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Fake News and the Mere Exposure Effect

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Abstract. On the Internet, fake news has become a phenomenon that deserves attention because of its social influence. Past research on fake news focused on repetition and presentation, and a research gap of lack of Asian population and Asian circumstances occurred. Therefore, the present study addresses two main research questions. First, it tests whether exposure frequency affects the perceived reliability of news and participants' willingness to share it. Second, it examines the reasons behind this pattern. To assess participants' attitudes toward fake news, researchers measured their sharing preference, their willingness to share the news with friends, and the news' perceived reliability, which refers to whether they believed the news was true. 74 participants participated in this research, and 68 participants' results were measured. The result shows that exposure frequency significantly influenced people's perceptions of fake news. Two exposures made people more likely to believe fake news, whereas three exposures reduced their belief in it. Limitations and directions for further research are discussed.

Keywords: Fake news, mere exposure effect, reliability, psychological resistance

1. Introduction

Nowadays, news has moved beyond television and expanded to social media platforms. While some news organizations are recognized on social media and post stories about events in daily life, other users post news-like blogs or plogs that confuse or even deceive viewers. In this context, fake news has become an essential topic around the world because its spread may cause widespread panic.

Research on news mainly focuses on repetition and presentation. The illusory truth effect suggests that repeated information can be perceived as more reliable than new information. Hassan and Barber [1] conducted a research on this topic by exposing the news repetitively for different times. They found that the effect was largest in the group exposed to the news twice. Also, the research shows that the other groups showed only slight increases relative to the control group. Even one repetition can increase the likelihood that people perceive news as true [2]. Regarding presentation, some research shows that presentation order does not affect perceptions of fake news. Edelijn et al. [3] conducted two experiments and found that the order in which fake and true news was presented did not affect perception. However, the method used to refute fake news was more important and effective than a vague correction.

The mere exposure effect means that repeated exposure to a stimulus can produce a more positive attitude toward it [4]. Thus, repeating a stimulus may increase liking for it. Factors such as stimulus

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type, stimulus complexity, and number of exposures can affect the mere exposure effect. In research on fake news, the mere exposure effect is often considered alongside the illusory truth effect.

Previous research has focused mainly on fake news in Western societies, with limited attention to how Asian populations evaluate fake news. In addition, this research lacks a structured analysis of the mere exposure effect. Therefore, the present study addresses two main research questions. First, it tests whether exposure frequency affects the perceived reliability of news and participants' willingness to share it. Second, it examines the reasons behind this pattern.

2. Method

To assess participants' attitudes toward fake news, researchers measured their sharing preference, their willingness to share the news with friends, and the news' perceived reliability, which refers to whether they believed the news was true. Researchers used ChatGPT to draft three news stories based on real events. The first fake story concerned the health benefits of cilantro, the second concerned the health benefits of bananas, and the third claimed that standing in the office benefits vascular health. Researchers then used Doubao to create an image for each story. Finally, they designed three experimental groups as follows.

Table 1. Experiment groups design

Repeat frequency	Fake News 1	Fake News 2	Fake News 3
Group A	2	1	3
Group B	1	3	2
Group C	3	2	1

In addition, researchers used Doubao to create six images of true news stories. These stories were based on a real report about expanding access to discounted tickets for Chinese university graduates.

After posting the questionnaires online, the researchers received 33 responses in Group A, 22 in Group B, and 19 in Group C. All participants were Chinese, and 60 were female. In Group A, 78.78% had a bachelor's degree or higher. The corresponding percentages were 59.09% in Group B and 57.89% in Group C. More than half of the participants used social media for at least 3 hours per week. However, only 9.09% of participants in Group A, 18.18% in Group B, and 15.79% in Group C used social media for more than 15 hours per week. By eliminating invalid data through eliminating results with same answer for different questions and respond time shorter than 60 seconds, in total 68 participants' results were measured.

3. Results

After obtaining a total sample of 68 participants (Group 1: 31; Group 2: 19; Group 3: 18), researchers conducted an ANOVA and t-tests on differences in perceived reliability and sharing preference. The results are presented below.

