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Research Article

Exploring the impact of social media exposure patterns on people's belief in fake news during COVID-19: A cross-gender study

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ABSTRACT

During COVID-19, fake news on social media seriously threatened public health. As a solution to this problem, this study examined how social media exposure patterns affect people being deeply harmed by fake news. Based on cognitive dissonance theory, this study investigated the effect of intentional and incidental exposure on belief in fake news through the mediating role of confirmation bias. The results show that intentional exposure positively influences confirmation bias and belief in fake news. Incidental exposure is the opposite. Our results also show that intentional exposure and confirmation bias negatively influence incidental exposure. Furthermore, these relationships remain unchanged by gender. This study provides theoretical and empirical contributions to reducing people's belief in fake news.

Keywords: fake news, social media, incidental exposure, intentional exposure, confirmation bias

INTRODUCTION

Fake news refers to the deliberate presentation of false or misleading claims as news, where the claims are misleading by design (Gelfert, 2018). According to Tandoc Jr (2018), fake news comprises six types: news satire, news parody, fabrication, manipulation, advertising, and propaganda. Despite the differences in type, all fake news is based on three core characteristics. That is fake news maintains the appearance of news, fake news is misleading, and fake news has a deliberate purpose (Gelfert, 2018). The unexpected emergence of COVID-19 has been accompanied by an avalanche of fake news, posing grave threats to public health. World Health Organization states that we must combat not only epidemics but also infodemic (Zarocostas, 2020).

Compared with other media, the negative impact of fake news on society reaches its peak on social media (Vosoughi et al., 2018). Statista (2021) states that an estimated 4.2 billion active social media users worldwide provide an audience base for disseminating fake news. Traditional media, including newspapers, television, and radio, have the advantage of allowing journalists to verify the news, which limits exposure to fake news (Currie Sivek & Bloyd-Peshkin, 2017). Social media have no control over posts, and fact-checking is lacking, making people more likely to be exposed to fake news (Zubiaga et al., 2018). In particular, in the face of ubiquitous fake news about COVID-19 on social media, including that mosquitoes can transmit the virus, that pure alcohol can cure epidemics, and that COVID-19 is a biochemical weapon, recent surveys have shown people prevalence believe in it (Mukhtar, 2021).

Researchers argue that social media should be held accountable for belief in fake news (Bridgman et al., 2020). Numerous studies have shown a positive relationship between the use of social media and belief in fake news (Barakat et al., 2021; Tandoc et al., 2021; Wang, 2020). Compared to before COVID-19, social media use in China increased dramatically during COVID-19 (Luo et al., 2021). But a survey in China showed that people who tend to obtain information from social media are at higher risk of not being able to distinguish between correct and incorrect information about COVID-19 (Zhao et al., 2020). This brings us to the question: how does social media usage influence people's belief in fake news in China?

Researchers often distinguish between two basic patterns of social media use: intentional exposure and incidental exposure (Matthes et al., 2020; Nanz et al., 2020). When people purposely access information, it is known as intentional exposure. Conversely, incidental exposure describes situations where users discover information by chance without purposefully seeking it. For example, when relaxing on social media, users may unintentionally be exposed to some information about COVID-19 or other information. According to a survey of Chinese social media users during COVID-19, 77% actively seek protection information and follow news on social media. 19% come across information on social media. Only 4% did not want additional action to gather information and avoid hearing news about COVID-19 (Hua & Shaw, 2020). However, whether people's belief in fake news is linked to social media exposure patterns is unclear.

In addition, past studies have explored factors that affect belief in fake news, including such as information processing (Bronstein et al., 2019), emotion (Martel et al., 2020), and cognitive ability (Tandoc et al., 2021). According to Gupta et al. (2022), these factors used to explain people's belief in fake news are fundamentally based on bounded rationality caused by insufficient information or mental capacity. Based on this hypothesis, many studies have focused on fake news labelling or warning on social media to reduce the harm caused by bounded rationality to people (Clayton et al., 2020). However, some researchers have questioned this explanation and stated that labelling or warning has not been effective in deterring people from believing fake news (Gwebu et al., 2021). Scholars have noted that confirmation bias is prominent among social media users (Fan et al., 2022). People may perceive new and discordant information as biased, untrustworthy, or just plain wrong (McGrath, 2017; Weeks et al., 2017). People are more likely to accept the news that aligns with their beliefs (Scheibenzuber et al., 2021). According to Gupta et al. (2022), fake news research should extend beyond detection and labelling on social media and tap into factors that lead individuals to reinforce or reduce their chances of forming biases.

