NEWS RELEASE

Singapore, 11 Feb 2025

Repeated exposure to deepfakes makes you more likely to believe their claims, finds international study by NTU Singapore

According to a false video generated using artificial intelligence (AI) that went viral on social media, American media personality Kim Kardashian manipulates people online for money, and you are more likely to believe this if you come across the same video again online, according to a multi-country study by **Nanyang Technological University, Singapore (NTU Singapore).**

Through an international study of 8,070 study participants, the NTU Singapore team found that those who had seen this viral deepfake of Kim Kardashian on social media prior to the study were more likely to believe the claim made in the video when exposed to it again.

The same effect was replicated when the study participants from Singapore, China, Indonesia, Malaysia, the Philippines, Thailand, the United States, and Vietnam were shown viral deepfakes of three other well-known figures as part of the study: Facebook founder Mark Zuckerberg, Russian president Vladimir Putin, and actor Tom Cruise.

The scientists suggest that this is due to the **illusory truth effect**, a psychological phenomenon in which people are more likely to believe information is true simply because they have encountered it multiple times, regardless of its accuracy. Repetition increases familiarity with the information, which in turn makes it easier for the brain to process.

This effect is amplified in study participants who rely primarily on social media platforms for news rather than direct news sources (e.g. websites, TV, newspapers) and thus are more likely to encounter deepfakes, increasing their risk of accepting the false claims as true. Contrary to existing research, the scientists found that having a higher cognitive ability did not defend these participants against the amplified illusory truth effect.

NTU Wee Kim Wee School of Communication and Information's (WKWSCI) Assistant Professor Saifuddin Ahmed, who led the study, said: "Our study shows

that across participants from different socio-political contexts, repeated exposure to the same deepfake makes them more likely to believe it, suggesting that the illusory truth effect persists regardless of their cultural and political background. As deepfakes become increasingly common, there is a pressing need for governments, tech companies, and media outlets to collaborate on solutions that mitigate their impact."

He added: "Given that mere exposure to deepfakes could reinforce false beliefs, policymakers could consider psychological mechanisms (such as the illusory truth effect) when developing educational campaigns focused on debunking deepfakes. Policymakers could also make use of the same psychological mechanism to disseminate important and truthful information, such as during a health crisis, to subconsciously encourage certain behaviours in the public."

The study was published in the *Journal of Broadcasting & Electronic Media*.

Respondents in Singapore least likely among eight countries to be deceived by deepfakes

The NTU scientists also looked at the national differences in the perceived believability of deepfakes.

Respondents in Singapore were the least likely to be deceived by deepfakes among the eight countries, followed by Vietnam and the Philippines (See Table in Notes to Editor for a comparison across countries).

The scientists said this could be due to higher levels of digital literacy in Singapore and a sustained effort from the government to raise awareness against misinformation through proactive campaigns and legislation.

However, the scientists noted that this observation does not necessarily mean Singaporeans are the most resilient to deepfakes.

Asst Prof Saifuddin said: "In fact, a large majority of the study respondents from Singapore who did not believe the false claims in the deepfakes shown were also found to be **uncertain about the accuracy of the claims (**they felt "it may be true or not**")**. While this is better than accepting the misinformation, it may reflect a broader sense of wariness towards unfamiliar information online. This may leave individuals more vulnerable to future exposure, as repeated misinformation could exploit their indecision.

"Therefore, to mitigate misinformation from exploiting indecision, it is important to cultivate certainty-based rejection, which builds cognitive immunity, making individuals more resistant to future persuasion and better equipped to challenge misinformation actively."

How the study was conducted

The study takes on a validated approach that is common among misinformation studies. Study participants were first presented with deepfakes of four prominent political and entertainment figures that have gone viral in a mock social media post format (See below in Notes to Editor).

They were asked to rate on a five-point scale how true they thought the claim in each video was, and if they had encountered any of these four deepfakes before to determine if participants had repeated exposure to the deepfakes.

To measure social media news engagement, participants were asked to rate on a five-point scale how often they read or commented on social media posts about political and public affairs, and how often they made social media posts about these issues.

Participants were also asked to complete a 10-item vocabulary test that is often used in social science research as a proxy measure for cognitive ability.

