Evidence Based Library and Information Practice

Evidence Summary

Visual Prebunking Advertisements Perform Better Than Their Audio-Only Counterpart for Improving Information Literacy

A Review of:
Daly, D., & Jarrette, K. (2025). Design of audio ads to prebunk misinformation and promote civil discourse. *Information Research: An International Electronic Journal*, *30*(iConf), 249–259. https://doi.org/10.47989/ir30iConf47359

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Received: 25 July 2025 **Accepted:** 10 Nov. 2025

DOI: 10.18438/eblip30847

Abstract

Objective – To determine if the use of prebunking advertisements influences information literacy, the ability to identify false news headlines, or attitudes toward civil discourse.

Design – A pilot, experimental study.

Setting – A large university in the southwestern United States.

Subjects – 143 undergraduate students.

Methods – A research team developed five short audio advertisements intended for prebunking sources of misinformation identified through social media. For each misinformation strategy, the team created a humorous sketch, dramatizing an interaction between two characters who knew each other. The team created familiar characters to model how one could engage friends or family who could be

susceptible to believing misinformation and promote civil discourse among them. The audio ads were intended to be aired during podcasts known to spread misinformation.

For the experimental design, the audio ads were coupled with Artificial Intelligence (AI)-generated visualization. Researchers set out to determine whether exposure to a specific prebunking ad enhances an individual's ability to identify false news headlines, whether the visualization of the ad script using AI assistance impacts respondent literacy, and how participants describe and gauge the effectiveness of a specific prebunking audio ad.

Participants were recruited through instructors who taught courses related to study topics. Instructors were encouraged to offer extra credit for participation. In Part 1 of the study, participants answered questions about demographics and social media use.

Participants completed two established qualitative questionnaires: the Generic Conspiracist Beliefs scale (GCBS) and the Misinformation Susceptibility Test (MIST-20) (Maertens et al., 2024). The researchers developed a questionnaire modeled after the MIST-20, the ITMIST, using real and fake headlines. Participants were exposed to one ad: either an audio-only ad, an AI-generated visualization ad, or a control ad. Participants completed another qualitative questionnaire after viewing the ad to finish Part 1. The following day, participants received a link to complete the GCBS, MIST-20, and ITMIST and completed another qualitative questionnaire within a week of the first survey, to finish Part 2 of the study.

Main Results – One hundred forty-three participants completed Part 1 of the study, and 99 completed Part 2. Participants ranged in age from 18–48 years; 59.6% identified as female, 38.4% identified as male; 54.5% identified as White/Caucasian, with the remaining participants identifying as racially diverse; 34.4% identified as Democrat, 32.3% Republican, 18.2% Independent; and participants represented multiple religious affiliations.

All participants used a social media platform at least once a week: 43.4% reported usage over two hours per day, 26.3% between 90–120 minutes, 12.1% between 60–90 minutes, 14.1% between 30–60 minutes, and 4% less than 30 minutes. Nearly 90 percent (89.9) of participants used Instagram, 67.6% TikTok, 66.7% Snapchat, 34.3% Twitter/X, 21.2% Facebook, and 8.1% used other social media platforms. Regarding podcasts, 23.2% frequently tuned in, 50.5% sometimes tuned in, and 26.3% never tuned in. Of those who listened to podcasts, 71.2% always skipped podcast ads, 26% sometimes skipped, and 1.4% never skipped. The podcasts that participants reported frequently tuning into for entertainment and education were strongly related to stated political affiliation.

The authors reported the results of the MIST-20 and ITMIST in this article. At the time of publication, the authors were still analyzing the results of the GCBS and the complete quantitative and qualitative data. When comparing the AI-generated visualization ad (Visual Experimental group) to the Visual Control group, investigators reported a significantly large average improvement in information literacy scores for the Experimental group on the MIST-20 (Visual Experimental $\bar{x} = 0.93$, Visual Control $\bar{x} = 0.33$), and a moderate average improvement on the ITMIST (Visual Experimental $\bar{x} = 0.98$, Visual Control $\bar{x} = 0.81$). When comparing the Audio Experimental group to the Audio Control group, investigators report mixed results. The Audio Experimental group did not show as great an average improvement compared to the Control group on the MIST-20 (Audio Experimental $\bar{x} = 0.85$, Audio Control $\bar{x} = 1.41$) but scored higher than the Control group on the ITMIST (Audio Experimental $\bar{x} = 0.78$, Audio Control $\bar{x} = 0.45$). More than half of the participants in each Experimental group improved in score. Those who improved showed a greater change in score than those whose score declined.