Therefore, this study will examine how social media exposure patterns affect people's belief in fake news through the mediating role of confirmation bias. In addition, past studies have shown gender differences in behavior and attitudes during COVID-19 (Cassese et al., 2020; Galasso et al., 2020; Hou et al., 2020; Laufer & Shechory Bitton, 2021; Newburn, 2020). It is necessary to investigate potential gender differences in the current study.

LITERATURE REVIEW AND HYPOTHESIS

This study was based on Web of Science and Scopus, the two widely used literature databases (Mongeon & Paul-Hus, 2016), to search the literature on the factors influencing belief in fake news. A systematic review found that individual cognition and information processing were vital factors (Bago et al., 2020; Bronstein et al., 2019; Stoltz & Lizardo, 2018; Tandoc et al., 2021). In addition, researchers have attributed most of the blame to social media (Tandoc Jr et al., 2018). With the advent of digital technology, people are increasingly consuming news on social media (Wohn & Ahmadi, 2019). Posts on social media with more likes, retweets, and comments tend to be noticed more by the audience, despite the posts being fake news (Lokot & Diakopoulos, 2016). According to Heiss and Matthes (2019), people often rely on both intentional and incidental consumption of news to satisfy their need for more information. This social media usage behaviour has been considered a trigger that influences the perception of fake news (Chang, 2021).

Intentional and Incidental Exposure

There are two ways in which people access information on social media: individuals either seek out information or unintentionally stumble across it (Lee & Kim, 2017). Intentional exposure is a form of information acquisition driven by personal intent or motivation (Heiss & Matthes, 2019; Shahin et al., 2021).

Social distancing, travel restrictions, and working from home during COVID-19 led to social media taking canter stage more than ever (Thelwall & Thelwall, 2020). There has been a dramatic increase in information-seeking behavior on social media to cope with the uncertainties associated with COVID-19 (Bento et al., 2020). Also, people acquire information through incidental exposure. In contrast to intentional exposure, incidental exposure emphasizes chance encounters with news content--users are exposed to information even without seeking it (Nanz et al., 2020). Incidental exposure is a contemporary way for people to access information. According to research (2010), 80% of internet users access incidental exposure news frequently, and 59% consume it almost daily.

Indeed, there is a complex relationship between these two patterns of social media exposure. People may unintentionally obtain content pushed to them by a digital algorithm that generates a profile of their prior behavior and likes and dislikes (Powers, 2017). Not only that, but the user's social connections and the behaviors and preferences of those connections can also become selectively peddled to users by social media platforms (Dreyfuss & Lapowsky, 2019). For example, Facebook changed its news feed algorithm in 2018 in which content shared by friends and family gets more attention than content that advertisers suggest to users. This approach to information filtering relies heavily on people's intentional exposure (Serrano-Puche et al., 2018). Even when selective processes are used, people can still be exposed to the news by accident (Lee & Kim, 2017). That is social media is committed to being used to shape future visible arrays of content through users' past behavior on the platform (DeVito, 2017; Dreyfuss & Lapowsky, 2019; Powers, 2017). Therefore, this study hypothesized that,

H1. Intentional exposure will have a negative effect on incidental exposure.

Cognitive Dissonance and Confirmation Bias

According to cognitive dissonance theory, individuals will avoid information inconsistent with their beliefs (Festinger, 1957). Therefore, to maintain cognitive consistency, people avoid accepting content on social media that contradicts their viewpoint (Pearson & Knobloch-Westerwick, 2019). Previous research has shown that confirmation bias results from avoiding cognitive dissonance (Knobloch-Westerwick et al., 2020). Confirmation bias seeks to reinforce pre-existing ideas or expectations that prevent cognitive dissonance (Williams et al., 2016). There is a widespread perception that confirmation bias is a cognitively harmful tendency. Bias hinders the formation of informed beliefs, reduces people's ability to correct misconceptions, and causes them to become overconfident in their reasoning (Mercier, 2016, 2018; Peters, 2020; Steel, 2018). In the context of social media being full of fake news, Garrett (2017) suggests examining how news consumption on social media facilitates the manipulation of the public by actors with deceptive motives.

Ideally, social media users should seek the most accurate and least biased content. In practice, however, people usually try to find content where their assumptions are most likely accurate (Subramaniam et al., 2015). In addition, past research has shown that incidental exposure exhibit weaker confirmation bias (Knobloch-Westerwick et al., 2020; Westerwick et al., 2017). Recent research has also found that social media provides citizens with incidental exposure that counteracts confirmation bias (Bakshy et al., 2015; Barberá et al., 2015; Flaxman et al., 2016). Therefore, this study hypothesized that,

H2. Intentional exposure will have a positive effect on confirmation bias.

