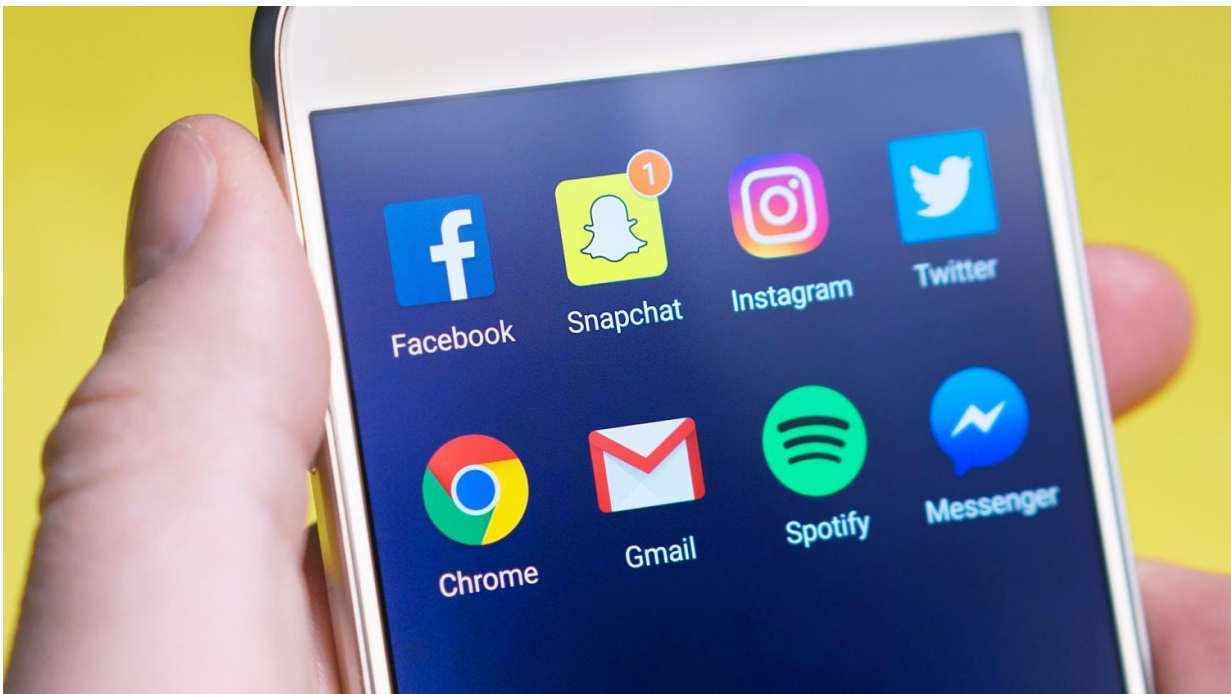# Mentioning what is hard to mention in chatbot for end-of-life preparation

September 24 2017, by Nancy Owano

Credit: CC0 Public Domain

(Tech Xplore)—Talking about the unthinkable for patients facing death is never easy. End-of-life planning is the phrase often used, softening the concept of death, but the task remains painful for the patient, family and friends.

A chatbot has been designed to ease the task. Discussions can lead to less

anxiety and help move on to tasks and decisions such as creating a will.

As Matt Reynolds in *New Scientist* reported, an agent that "helps people have conversations about their funeral plans, wills and spiritual matters is set to be trialled in Boston over the next two years with people who are terminally ill."

The system is designed to interact with patients at home for six months. It also has communication channels to a nurse and family caregiver.

Researchers are testing out this tablet-based bot. It carries a cartoon avatar. The user is given multiple-choice questions that focus on end of life issues

The team behind the chatbot are Northeastern University and Boston Medical Center.

Jordan Pearson in CNET said they recently presented the chatbot at the International Conference on Intelligent Virtual Agents in Stockholm. Dina Utami, Timothy Bickmore, Asimina Nikolopoulou, and Michael Paasche-Orlow have a paper describing their work, "Talk About Death: End of Life Planning with a Virtual Agent."

"The chatbot is explicitly meant to replicate conversing with a "palliative care coach" that answers [questions](#) about things like preparing a will and funeral preparations." Pearson added that "The end goal is to reduce people's anxiety about dying."

The bot has a neutral mode—functional—and pro-spiritual mode. The latter is dialogue tailored to the person's religious orientation." According to the researchers, the agent's responses were reviewed by hospital chaplains," said CNET.

The dialogue accounts for six religions (Christianity, Judaism, Islam, Hinduism, Buddhism and Sikhism), as well as for atheism, spiritual humanism, and secular humanism, the authors stated.

Regarding the multiple-choice questions, CNET noted how people were asked to choose options from a "pre-written list of responses." The authors in their paper said that "User contributions to the conversation are made via a multiple-choice menu of utterances updated at each turn of the conversation."

The authors in their paper wrote that the virtual agent plays the role of "a palliative care coach, supporting patients directly and identifying opportunities for referral to human palliative care specialists or other resources."

The team initially tested the chatbot with 44 older adults (24 males, 20 females, ages 55 to 82).

Just under half those adults had some kind of chronic illness. Nearly all had spent time with someone who was dying. "Most of the participants said talking to the chatbot helped relieve anxiety about early death," said *Daily Mail*.

New Scientist said Bickmore planned to give tablets loaded with the chatbot to 364 people who have been told they have less than a year to live.

What technology and techniques are at play?

The authors said the agent was "animated in a 3-D game engine." The agent uses synthetic speech "driven by a hierarchical transition network-based dialogue engine."

Nonverbal behavior is also addressed in the conversations, using BEAT, they said, "animated in synchrony with speech, and includes hand gestures, posture shifts, head nods, and facial displays."

If a chatbot sounds absurd in this circumstance, arguments in its favor could include (1) it is non-judgmental. (2) could help people who have no family members or friends with which to have such exchanges (3) could act as a first step for people before they have conversations with humans.

The authors in the paper said a clinical trial was underway.

  More information: Talk About Death: End of Life Planning with a Virtual Agent, relationalagents.com/publicati … /IVA17.spiritual.pdf

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