

Global study confirms influential theory behind loss aversion

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A new global study offers a powerful confirmation of one of the most influential frameworks in all of the behavioral sciences and behavioral economics: prospect theory, which when introduced in 1979, led to a sea

change in understanding the irrational and paradoxical ways individuals make decisions and interpret risk with major impacts for science, policy, and industry. Led by a Columbia University Mailman School of Public Health researcher, the new study in 19 countries and 13 languages replicates the original study that provided the empirical basis for prospect theory. Results appear in *Nature Human Behaviour*.

Developed by Nobel Prize winner Daniel Kahneman and Amos Tversky, prospect [theory](#) has been called the most influential theoretical framework in all of the social sciences and popularized the concept of loss aversion, which says that people prefer small guaranteed outcomes over larger risky outcomes. The 1979 paper that launched the theory is today the most cited paper in economics and is among the most cited in psychological science.

The new study led by Kai Ruggeri, Ph.D., assistant professor of health policy and management, is a robust test of prospect theory at a scale commensurate with its impact—and the first to test the theory in so many countries, languages, currencies, and to focus on the generalizability of the theory. Ruggeri and colleagues used nearly identical methods to those in the original study, modifying them only to make currency values relevant for a 2019 sample within each country. Participants were presented with 17 hypothetical decisions about potential gains and losses of money. For example: If you were given \$1,000 to play a game, would you accept a 50 percent chance to double your money or a 100 percent guarantee of gaining an additional \$500? In all, 4,098 respondents who completed all the questions were included in the final analysis.

Results of 1979 study—now confirmed in the new global study—gave rise to prospect theory and upended orthodoxies around rational choices. Among the original study's findings: people tend to be risk-seeking when maximizing gains, but risk-averse when minimizing losses; our

preferences may change depending on how they are rendered sequentially; and we tend to overweight small probabilities.

The researchers found that Kahneman and Tversky's 1979 empirical foundation for proposing prospect theory broadly replicates in all the countries they studied: they report a 90 percent replication in areas directly testing the theoretical contrasts at the heart of prospect theory. Some effects were less strong than in 1979, but the researchers say this outcome may be more a testament to the ease of accessing participants in 2019, rather than suggesting a flaw in the original study conclusions. Another possible explanation—a third of respondents were aware of the concept of loss aversion—was shown to have only a weak effect on their decisions.

The implications of prospect theory have been far-reaching, extending from economics to behavioral psychology, including health behaviors. Prospect theory has helped explain why people under-use preventive care in health, how people misunderstand risk in health, and how to frame behavioral interventions for smoking cessation in terms of losses instead of gains, among many other health-related insights.

"Our study offers compelling evidence for continuing to consider prospect theory as a viable explanation of individual behavior, and therefore valuable for informing public policy around the world, in areas from financial decision-making to population well-being," says Ruggeri.

Pegah Khorrami, MPH '20, was a unique contributor and coauthor of the study. She was the first Columbia student to participate in the Junior Researcher Programme, a global initiative for early career researchers in the [behavioral sciences](#) which is now partnering with Columbia Global Programs. Junior Researcher Programme, members were a driving force for the study. For a complete list of all 32 study authors from 27 institutions, refer to the study on *Nature Human Behaviour*.

More information: Kai Ruggeri et al. Replicating patterns of prospect theory for decision under risk, *Nature Human Behaviour* (2020). [DOI: 10.1038/s41562-020-0886-x](https://doi.org/10.1038/s41562-020-0886-x)

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