Coronavirus: Social distancing accepted when people understand exponential growth

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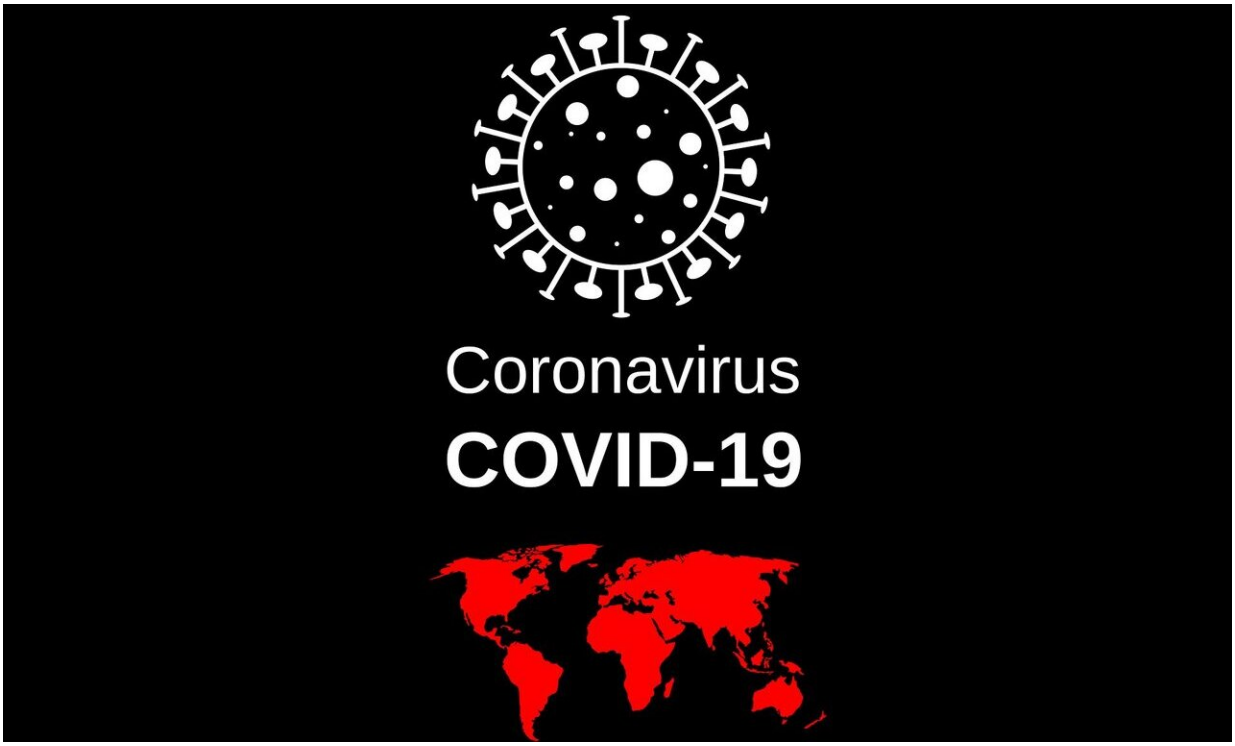

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Researchers from the Social Cognition Center Cologne at the University of Cologne and from the University of Bremen report that participants in three experiments, each involving more than 500 adults in the United States, tended to assume the number of COVID-19 cases grew linearly with time, rather than exponentially. As a result, they underestimated

actual virus growth. Interventions designed to help people avoid this bias led to an improved understanding of virus growth and increased support for social distancing measures compared with participants who did not receive such instructions.

The experiments were conducted by the social psychologist Dr. Joris Lammers of the Social Cognition Center Cologne and the University of Bremen and his co-authors, the social psychologists Jan Crusius and Anne Gast, also from the University of Cologne. The article "Correcting misperceptions of exponential coronavirus growth increases support for social distancing" has been published in the current issue of *Proceedings of the National Academy of Sciences of the United States of America*.

The most effective way to stem the spread of a pandemic such as COVID-19 is what has come to be known as 'social distancing.' But the introduction of such measures is hampered by the fact that a sizeable part of the population fails to see their need. Many social scientists see the root of this perception in what they call the exponential growth bias. "In general, people have difficulty understanding exponential growth and erroneously interpret it in linear terms instead," explains first author Joris Lammers. The result is a gross underestimation of the growth of the infection rate and a misunderstanding of the potential to slow it down through social distancing. "Our current work tests the role of exponential growth bias in shaping the public's view on social distancing to contain the coronavirus's spreading."

Three studies were conducted during the mass spreading of the virus in the United States toward the end of March 2020. The first study focused on participants' understandings of linear growth, showing that many Americans mistakenly perceive the virus's exponential growth in linear terms. Interestingly, political orientation also played a role: conservatives were more prone to this misunderstanding than liberals. Studies 2 and 3 showed that instructing people to avoid the exponential growth bias

significantly increases correct perceptions of the virus's growth and thereby support for social distancing. "Together, these results show the importance of statistical literacy to recruit support for fighting pandemics such as the coronavirus," said Lammers.

"Our results stand in contrast to earlier literature showing that the exponential growth bias is difficult to overcome," he explained. "The reason for this is that the current study focuses on a threat with great personal relevance and media presence, which likely increases subjective availability and thus the estimated probability of the risk."

Given that social distancing is the most effective way to combat the coronavirus currently available, these findings can have a significant impact: They show that bias, among other things, influences political opinions about matters of life and death, Lammers believes. Most important for team is to show the necessity of statistical literacy and to improve that skill among the general public.

More information: Joris Lammers et al, Correcting misperceptions of exponential coronavirus growth increases support for social distancing, *Proceedings of the National Academy of Sciences* (2020). DOI: 10.1073/pnas.2006048117

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