Conclusion – Prebunking ads improved information literacy, but a greater improvement was shown with AI-generated visualization ads than with audio-only ads. The investigators acknowledge the benefit of theatrical visual advertisements to prebunk misinformation and plan research to include broader populations.

Commentary

This research was appraised with the JBI critical appraisal tool for the assessment of risk of bias for quasi-experimental studies (Barker et al., 2024).

In this publication, the investigators describe a pilot study, using a pre- and post-test experimental design to assess a complex issue of measuring information literacy. The authors described a detailed iterative ad creation process but only used one ad in this pilot study.

Investigators provided clear research questions and used validated tools, but due to multiple limitations, readers should view the positive effect seen for visual prebunking ads as warranting further investigation.

The investigators mentioned that "Analyses of results are limited at the time of this writing, with some data including both quantitative and qualitative responses still being analyzed." In this article, the results of the GCBS and the answer to the third research question, "How will participants describe and gauge the effectiveness of a specific prebunking audio ad?" were not reported.

Preliminary results from experimental studies should include clear methodology. Information regarding the study design and statistical analysis, even for pilot studies, is necessary for readers to evaluate the study results and their impact. The information for the reader to gauge these nuances in the results or significance was missing. Although the authors acknowledged these limitations, they do affect the reader's ability to interpret the study design and results.

A discrepancy in the data was found while reading the published report, but it is not noted on the journal website. The results reported by the authors in the body of the manuscript, "a moderate improvement on the ITMIST (Visual Control $\bar{x}$ = 0.81, Visual Experimental $\bar{x}$ = 0.98)" did not match the table of data for the ITMIST. The data points are transposed in the table, Visual Control average $\bar{x}$ = 0.98 and Visual Experimental $\bar{x}$ = 0.81, reflecting a poorer response in the experimental group. The same error is noted in the Audio-only data, and the data should be confirmed before making decisions on the ITMIST tool.

The MIST-20 is a validated tool that measures susceptibility to fake news (Maertens et al., 2024). Survey takers view 20 news titles, 10 fake and 10 real and are asked to discern whether the title is real or fake. The titles included in the MIST-20 were narrowed over multiple studies from more than 100 real and more than 400 fake news titles. The articles included in the MIST-20 are in random order each time the website is accessed, but the titles do not change. (University of Cambridge). Any improvement in the scores may be due to a participant learning bias, where participants learn from the first attempt. Since participants completed the survey on two different days, it is not unreasonable to think that they may have searched online for the same news titles between their first and second attempts. The authors acknowledge this limitation.

The maximum total score for the MIST-20 is equal to 20 correct answers. The raw scores for the participants are not provided, but investigators report a significantly large average improvement between the Visual Experimental group and the Visual Control group. The data analysis would be helpful, but from the results, the difference in average between groups of $\bar{x}$ = 0.60, less than one correct question out of 20, but this positive difference may be meaningful in the context of additional research.

The interpretation must also be paired with the demographics of the experimental and control groups and other limitations. If the groups are similar in demographics, it does strengthen the results. For example, responses to the MIST-20 differ by age range and by the hours of social media consumed. In a YouGov survey of 1,516 adult U.S. citizens, the average score for the MIST-20 was 13. Older survey takers performed better than their younger counterparts. Those spending the least recreational time (0-2 hours) online each day also performed better, as did those who did not use social media as their sole news source. The YouGov survey collected data on education, but this was a characteristic used to weigh the data results (Sanders, 2023). It may be difficult to extrapolate the results of college students, limiting the generalizability.

Another limitation to consider is that students were offered extra credit in one of their courses to participate. Incentives like this may lead to rushed or less thoughtful answers. The authors acknowledged this limitation.

The increased use of social media and exposure to fake news is a growing problem. Librarians play a role in fighting misinformation while promoting credible information and trustworthy resources. Additional research in this field of information literacy is incredibly important. Understanding the demographics of those most at risk of believing misinformation can help librarians identify strategies such as prebunking advertisements to combat it. Although academic settings such as the one used in this study may limit generalizability, they may be settings that can engage participants in this research. The majority of studies on the topic of "library practices against fake news" have been conducted in academic libraries (Revez & Corujo, 2021).

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