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Notes to Editor:

The research paper titled "*Social Media News Use Amplifies the Illusory Truth Effects of Viral Deepfakes: A Cross-National Study of Eight Countries*" was published in the *Journal of Broadcasting & Electronic Media* in October. Volume 68, Issue 5, 2024
DOI: 10.1080/08838151.2024.2410783

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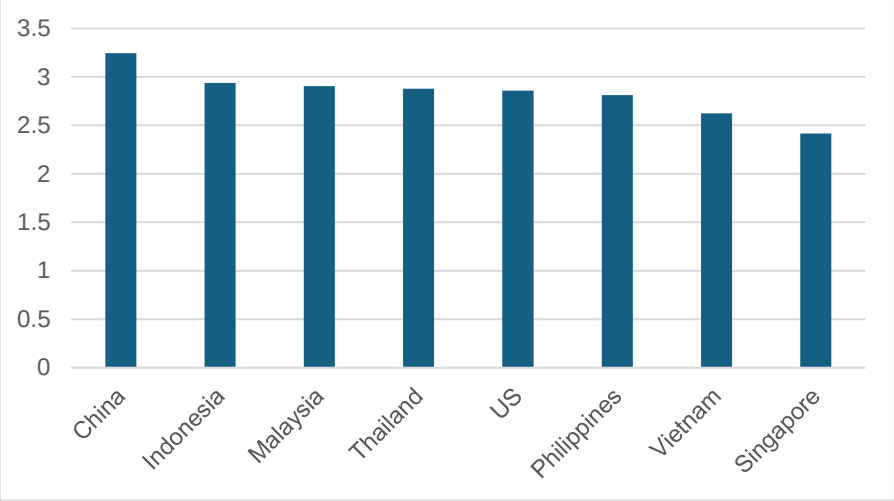
Comparison table of vulnerability to deepfakes across eight countries

Study participants were asked to rate, on a scale of 1 (for strongly disagree) to 5 (for strongly agree), whether they believe the claims made in a deepfake.



Examples of deepfakes presented to study participants in a mock social media format:

Source of deepfakes shown to survey participants:

Creator	Subject	Link
Bill Posters	Mark Zuckerberg	https://www.instagram.com/p/ByaVigGFP2U/?igshid=MTI5NDc2ZGU=
Bill Posters	Kim Kardashian	https://www.instagram.com/p/ByKg-uKlP4C/?igshid=MTI5NDc2ZGU=

Chris Umé	Tom Cruise	https://www.tiktok.com/@deeptomcruise/video/6932640712861224198?embed_source=70846778%2C120811592%2C120810756%3Bnull%3Bembed_name&is_copy_url=1&is_from_webapp=v1&item_id=6932640712861224198&refer=embed&referer_url=www.independent.co.uk%2Farts-entertainment%2Ffilms%2Fnews%2Ftom-cruise-deepfake-tiktok-video-b1808000.html&referer_video_id=6932640712861224198
RepresentUs	Vladimir Putin	https://www.youtube.com/watch?v=sbFHhpYU15w&t=1s

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About Nanyang Technological University, Singapore

A research-intensive public university, Nanyang Technological University, Singapore (NTU Singapore) has 35,000 undergraduate and postgraduate students in the Business, Computing & Data Science, Engineering, Humanities, Arts, & Social Sciences, Medicine, Science, and Graduate colleges.

NTU is also home to world-renowned autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies and Singapore Centre for Environmental Life Sciences Engineering – and various leading research centres such as the Earth Observatory of Singapore, Nanyang Environment & Water Research Institute and Energy Research Institute @ NTU (ERI@N).

Under the NTU Smart Campus vision, the University harnesses the power of digital technology and tech-enabled solutions to support better learning and living experiences, the discovery of new knowledge, and the sustainability of resources.

Ranked amongst the world's top universities, the University's main campus is also frequently listed among the world's most beautiful. Known for its sustainability, NTU has achieved 100% Green Mark Platinum certification for all its eligible building projects. Apart from its main campus, NTU also has a medical campus in Novena, Singapore's healthcare district.

For more information, visit www.ntu.edu.sg