H3. Incidental exposure will have a negative effect on confirmation bias.

Furthermore, confirmation bias changes individuals' social media activity as it is a psychological defense (Weeks et al., 2017). Individuals are more likely to recognize news as correct if it is congruent with something they perceive as trustworthy (Bonnet & Rosenbaum, 2020). Past research has found that confirmation bias is the most important determinant of believing fake news (Di Domenico et al., 2021). According to Quattrociocchi et al. (2016), social media can contribute to belief in fake news since it exposes users to content that supports their worldview. As people tend to choose the information that confirms their beliefs, repeated exposure to the same content might shape an individual's subjective truth (Unkelbach et al., 2019). Confirmation bias hinders reliable belief formation and truth-tracking. Therefore, the present study hypothesized that,

H4. Confirmation bias will have a negative effect on incidental exposure.

H5. Confirmation bias will have a positive effect on belief in fake news.

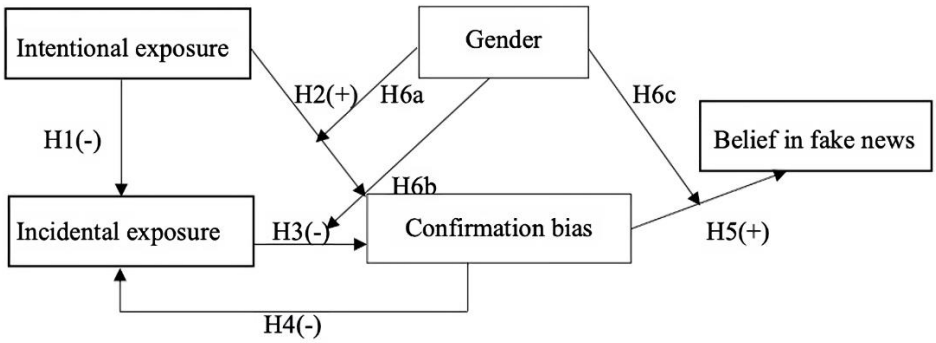

Figure 1. A conceptual framework of this study (Source: Authors' own elaboration)

Gender as Moderator

Gender differences have long been regarded as crucial to how people receive information, among other things (Yin et al., 2018). Gender differences can often be interpreted in biological and social terms (Thelwall et al., 2019). The biological difference between males and females is typically attributed to sex chromosomes, sex hormones, etc. (Mauvais-Jarvis et al., 2020). In the socialization literature, gender differences are considered gender role recognition or identity - a person's internal perception of sex (Fosch-Villaronga et al., 2021). Although these interpretations have often been confused and used in an overlapping manner in the past, past scientific studies have generally emphasized the differential impact of males and females at the biological level (Bodecka et al., 2021; Lai et al., 2020; Li et al., 2021). Therefore, this study identifies gender as biological sex (e.g., male and female).

Individual reactions to the same situation vary by gender (Etheridge & Spantig, 2020). There is evidence that the belief in fake news is moderated by a variety of factors, including knowledge (Apuke & Omar, 2020), emotion (Tan & Hsu, 2022), and media literacy (Chen et al., 2021). However, the influence of gender differences has not been discussed in previous studies. Males and females differ in their information-seeking (Lachlan et al., 2021) and confirmation bias (Nicholson et al., 2022). Although different information environments influence gender differences, past research has generally concluded that males are more rational and perform better on confirmation bias than females (Liu et al., 2017). Therefore, this study hypothesized that,

H6a. Gender moderates the relationship between intentional exposure and confirmation bias, with the effect higher for females.

H6b. Gender moderates the relationship between incidental exposure and confirmation bias, with the effect higher for males.

H6c. Gender moderates the relationship between confirmation bias and belief in fake news, with the effect higher for females.

All hypotheses are summarized in **Figure1**.

METHODOLOGY

Sample and Data Collection

This study was conducted in China because China is one of the worst regions for COVID-19 (Salgotra et al., 2020). China had the highest deaths worldwide in the first 50 days of COVID-19 (Khan et al., 2020). During COVID-19 in China, the use of social media has increased dramatically (Luo et al., 2021), as has the amount of fake news on social media (Yang et al., 2021a). China actively seeks strategies to combat fake news (Pang et al., 2022; Yang et al., 2021b).

