

## **NEWS RELEASE**

**Singapore, 6 September 2022**

### **Less trust in AI-suggested preventive care measures than those from health experts finds NTU Singapore-led study**

Researchers led by **Nanyang Technological University, Singapore (NTU Singapore)** have found that individuals show less trust in preventive care interventions suggested by artificial intelligence (AI) than when the same interventions are prompted by human health experts.

Preventive care interventions are activities aimed at reducing risks to health, such as undertaking a health screening, increasing physical activity, and receiving a vaccination.

Studying 15,000 users of a health mobile application in South Korea, the researchers found that emphasising the involvement of a human health expert in an AI-suggested intervention could improve its acceptance and effectiveness.

These findings suggest that the human element remains important even as the healthcare sector increasingly adopts AI to screen, diagnose and treat patients more efficiently. The findings could also contribute to the design of more effective AI-prompted preventive care interventions, said the researchers.

**Assistant Professor Hyeokkoo Eric Kwon from NTU Nanyang Business School (NBS)**, who led the study, said: “Despite the potential of artificial intelligence to provide higher quality interventions, we found that people have lower trust in health interventions suggested by or derived from AI alone, as compared to those they perceive to be based on human expert opinion. Our study shows that the affective human element, which is linked to emotions and attitudes, remains important even as health interventions are increasingly guided by AI, and that such technology works best when complementing humans, rather than replacing them.”

This study reflects NTU’s efforts under **NTU2025**, the University’s five-year strategic plan that addresses humanity’s grand challenges such as the impact of technology on humanity. Conducted by NTU NBS at the intersection of business and healthcare

technology, the study also highlights NTU's strength and focus on interdisciplinary research.

The findings were published in an article in the scientific journal *Production and Operations Management*, co-authored with **Assistant Professor Nakyung Kyung** of the National University of Singapore.

### **Higher acceptance for human-based health intervention**

To study user perceptions of preventive health interventions proposed by artificial intelligence (AI) compared to those proposed by humans, the research team recruited 9,000 users of a mobile health app in South Korea.

Through the app, these users received a pop-up notification that encouraged them to walk a specific number of steps, generated for each user via an AI algorithm. The app then measured the number of steps taken for users who chose to take on this health intervention.

For 3,000 users in the AI-suggested intervention group, their pop-up notification read: "AI recommends that you walk (personalised step goal) in the next seven days. Would you like to participate?" Another 3,000 in the human-suggested intervention received a notification that read: "Health expert recommends that you walk (personalised step goal) in the next seven days. Would you like to participate?" (See Figure 1 below in Notes to Editor).

A control group of 3,000 users received the neutral intervention that mentioned neither AI nor a health expert.

Of the users who received the AI-suggested intervention, 19% accepted the intervention. About 10% of this group subsequently achieved their personalised step goal at the end of the week. More users in the group that received the human-suggested intervention accepted the intervention (22%) and achieved their goal (13%).

### **Improving the effectiveness of AI-suggested interventions**

The research team then extended their study to include two more groups of 3,000 users of the same mobile app.

One group received an intervention that disclosed the use of AI in conjunction with health experts. The other group received an intervention that explained how AI generated the interventions (See Table 1 below).

Users were more accepting of the health intervention that showed how AI was used to complement a health expert's opinion (27%) compared to purely AI-suggested or human-suggested interventions. Of this group, 19% achieved their personalised step goal.

Being transparent about how AI was used to generate the personalised step goal also led to a higher acceptance rate (21%). Of this group, 13% achieved their goal.

While the study was conducted in the context of preventive healthcare, the researchers believe that their findings could be applied in other contexts where affective trust plays a significant role, such as travel, education, legal, and insurance services.

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### Notes to Editor:

Study '[Rationally trust, but emotionally? The roles of cognitive and affective trust in laypeople's acceptance of AI for preventive care operations](#)' published online in *Production and Operations Management* on 30 Jun.

**Figure 1:** Preventive health interventions were delivered to users of a mobile health app to determine their acceptance rate of an AI-suggested intervention (left) as compared to one suggested by humans.

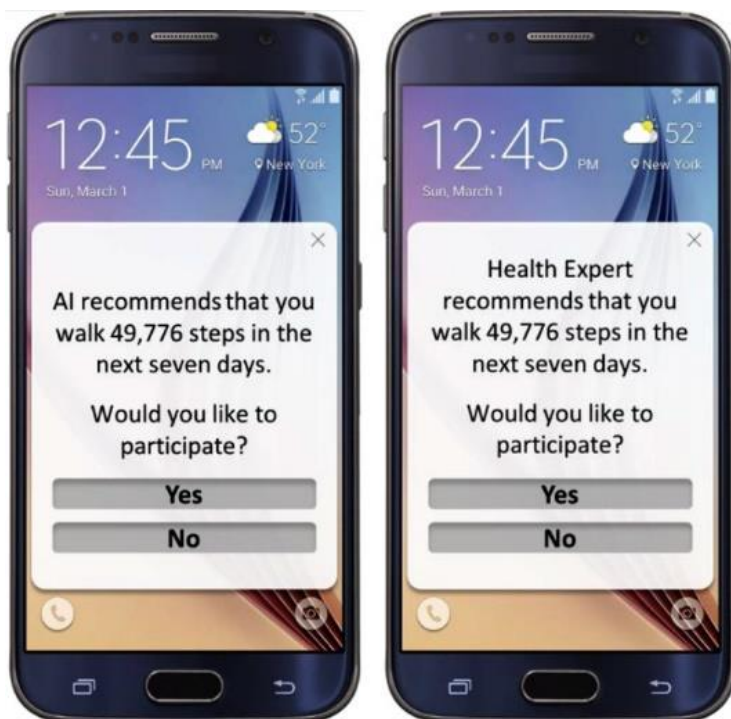


Table 1: Health app intervention messages and findings

<b>Intervention type</b>	<b>Intervention message</b>	<b>Acceptance rate</b>	<b>Achievement rate</b>
AI-suggested	AI recommends that you walk (personalised step goal) in the next seven days. Would you like to participate?	18.7%	10.3%
Human-suggested	Health expert recommends that you walk (personalised step goal) in the next seven days. Would you like to participate?	22.4%	13.2%
Neutral (Control group)	Would you walk (personalised step goal) in the next seven days? Would you like to participate?	11.3%	5.9%
AI-human	By using AI, a health expert recommends that you walk (personalised step goal) in the next seven days. Would you like to participate?	27.2%	18.9%
AI-transparency	AI recommends that you walk (personalised step goal) in the next seven days. AI has predicted how many steps you will walk in the next seven days based on your previous walking activity. Given that prediction, AI has selected a challenging yet attainable step goal that would maximise your physical activity. Would you like to participate?	21.1%	12.8%

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***About Nanyang Technological University, Singapore***

A research-intensive public university, Nanyang Technological University, Singapore (NTU Singapore) has 33,000 undergraduate and postgraduate students in the Engineering, Business, Science, Medicine, Humanities, Arts, & Social Sciences, and Graduate colleges.

NTU is also home to world-renowned autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies, Earth Observatory of Singapore, and Singapore Centre for Environmental Life Sciences Engineering – and various leading research centres such as the Nanyang Environment & Water Research Institute (NEWRI) 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, over 95% of its building projects are certified Green Mark Platinum. Apart from its main campus, NTU also has a medical campus in Novena, Singapore's healthcare district.

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