

# Model highlights three roots of online toxicity

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In 2022, Professor of Cognitive Neuroscience Dean Mobbs began to investigate the relationship between social media use and mental health and well-being. As his research program ramps up to test brain activity and physiological markers of stress during social media use, Mobbs and his colleagues, postdocs Swati Pandita, Ketika Garg, and Jiajin Zhang, have constructed a theoretical model to highlight key differences

between online and face-to-face communications.

The [article](#) "Three roots of online toxicity: disembodiment, accountability, and disinhibition" is published in *Trends in Cognitive Sciences*.

Mobbs, who is also the director and Allen V.C. Davis and Lenabelle Davis Leadership Chair of the Caltech Brain Imaging Center, and an affiliated faculty member of the Tianqiao and Chrissy Chen Institute for Neuroscience at Caltech, calls this model the "DAD" framework. "What is it about the environment of social media platforms that causes more toxicity during social communication than we find in face-to-face communication?" Mobbs asks.

The answer is DAD—Disembodiment, lack of Accountability, and Disinhibition—all of which make it more likely that social interactions online skew toward a level of nastiness and misinformation exceeding what we experience when interacting with others in person.

First, disembodiment: In most social media exchanges, people have no direct sensory experience of one another. "When I'm speaking to somebody online," Mobbs explains, "the conversation I'm having is all in my head; it's completely disembodied."

Without cues from another's [facial expressions](#) or body position, these interactions, though they may feel external, are transacted entirely within one's internal world. It is here, Mobbs says, that the problem lies: "Your internal world is your playground not just for ideas, or for what you want to say, but sometimes for things you shouldn't say. And when you are communicating in this disembodied state, having a conversation in your mind, you begin to forget that you're having a conversation with a real person."

The second factor is lack of accountability: "I can say something via text on social media, and often I don't have to pay the consequences of saying it," Mobbs explains. "I don't get social disapproval at the same level I would as if I were with someone in person, and, frequently, I either am or believe myself to be completely anonymous."

Social and [cultural norms](#) that operate in person to provide checks on interpersonal communication are absent, and with anonymity, even the fear of criminal punishment is gone.

Lack of accountability and embodied cues leads to the third factor: disinhibition. "It is disinhibition that allows you to say whatever you think, whatever you want," Mobbs says. "All of those nasty thoughts that you have in your head can just come out your fingertips without interference."

The DAD framework is based in an [evolutionary perspective](#) on emotion that is at the foundation of Mobbs's research. "We need to understand the conditions in which our emotions and [survival strategies](#) evolved, and what the contingencies were within this environment, so that we can then understand how these psychological and behavioral mechanisms are likely to manifest themselves in the significantly altered environment of online communication," Mobbs explains.

Mobbs notes that there are two tools humans rely on extensively to deal with threats. "The first is that with our imagination, we can simulate the world in our minds," Mobbs says. "I can imagine a threat and think about its behavior and my possible reactions before I even encounter the threat.

"The second is vicarious learning. I watch the news, I listen to people tell stories, or I watch my friend being eaten by a predator, and I learn vicariously. Other animals have different strategies, such as camouflage

or enhanced senses that detect threats, but we typically rely on avoiding predators before actually encountering them."

In short, "We have not evolved for a social media environment," Mobbs says. "The [sensory systems](#) and theory of mind systems we have evolved in previous millennia do not translate well into an online domain." This leads to the "impaired interactions" that create online toxicity.

The DAD framework suggests that toxic social interactions online can be ameliorated by taking steps to reduce the elements of disembodiment, lack of accountability, and disinhibition on [social media platforms](#).

For example, Mobbs and his co-authors suggest that accountability can be strengthened by forcing users to register their accounts under their legal names, by slowing down the rate of interactions, or by introducing AI content moderators to provide more time for users to think about the consequences of their actions. Even the simple use of emoticons and avatars can help to mitigate the effects of disembodiment on our online behavior as they help to make others appear more real and their feelings more apparent.

**More information:** Swati Pandita et al, Three roots of online toxicity: disembodiment, accountability, and disinhibition, *Trends in Cognitive Sciences* (2024). [DOI: 10.1016/j.tics.2024.06.001](https://doi.org/10.1016/j.tics.2024.06.001)

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