The sampling method used in this study was convenience sampling. The target population was Chinese social media users, who were free to participate in the survey. As convenience sampling offers time and cost advantages, this method is prevalent in social media and fake news research (Hou et al., 2020). The sampling

frame was defined as social media user. The study excluded respondents who were not social media users by using the questionnaire "frequency of social media use during the week". This exclusion criterion is often used to measure social media users (Kingsbury et al., 2021).

For data collection, an online questionnaire was used. The online survey was completed using WenJuanXing. Collecting data online allows for faster access to a large number of potential respondents, the ability of respondents to respond quickly, and relatively low research costs (Ilieva et al., 2002). Before completing the questionnaire, the respondents were provided with information about the purpose of the survey. The survey took approximately five to ten minutes to complete, while the data collection process took two weeks, from 19th September to 2nd October. A total of 303 samples were collected. Excluding non-social media users, the final effective sample size for the study is 300. According to Blunch (2012), a sample size of least five times the number of items is a standard necessity for structural equation modelling utilizing AMOS. The model proposed in this study has 15 items. Therefore, the sample size for this study is sufficient (minimum required sample size of 75).

Measures

Incidental exposure

Three items from Heiss et al. (2019) and Kim et al. (2013) to assess incidental exposure. It is measured using a 7-point Likert scale ranging from strongly disagree to strongly agree. Including

(1) I find news about COVID-19 on social media by accident,

(2) I know about certain news when others post content about COVID-19 on social media (e.g., WeChat friend circle, Weibo, DouYin, etc.), and

(3) I do not actively seek out certain content about COVID-19 on social media but come across it by chance.

The alpha value for the construct was α=0.887.

Intentional exposure

The intentional exposure scale was adapted from Chong (2021) and Heiss et al. (2019). Measured on a 7-point Likert scale (1=strongly disagree; 7=strongly agree). Alpha value for the construct was α=0.86. Including

(1) I would actively search for news about COVID-19 on social media,

(2) I would actively search for news about COVID-19 on social media frequently,

(3) I would follow news sources about COVID-19 on social media (e.g., official accounts, etc.), and

(4) I would actively follow news of interest amidst the large amount of information about COVID-19 pushed out on social media.

Confirmation bias

The scale of confirmation bias was adapted from the study of Zhao et al. (2020), which was consisted of three items. The alpha value for the construct was α=0.896. Including

(1) most of the COVID-19 information I've seen on social media is consistent with my initial beliefs,

(2) in general, I agree with most of the COVID-19 information that I have seen on social media, and

(3) I like most of the COVID-19 information I've seen on social media.

Measured on a 5-point Likert scale ranging from strongly disagree to strongly agree.

Belief in fake news

Respondents were presented with five headlines of fake news claims about the COVID-19 and asked to indicate to what extent they think each claim is true or fake on a 7-point Likert scale (1=definitely fake; 7=definitely true). These fake news headlines come from Jiao Zhen, a fact-checking platform in China, and were a selection of the latest fake news headlines. The alpha value for the construct was α=0.893.

Table 1. Respondents' demographics profile (n=303)

Breakdown of participants' demographics	Items	Sample	Percentage (%)
Gender	Male	128	42.2
	Female	175	57.8
Age	0-20 years	28	9.2
	21-30 years	112	37.0
	31-40 years	84	27.7
	41-50 years	42	13.9
	51-60 years	34	11.2
	Over 60 years	3	1.0
Education level	Doctor	12	4.0
	Master	16	5.3
	Bachelor	178	58.7
	Associate college	54	17.8
	Senior high school	27	8.9
	Below junior secondary school	16	5.3
Occupation	Student	28	9.2
	Unemployed	24	7.9
	Employees of state enterprises	57	18.8
	Private employees	85	28.1
	Self-employed	99	32.7
	Other	10	3.3
Social media use	Never use social media	3	1.0
	1 or 2 times a week	17	5.6
	3 or 4times a week	85	28.1
	5 or 6 times a week	95	31.3
	One or more times a day	103	34.0

Common Methods Variance

As this study proposes a non-recursive model, SPSS and AMOS were used to analyze the data. Obtaining measurements of predictor and criteria variables from distinct sources is optimal for controlling the common method variance (Podsakoff et al., 2003). However, this study used a single source, and evaluating possible biases is necessary.

Firstly, Harmon's one-factor test, and exploratory factor analyses for all research items examine whether the common method variance. In this study, there was not a single factor that outlined most of the variance. This suggests that method variance is not a problem. Also, this study uses AMOS to estimate the measurement model to check the common method variance (Mishra, 2016). The results showed that biases were not significant.

