 (0.177)	-0.092 (0.226)
logSigma	0.627*** (0.052)	0.711*** (0.056)	0.311*** (0.048)	0.549*** (0.050)
AIC	965.125	926.924	861.651	948.206
BIC	1010.694	972.493	907.220	993.776
Log Likelihood	-469.562	-450.462	-417.826	-461.103
Num. obs.	246	246	246	246
Left-censored	28	57	6	14
Uncensored	206	181	227	215
Right-censored	12	8	13	17

Values in parentheses represent standard error; *** p<0.01, ** p<0.05, * p<0.1

Appendix 12: Study 2 tobit regression analysis.

	Model 1	Model 2	Model 3	Model 4
(Intercept)	2.012* (0.949)	0.982** (1.143)	2.736*** (0.787)	1.829** (0.993)
Gender	-0.254 (0.276)	-0.297 (0.331)	-0.223 (0.229)	0.343 (0.289)
Age	0.009 (0.012)	0.015 (0.014)	0.009 (0.010)	-0.009 (0.013)
Education qualification	-0.039 (0.063)	0.020 (0.074)	0.037 (0.053)	0.131 (0.067)
Work experience	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.000)	-0.001 (0.001)
Annual salary	-0.062 (0.061)	-0.022 (0.073)	-0.003 (0.050)	0.006 (0.064)
Hours on sm	0.088 (0.082)	0.155 (0.099)	0.014 (0.069)	-0.026 (0.086)
Amount of news	0.027 (0.098)	0.083 (0.118)	0.019 (0.081)	0.033 (0.103)
Profile	-0.343** (0.130)	-0.269* (0.158)	-0.251* (0.108)	-0.115 (0.137)
Trustworthy	0.600*** (0.100)	0.351*** (0.120)	0.509*** (0.082)	0.520*** (0.103)
logSigma	0.528*** (0.062)	0.695*** (0.067)	0.350*** (0.058)	0.578*** (0.061)
AIC	658.141	664.809	631.102	687.793
BIC	693.203	699.871	666.164	722.854
Log Likelihood	-318.071	-321.405	-304.551	-332.896

	Model 1	Model 2	Model 3	Model 4
Num. obs.	179	179	179	179
Left-censored	26	45	12	18
Uncensored	145	129	158	149
Right-censored	8	5	9	12

Values in parentheses represent standard error; *** p<0.01, ** p<0.05, * p<0.1

Appendix 13: Details of subreddits

Subreddit	Posts	Comments
Aoc	848	69273
Ask the donald	814	7536
Conservative	955	26272
Democrats	851	16695
Enlightened centrism	961	57558
Gold and black	967	5947
Last week tonight	989	20132
Lepords ate my face	922	285139
liberal	991	34610
liberatarian left	887	6237
moderate politics	993	199100
neutral politics	920	111368
our president	987	57347
political discussion	882	163113
Political humor	977	51798
politics	985	130030
sam harris	991	109615
sanders for president	666	19990
White people twitter	962	145436
Total	17548	1517196