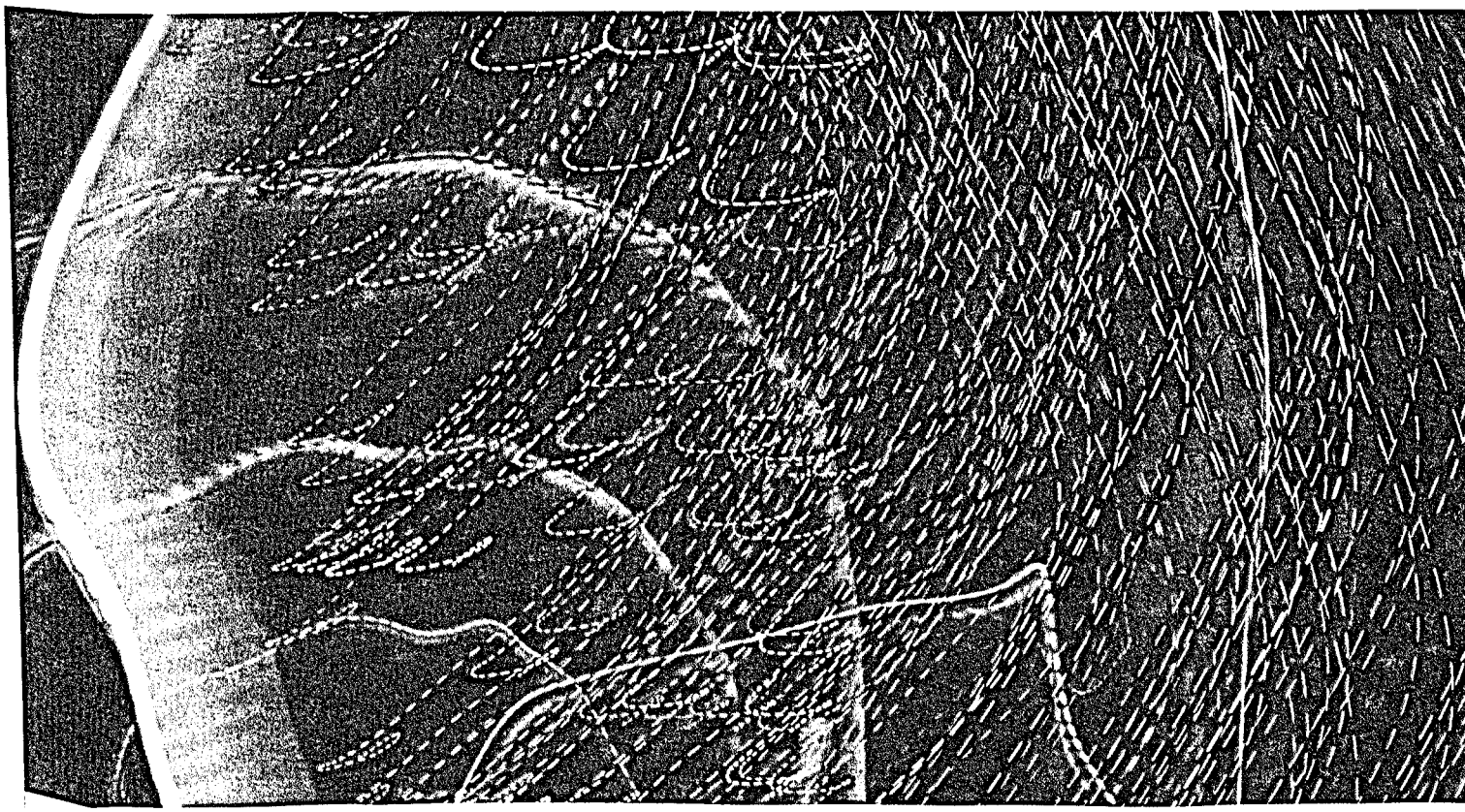
7th Edition

Cognitive Psychology



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or NASA astronauts (Farrington-Darby et al., 2006; Orasanu, 2005; Patel, Kaufman, & Arocha, 2002).

Group Decision Making

Groups form decisions differently than individuals. Often, there are benefits to making decisions in groups. A phenomenon called *groupthink*, however, can occur that seriously impairs the quality of decisions made. The next sections explore group decision making in more detail.

In the lab of GERD GIGERENZER

Making Decisions in an Uncertain World

In my lab, we investigate *bounded rationality*, that is, how humans make decisions in an *uncertain* world. In the real world, omniscience is absent and surprises can happen; nevertheless, people have to make decisions, such as whom to trust, what medication to take, or how to invest money.

The first question we pose is descriptive: What heuristics do people rely on to make decisions in an uncertain world? We have investigated a number of heuristics, including those relying on recognition (the recognition and fluency heuristics), one good reason (such as *take-the-best*), and on the wisdom of others (such as *imitate-the-majority)*. The study of the *adaptive toolbox* investigates the heuristics used, their building blocks, and the core cognitive capacities they exploit.

Photo by Dietmar Gust

Gerd Gigerenzer

Our second question asks: In what environment does a heuristic work or fail? To find answers, we develop formal models of heuristics, using analysis and computer simulation. We found that simple heuristics that rely on only one good reason (such as take-the-best) actually can make more accurate predictions than can complex strategies such as multiple regression or neural networks. This result shows that heuristics are not second best, and that less information, computation, and time can lead to better decisions. In fact, in an uncertain world, one needs to ignore part of the information to make good judgments.

We also use our research to design heuristics and environments that help people make better decisions. For instance, physicians in Michigan hospitals now use heuristics called *fast-and-frugal trees* when making intensive care unit allocations. These simple heuristics are fast and frugal, and yet are better than complex linear regression models at predicting heart attacks.

One aspect of intuitive design is risk communication. In a contraceptive pill scare in the UK, the media reported that third-generation pills increase the risk of potentially life-threatening blood clots (thrombosis) by 100%. Many women stopped taking the pill, resulting in unwanted pregnancies and an estimated 13,000 additional abortions. How big is 100%? Studies had shown that out of every 7,000 women who took the earlier second-generation pill, about 1 had a thrombosis; this number increased to 2 among women who took third-generation pills. That is, the *absolute risk increase* was only 1 in 7,000 while the *relative risk increase* was indeed 100%. Had the media reported the absolute risks, few women would have panicked. The pill scare illustrates how citizens' fears are manipulated by framing numbers in a misleading and nontransparent way. During the last few years, I have trained some 1,000 physicians and dozens of U.S. federal judges in understanding risks, for instance when evaluating cancer screening or DNA tests. Few physicians and lawyers have been educated in risk communication, and this blind spot is an important area in which psychologists can apply their knowledge and help.

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