

# Could a virtual companion soothe social anxiety?

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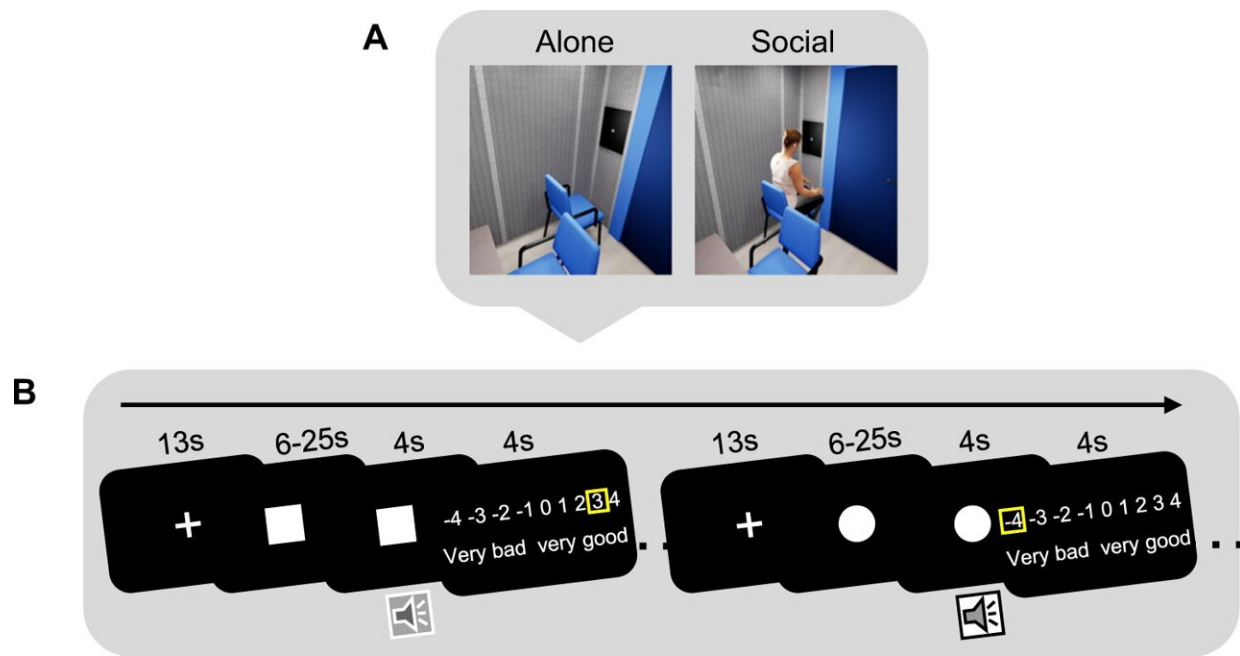


Fig. 1: Visualization of the experimental set up in the virtual reality (VR) study including the virtual agent and example trial sequence. A The virtual environment in the VR study was an exact replication of the testing room used in the real-life study. The virtual agent was created based on a body scan of the person that was present in the real-life study. B Participants were presented with abstract symbols that were associated with an aversive or a neutral sound. After the presentation of the sound, they rated how they felt on a scale from  $-4$  (very bad) to  $+4$  (very good). Credit: DOI: 10.1038/s41398-021-01761-5

A lot of people feel less anxious in a frightening situation if they don't have to face it alone. But what if these people suffer from social anxiety—a disorder characterized by fears of embarrassing themselves in social situations? Does the soothing effect of a companion then have the contrary effect? Could a virtual companion solve the problem in such cases? And how do men and women differ in how they respond to such situations?

A team of scientists from the University of Würzburg, the Würzburg University Hospital and Zhengzhou University (China) has looked into these questions in a current study which involved scholars from the fields of neuroscience, psychology and computer science. It was led by Grit Hein, Professor of Translational Social Neuroscience at the Department of Psychiatry, Psychosomatics and Psychotherapy at the Würzburg University Hospital. The team has now published its research results in the journal *Translational Psychiatry*.

"In a nutshell, we have shown that anxiety can also be reduced by the 'presence' of a virtual person, especially in socially anxious women. And women in general seem to benefit more from social presence," Hein summarizes the key findings of the study. She believes that this insight might have practical significance.

## **A study of more than 200 participants**

208 men and women participated in the study. They were all exposed to fear-inducing sounds alternating with neutral ones—either in the company of another person or alone. Women had female companions, men had male companions. The researchers determined the level of the participants' anxiety response through changes in skin conductance. Moreover, the participants had to rate the sounds on a scale.

But the series of experiments differed in one key aspect: One group had

a real person at their side during the experiment whereas the second group completed the task in a [virtual reality](#)—accompanied by an avatar that was an image of the real companion.

## **Social support as a stress buffer**

"Earlier experiments have shown that the presence of a third party can significantly reduce fear responses. In such situations, social support thus has a stress-buffering effect," Grit Hein explains. But not all people are equally sociable. In some, the presence of others might actually trigger apprehension or anxiety. They fear that their companion might notice their anxious responses, such as trembling, flushing or sweating, causing them stress in the first place. It has been unclear so far whether an avatar is also capable of triggering such a response.

The results of the Würzburg study have now provided clarity in this regard. They show:

- Women respond much more strongly to fear-inducing sounds than men.
- The presence of another person reduces anxiety especially in women. This is especially true for women without social anxiety disorder.
- The presence of a virtual person also reduces the anxiety response in women—regardless of the level of social anxiety they experience. So a virtual agent may increase feelings of safety in [women](#) suffering from [social anxiety](#) disorder.
- Social anxiety does not have a comparable effect on men.

"Our findings provide new insights into the individual differences that influence the social modulation of the autonomic human [anxiety](#) responses," the authors conclude in their study. In future studies, the researchers aim to study long-term effects and replicate the findings in

real life.

In addition, they would like future studies to systematically explore the effect of the gender of the present person. This would also allow scientifically sound evidence to be provided as to how men respond when they have a woman at their side in fear-inducing situations and vice versa.

**More information:** Yanyan Qi et al, Social buffering of human fear is shaped by gender, social concern, and the presence of real vs virtual agents, *Translational Psychiatry* (2021). [DOI: 10.1038/s41398-021-01761-5](https://doi.org/10.1038/s41398-021-01761-5)

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