RESULTS

Descriptive Statistics

Of the 303 respondents in this study, there are 128 males and 175 females. There are 18 people under the age of 20, 112 people aged 21-30, 84 people aged 31-40, 42 people aged 41-50, 34 people aged 51-60, and three people aged 60 and over. Education levels range from Doctor to Junior High School and below, with the largest number of Bachelors, with 178. There are mainly state enterprises, private companies, and self-employed people who hold occupations. We excluded three respondents from this study's analysis for never using social media. **Table 1** includes the demographic information.

Assessment of the Measurement Model

Based on the AMOS analysis steps (Collier, 2020), the first step was to confirm our measurement model using confirmatory factor analysis (CFA). Then, analyze structural equation model (SEM) to examine hypotheses. In the meantime, check the model's goodness of fit.

The results showed that the measurement model had a good fit since the goodness-of-fit index (GFI) of 0.933, adjusted goodness-of-fit index (AGFI) of 0.905, and normed fit index (NFI) of 0.939 exceeded the criteria

Table 2. Confirmatory factor analysis result (n=300)

Construct		Factor loading	Standard error	Item reliability	p-value	CR	AVE
Intentional exposure	ITE1	0.751				0.862	0.611
	ITE2	0.856	0.079	14.429	***		
	ITE3	0.726	0.075	12.048	***		
	ITE4	0.788	0.077	13.124	***		
Incidental exposure	ICE1	0.826				0.888	0.727
	ICE2	0.887	0.059	17.754	***		
	ICE3	0.843	0.057	16.732	***		
Confirmation bias	CB1	0.850				0.896	0.741
	CB2	0.858	0.056	18.174	***		
	CB3	0.875	0.056	18.536	***		
Belief in fake news	BF1	0.775				0.894	0.628
	BF2	0.870	0.071	15.779	***		
	BF3	0.704	0.072	12.605	***		
	BF4	0.788	0.071	14.245	***		
	BF5	0.817	0.068	14.940	***		

Note. CR: Composite reliability & ***p<.001

Table 3. Discriminant validity result (n=300)

Variable	Incidental exposure	Intentional exposure	Confirmation bias	Belief in fake news	Mean	SD
Incidental exposure	0.853				3.157	1.259
Intentional exposure	-0.391	0.782			4.910	1.140
Confirmation bias	-0.627	0.471	0.861		4.867	1.215
Belief in fake news	-0.612	0.475	0.598	0.792	4.877	1.158

Note. SD: Standard deviation

value of 0.9 (Kline, 2015). In addition, the convergent validity was assessed through average variance extracted (AVE), which rendered results higher than the acceptable value of 0.5 (**Table 2**).

Table 3 presents the results of discriminant validity analysis based on Fornell-Larcker criterion (Ab Hamid et al., 2017). The discriminant validity for each variable is determined by calculating the square root of AVE for each variable and comparing this value to the correlation coefficient values (Collier, 2020). The correlation coefficient ranges from +1 through 0 to -1, and 0 indicates no correlation; a perfect correlation between two variables is expressed as +1 (if the relationship is positive) or -1 (if the relationship is negative) (Ratner, 2009). For example, square root of AVE for variable incidental exposure is 0.853, which is greater than the correlation values between incidental exposure and intentional exposure (-0.391), confirmation bias (-0.627), and belief in fake news (-0.612). The results show that all variables are dissimilar and discriminate from each other.

The above analysis met the requirements for internal reliability, structural validity, and discriminant validity. Each item had significant loadings on their respective constructs, showing that the scales for measuring each construct have a high level of convergent validity. Therefore, we conducted SEM analysis to test the hypothesis.

Assessment of the Structural Equation Model

Using SEM, we tested the significance of the relationships among variables in our model. **Table 4** showed a good model fit: X^2 was 198.2, the df was 85, and the normed Chi-square was 2.332. All the values were within their respective reasonable ranges. In particular, the GFI of 0.93, the NNFI of 0.952, and the CFI of 0.961 were above the acceptable value of 0.9. In addition, the RMSEA of 0.067 was less than 0.08, and the SRMR of 0.036 met the threshold value of less than 0.05 (Arbuckle & Wothke, 1999).

