

# **New book explores how we make decisions when faced with uncertainty**

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**TAMING**

**UNCERTAINTY**

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the Center for  
Adaptive Rationality

Credit: KU

For decades, statisticians, economists, philosophers and mathematicians have studied how to make decisions in the face of uncertainty, and typically their analyses have focused on how to use probability theory from mathematics to harness this vexing problem.

But a new book co-written by a researcher at the University of Kansas recognizes that while most people often lack the necessary ingredients to use [probability theory](#), they are often quite successful in navigating uncertainty. This raises the question of how people do it. The book examines the [psychological factors](#) and tools that determine how everyday people make decisions when faced with uncertainty, or a lack of sufficient information or time.

"Taming Uncertainty" was published in August by MIT Press. While the text is geared toward scholars, it also sheds light on devices the human mind employs when confronted with everyday choices like what to eat, how to spend money or even how to cross the street in traffic. The book's website contains exercises that could help illustrate the role of uncertainty.

"When psychologists have studied decision-making, we often factor out uncertainty," said lead co-author Tim Pleskac, professor of psychology at KU. "But people are clearly pretty successful navigating uncertain situations—so it makes sense to study it. There are several parts to the book. One part looks at mental shortcuts that people use to navigate this world, called 'heuristics.' Another part looks at how people search for information to handle uncertainty. The third part looks at how people

use the people around them to make judgments—called the wisdom of the crowd."

Pleskac said the book also examines how people make decisions as they age, learn and shift environments.

"We're all developing and changing over the course of our lives," he said. "That introduces its own uncertainty. Our mind is changing as we develop and so are the ways in which we handle uncertainty. We try to take this into account in the book."

In a concrete example of how uncertainty plays a factor in our decision-making, the KU researcher cited the famous "marshmallow test" devised by groundbreaking psychologist Walter Mischel. Preschoolers were offered the option to eat a marshmallow right away or wait and get two marshmallows later, to assess their ability to delay gratification.

"That work suggests that preschoolers who were patient and willing to wait for two marshmallows tended to be more successful in life," Pleskac said. "But what isn't widely appreciated is these experiments contained an element of uncertainty—children did not always know how long they would have to wait. The experimenter simply said, 'You know, sometimes, I'm gone a long time.' So, who waits for two marshmallows could be more a function about how they handle and process the uncertainty of when that experimenter will return."

Pleskac and his co-authors in their new book sought to fully understand that dimension of decision-making, and they found using the lens of uncertainty could yield different perspectives.

"It turns out in the case of the marshmallow test that sometimes it might be better to just eat the marshmallow, especially if the experimenter is expected to take an incredibly long time," he said. "It could be like

waiting for a person to respond to an email—if it hasn't happened right away, it probably will take a long time."

Pleskac, whose research career is focused on decision-making and computational models of decision-making, said the book involved dozens of authors and took years to put together. Unlike many [books](#) where certain co-authors take responsibility for specific sections, all of the co-authors contributed to every part of "Taming Uncertainty."

"Ralph Hertwig and Thorsten Pachur are the other lead authors—but we wrote it with about 30 other people including biologists, economists, philosophers and others," Pleskac said. "We all worked on all the chapters together. It's not an edited book. We passed around and worked on all the chapters, each one of us emphasizing different chapters, but it was a book that we all put together."

Despite its academic orientation, Pleskac said the research underpinning the book offered a few lessons to anyone hoping to make better decisions when faced with uncertainty.

"Use the environment to your advantage," he said. "For instance, we show that when you have to figure out the probability of different events occurring, the magnitudes of the different outcomes are often very good and reliable cues for understanding the chances that the event will occur."

Further, the KU researcher said it's important to rely on the people around you when making a decision involving uncertainty.

"Even combining as few as three independent judgments from different people can outperform the accuracy of one individual," Pleskac said. "This is even true in a range of medical domains including mammography, dermatology and back pain. Even your social network

can contain the information you need. So, if you are asked frequency of a threatening disease or even the popularity of a sport, you can use what we call the 'social circle heuristic' to systematically poll your relatives, friends and neighbors to come to a reasonable estimate of these unknown numbers. What we show in the book is that this heuristic can be an effective and efficient way to estimate these quantities."

Pleskac moved to KU in 2018 and continues this work as he starts the KU Behavioral Science Laboratory. Additionally, Pleskac is working with colleagues at the Cofrin Logan Center for Addiction Research & Treatment to understand decision-making deficits associated with addiction. He also is working with colleagues at the Institute for Policy and Social Research to develop data science training programs at KU.

**More information:** [www.amazon.com/Taming-Uncertainty ... ertwig/dp/0262039877](http://www.amazon.com/Taming-Uncertainty-How-We-Make-Choices-When-Faced-With-Uncertainty/dp/0262039877)

Provided by University of Kansas

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