Table 2. ANOVA test results on sharing preference

SUMMARY				
Group	Observations	Sum	Average	Variance

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Table 2. (continued)

Repeat once	68	233	3.42647059	3.65122915
Repeat twice	68	221	3.25	3.05597015
Repeat three times	68	238	3.5	2.88723051

Table 3. Analysis of variance

Analysis of Variance						
Difference	SS	df	MS	F	P-value	F crit
Between groups	2.24509804	2	1.12254902	0.35100023	0.70441422	3.04082805
Within groups	642.826797	201	3.19814327			
Total	645.071895	203				

Table 4. ANOVA test results on reliability difference

SUMMARY				
Group	Observations	Sum	Average	Variance
Repeat once	68	-12	-0.1764706	1.52063213
Repeat twice	68	50.5	0.74264706	5.23501975
Repeat three times	68	-9	-0.1323529	1.66878841

Table 5. Analysis of variance

Analysis of Variance						
Difference	SS	df	MS	F	P-value	F crit
Between groups	36.5465686	2	18.2732843	6.50723977	0.0018267	3.04082805
Within groups	564.4375	201	2.80814677			
Total	600.984069	203				

The relationship between exposure frequency and sharing preference was not significant. The change in perceived reliability was highest in the group exposed to the news twice. In the other two groups, this change was below zero, indicating that perceived reliability decreased. The ANOVA showed that exposure frequency had a significant effect on the change in perceived reliability ($p = 0.0018267$) but no significant effect on sharing preference ($p = 0.7044$).

Researchers then examined differences in perceived reliability among the one-, two-, and three-exposure conditions. Participants exposed to the news twice showed a significantly greater change in perceived reliability ($M2 = 0.74$, $M1 = -0.17$, $M3 = -0.13$; $t(134) = 2.92$, $p = .004$). The change increased from one to two exposures but declined after the third exposure.

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Table 6. The t-test result between repeat 2 and repeat 1 for reliability difference

	Repeat 2	Repeat 1
Average	0.74264706	-0.1764706
Variance	5.23501975	1.52063213
Observation data	68	68
pooled variance	3.37782594	
Hypothesized Mean difference	0	
df	134	
t Stat	2.91602961	
P(T≤t) one-tail	0.00207867	
t Critical one-tail	1.65630454	
P(T≤t) two-tail	0.00415734	
t Critical two-tail	1.97782576	

Table 7. The t-test result between repeat 3 and repeat 2 for reliability difference

	Repeat 3	Repeat 2
Average	-0.1323529	0.74264706
Variance	1.66878841	5.23501975
Observation data	68	68
pooled variance	3.45190408	
Hypothesized Mean difference	0	
df	134	
t Stat	-2.7461114	
P(T≤t) one-tail	0.00342979	
t Critical one-tail	1.65630454	
P(T≤t) two-tail	0.00685959	
t Critical two-tail	1.97782576	

In summary, exposure frequency significantly influenced the change in perceived reliability between the pretest and posttest. However, it did not significantly influence sharing preference.

4. Discussion

Familiarity bias may explain why participants were more likely to believe the news after two exposures. This bias refers to an increase in perceived reliability after a message or other content is repeated several times. It therefore applies to a situation in which participants are repeatedly exposed to the same news. During the first exposure, participants may question the news' reliability.

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By the second exposure, however, repetition may make the news feel more familiar and therefore more credible.

However, the effect of familiarity may follow an inverted U-shaped pattern. Once exposure passes a certain threshold, perceived reliability may decrease as exposure increases [5]. In addition, psychological reactance may explain why perceived reliability was lower after three exposures than after two. Psychological reactance occurs when people sense an attempt to persuade them and begin to resist it [6]. After seeing the same news three times, participants may have experienced information fatigue and become resistant to the message. As a result, perceived reliability may have declined, producing the observed inverted U-shaped pattern.

This study has several limitations. First, the unequal number of participants in each group may have contributed to differences among the groups. Second, the news stories focused mainly on health. The experimental design therefore cannot rule out the possibility that the public naturally views health-related news as reliable. Thus, the findings may be generalizable only to health-related contexts. Third, the study did not examine gender differences. Because most participants were women, the results may not generalize to men. Further research should make the results more generalizable, using almost equal amount of men and women. Also, the form of fake news should accomodate to more widely used social media platform other than short videos.

5. Conclusion

The findings show that exposure frequency significantly influenced people's perceptions of fake news. Two exposures made participants more likely to believe fake news, whereas three exposures reduced their belief in it. This pattern suggests that familiarity may initially increase perceived reliability, but repeated exposure may eventually trigger fatigue or resistance. However, exposure frequency did not significantly affect participants' willingness to share the news. These findings highlight the need to distinguish perceived reliability from sharing behavior when studying misinformation. Future research should test a larger and more balanced sample and include news topics beyond health. It should also examine whether the same pattern appears across different demographic groups and social media settings.

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