Table 4. Fitness test of model (n=300)

Model fit index	Criterion	Model fit of research model	Fit
ML_x^2	Smaller is better	198.238	
df	Bigger is better	85	
Normed Chi-square	1-3	2.332	Ideal
GFI	>0.90	0.930	Ideal
AGFI	>0.90	0.901	Ideal
RMSEA	<0.08	0.067	Ideal
IFI	>0.90	0.961	Ideal
NFI	>0.90	0.934	Ideal
TLI (NNFI)	>0.90	0.952	Ideal
CFI	>0.90	0.961	Ideal
SRMR	<0.05	0.036	Ideal

Note. df: Degree of freedom; GFI: Goodness-of-fit index; AGFI: Adjusted goodness-of-git index; RMSEA: Root mean square error of approximation; IFI: Incremental fit index; NFI: Normed fit index; TLI: Tucker Lewis index; NNFI: Non-normed fit index; CFI: Comparative fit index; & SRMR: Standardized root mean square residual

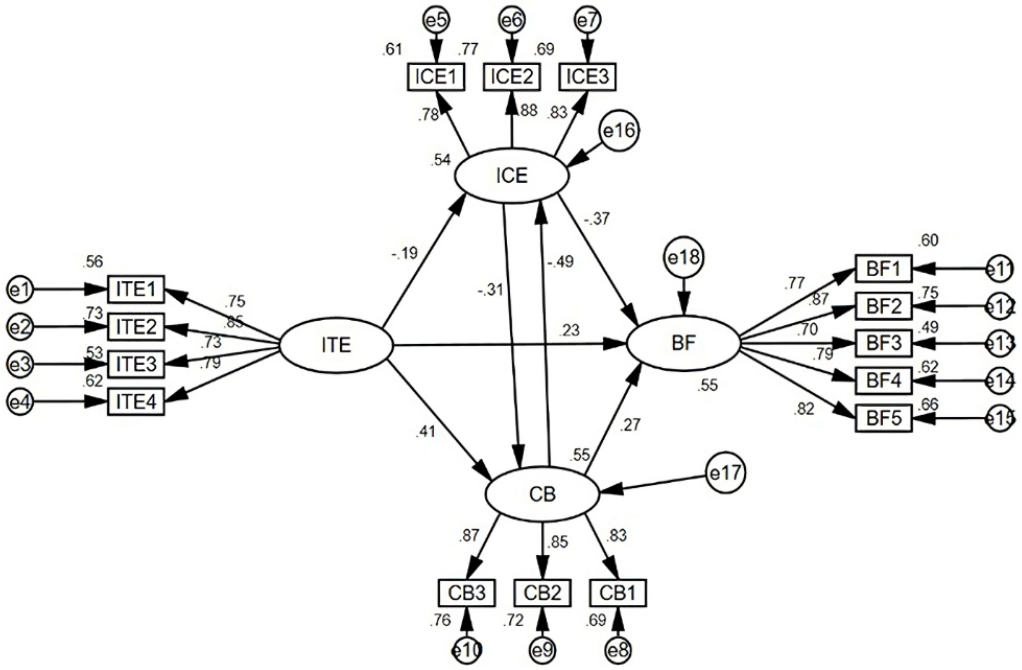

Figure 2. Results of structural equation model analysis (Source: Authors' own elaboration)

From the structural equation model results in **Figure 2** and the model significance test results in **Table 5**, intentional exposure has a significant negative effect on incidental exposure (β=-0.187, p<0.01). This demonstrates that **H1** was supported. Confirmation bias had a significant negative effect on incidental exposure (β=-0.494, p<0.001), and **H4** was supported. It was observed that when incidental exposure was used as dependent variables, the R^2 values of the model was 0.545, showing that the model had good explanatory power. The standardized estimate between intentional exposure and confirmation bias supported **H2** (β=0.414, p<0.001). Next, the standardized estimate between incidental exposure and confirmation bias was -0.309 with a p-value less than 0.001, implying that incidental exposure has a negative impact on confirmation bias; thus, **H3** was supported. The explanatory power of the model with confirmation bias as the dependent variable was 54.7% (R^2=0.547). Further, the standardized estimate between confirmation bias and belief in fake news was positive and significant at 0.268, thereby supporting **H5**.

Table 5. Hypotheses testing (N=300).

DV	IV	SE	p-value	β	R^2	Hypothesis	Result
ICE	ITE	0.072	0.009	-0.187	0.545	H1	Support
	CB	0.103	***	-0.494		H4	Support
CB	ITE	0.066	***	0.414	0.547	H2	Support
	ICE	0.085	***	-0.309		H3	Support
BF	CB	0.087	0.002	0.268	0.551	H5	Support

Note. DV: Dependent variable; IV: Independent variable; SE: Standard error; & ***p<.001

Table 6. Results of the mediation effect analysis (n=300)

