People may welcome talking tissue boxes and other smart objects

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Just as people have embraced computers and smart phones, they may also give their blessing to talking tissue boxes and other smart objects, according to Penn State researchers.

"Smart objects will become more and more a part of our daily lives," said S. Shyam Sundar, Distinguished Professor of Communications and co-director of the Media Effects Research Laboratory. "We believe the next phase is that objects will start talking and interacting with humans, and our goal is to figure out the best ways for objects to communicate with humans."

As sensors and computers increasingly become smaller and cheaper, smart objects will appear in more homes and offices and not be hidden or shielded from interacting with people, according to the researchers. For example, smart refrigerators could talk or send tweets to signal when certain food items are almost out, or when expiration dates are nearing, according to the researchers.

"We regularly communicate with objects by collecting data from those objects," said Haiyan Jia, doctoral candidate in mass communications, who worked with Sundar. "But we wanted to test what happens when objects talk directly to us in a social situation."

Researchers videotaped participants as they reacted to a talking box of tissues that was on a desk in the laboratory. Once a laboratory worker sneezed, the tissue box said, "Bless You." The tissue box also responded

with two follow-up messages: "Here, take a tissue" and "Take care!"

Participants from two other groups heard the same messages from either a laboratory worker or a talking tabletop robot, according to the researchers, who presented their findings at the 2013 Annual Conference on Human Factors in Computing Systems in Paris today (May 1).

The participants found the talking tissue box just as human-like and as autonomous as the robot, even though robots are more human-looking and human-acting. In actuality, a research assistant operated both the robot and tissue box by broadcasting the pre-recorded statements to the devices.

Researchers invited the 63 subjects to participate under the guise that they were taking part in a cognitive games study. In addition to watching their reactions on videotape, researchers asked the participants to fill out a questionnaire about the lab environment, including questions on the smart objects.

People seem to strongly respond to the voice of the object, said Jia. Sundar and Jia also worked with Mu Wu and Eunhwa Jung, graduate students in mass communications, and Alice Shapiro, graduate student in learning and performance systems.

Sundar said that the study may also help manufacturers design smart objects. While designers tend to make robots look human, many people consider robots that are too humanlike creepy.

"This study shows that speech is a social cue," said Sundar. "It may be enough to make the objects more social and not necessarily more human-like in appearance."

At least tentatively, Jia said this shows that people will accept smart

objects. However, she added that future research should investigate if people will strongly connect with these objects and if long-term exposure to smart objects as social companions may change people's attitudes toward these objects over time.

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