Path	Effect	SE	Bias corrected (95%)			Percentile method (95%)		
			LLCI	ULCI	p-value	LLCI	ULCI	p-value
ITE-BF (direct effects)	0.227	0.063	0.108	0.350	0.001	0.103	0.345	0.001
ITE-BF (total indirect effect)	0.318	0.043	0.237	0.404	0.001	0.234	0.401	0.001
ITE-ICE-BF	0.068	0.031	0.018	0.137	0.007	0.015	0.134	0.011
ITE-CB-BF	0.111	0.044	0.037	0.208	0.004	0.030	0.201	0.006
ITE-ICE-CB-BF	0.015	0.012	0.002	0.051	0.009	0.001	0.046	0.016
ITE-CB-ICE-BF	0.075	0.031	0.030	0.157	0.000	0.025	0.145	0.001
ITE-BF (total effect)	0.545	0.051	0.429	0.635	0.001	0.432	0.636	0.001

Note. CI: Confidence interval & SE: Standard error

Table 7. Moderation with Chi-square (X^2) significance (n=300)

Model	CMIN	Degree of freedom	p-value
Unconstrained	285.502	170	
Measurement residuals	290.275	177	
Chi-square (X^2) significance	4.773	7	0.688

Mediation Effect Analysis

This study used bootstrap ML with a 5,000 replicate sampling occasions test to further test the mediating effect. **Table 6** shows the results of the bootstrapping procedure testing the total, indirect, and direct effects. When intentional exposure was the independent variable, the mediation effect of incidental exposure on belief in fake news displayed a mediation effect; the mediation effect of confirmation bias on belief in fake news also revealed a mediation effect. Implicating that confirmation bias plays a mediation effect on intentional exposure, incidental exposure, and belief in fake news, incidental exposure mediation intentional exposure, confirmation bias, and belief in fake news.

Multi-Group Analysis

For conducting multi-group analysis (MGA), the researchers applied the essential steps Awang (2012) recommended to test the moderating effect of gender on the relationship between intentional exposure, incidental exposure, and confirmation bias, the moderating effect of gender on the relationship between confirmation bias and belief in fake news. First, this study examines the overall model's moderation effect by applying Chi-square (X^2) value between the measurement residuals and the unconstrained model (285.502-290.275=4.773). The CMIN difference was statistically insignificant (**Table 7**), with df being 7, p=0.688>0.05. Concluding that gender has not a moderating effect on the structural model as a whole. The t-values for the critical ratios for each pathway in this study were less than 1.96 for both males and females, which did not reach a significant level (**Table 8**). Indicating that the moderation was not valid, and **H6a**, **H6b**, and **H6c** were not supported.

Table 8. Gender moderation path results (n=300)

Path	Gender: Male		Gender: Female		Composite reliability	
	Beta value	p-value	Beta value	p-value	t	p-value
ICE←ITE	-0.246	0.019	-0.160	0.105	0.659	0.511
CB←ITE	0.358	***	0.440	***	0.590	0.557
BF←ITE	0.166	0.079	0.268	0.001	0.888	0.377
BF←CB	0.417	0.003	0.161	0.133	0.433	0.666
CB←ICE	-0.364	0.007	-0.278	0.012	-1.677	0.097
BF←ICE	-0.223	0.093	-0.468	***	-1.367	0.175
ICE←CB	-0.476	0.002	-0.496	***	-0.019	0.985

DISCUSSION

The threat of fake news is greater than ever during COVID-19, especially with the surge in the use of social media. Our goal is to provide insights into current interventions on social media by assessing the patterns of exposure to fake news using social media. Specifically, this study cross-gender analyses the impact of intentional and incidental exposure on belief in fake news through confirmation bias.

Firstly, the results indicate that those who seek information through social media are more likely to be gullible to fake news than those who do not (**H2** and **H5** supported). The result consistent with past findings (Diehl & Lee, 2022). However, unlike past studies, our results emphasize the mediating role of confirmation bias. Although previous fake news research has focused on the bounded rationality of people's lack of access to information and analysis (Bronstein et al., 2019; Gupta et al., 2022). Strategies such as labelling and warnings proposed based on past explanations have been questioned (Sharevski et al., 2022). This reflects that it is difficult to explain the relationship between social media use and belief in fake news with limited rationality. Our work draws on knowledge of social media and cognitive dissonance theory. According to cognitive dissonance theory, humans are often sensitive to a dissonance between behavior and beliefs and compel individuals to seek solutions to resolve the dissonance. Confirmation bias is usually the chosen solution, with people preferring to accept new things that conform to their pre-existing beliefs (Peters, 2020).

Secondly, our results show a two-way effect between incidental exposure and confirmation bias (H3, H4 supported). On the positive side, incidental exposure to social media can reduce the triggering of confirmation bias and thus reduce the risk of falling into fake news. Past research has suggested it is a measurement to alleviate the problem of fake news (Jones-Jang et al., 2021; Masip et al., 2020). However, the result of this study indicates that intentional exposure reduces the chance of incidental exposure (**H1** supported). Increasing the chance of incidental exposure is not easy for social media. Social media shapes a highly selective media environment. Social media algorithms analyze user behavior (e.g., likes, retweets, searches, and follows) to recommend highly relevant content to the user (Fantl, 2021; Hameleers & Van der Meer, 2020). A well intentioned "good echo chamber" might constitute a technique of resistance to fake news (Shane et al., 2022). However, people trapped in an 'echo chamber' due to their intentional exposure were progressively surrounded by the same information (Colleoni & Corsaro, 2022). People will readily fake news as standard in this situation. Therefore, while increasing incidental exposure is a viable option, our study prefers to address the issue of confirmation bias, which is an important bridge between exposure patterns and belief in fake news.

Furthermore, the results of this study show that gender does not influence the relationship between exposure patterns, confirmation bias, and belief in fake news. Although some previous studies have shown that males are more rational and less susceptible to fake news than females (Laato et al., 2020; Lai et al., 2020; Wright et al., 2022). However, the results of this study suggest that males do not have an advantage over females (**H6a**, **H6b**, and **H6c** not supported). It may be due to the mediating role of confirmation bias. Confirmation bias may not differ in the information processing based on gender (Jonas et al., 2001). Therefore, we have to address the problem of fake news with concern for the whole group and not a single one.

Theoretical Contributions

This study provides theoretical and empirical support for how social media mitigate people's skepticism of fake news. Firstly, this study develops a model of the relationship between exposure patterns on social media and belief in fake news. Previous research has shown that social media use exacerbates belief in fake news (Barakat et al., 2021; Cacciatore et al., 2018; Nelson & Taneja, 2018; Tandoc et al., 2021; Wang, 2020), and this model explains that.

Secondly, this study explains why people believe fake news through confirmation bias. Past explanations based on bounded rationality, measures commonly taken by social media to solve the problem of fake news are through warnings or labelling (Clayton et al., 2020). However, past research has shown that warnings are ineffective under the existence of confirming bias (Gwebu et al., 2021). Therefore, we believe that reducing confirmation bias is fundamental to preventing people from being harmed by fake news on social media.

Thirdly, this study collected data in China. The results explain why there was a surge in belief in fake news during COVID-19 in China (Yang et al., 2021a; Zhang et al., 2021). A primary reason for this is the increased intentional news exposure behaviour on social media in China since people perceive uncertainty (Zhou, 2021). However, intentional exposure to knowledge is received only based on matching one's prior beliefs, and people's inherent biases lead them into a cycle where the more they seek, the more they are hurt by fake news.

Fourthly, a muti-group comparison of this study shows that there is no significant difference between gender in social media exposure patterns and belief in fake news. Therefore, we can take the same measures to combat the problem of fake news on social media.

Practical Implications

The current empirical study has several implications for journalist and policymakers. Firstly, to reduce the impact of fake news, journalists should report the latest information about COVID-19 in as timely a manner as possible. Reduce news blind spots, which may provide space for fake news.

Secondly, we should consider reducing people's bias and allowing them to receive the correct information. Given that, the government should consider several interventions against confirmation bias, such as linking to open data knowledge bases (Lee & Park, 2020), thinking opposites (Van Brussel et al., 2020), and improving media literacy (Pearson & Knobloch-Westerwick, 2019).

Limitations and Suggestion for Future Research

This study has limitations. Firstly, we used recent news headlines popular on Chinese social media to measure belief in fake news. Some respondents may have been aware that these are fake news before this study's survey, which may have influenced the results of this study. Secondly, although there are cost and time advantages to collecting data through convenience sampling in this study, there is no denying that the sample may not be representative enough (Etikan et al., 2016). Thirdly, there may be potential self-reporting bias in our research survey. Respondents may have overestimated or underestimated their use of social media and confirmation bias. Future research could conduct longitudinal or experimental studies to validate this study's findings. Also, this study is a China-based study with differences in COVID-19 profiles and social media prevalence rates from other countries or regions. Future studies can continue to investigate in different contexts. Finally, this study examined the impact of confirmation bias on the belief in fake news. Based on the results of this study, we suggest that future researchers further explore some strategies to reduce confirmation bias that may be effective in combating fake news on social media.

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