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# Explaining Innate Risk-Takers

## By digging into academic studies, Scott Shane finds that our genes influence our tolerance for risk

By Scott Shane

This column is adapted from *Born Entrepreneurs, Born Leaders: How Your Genes Affect Your Work Life* by Scott Shane (Oxford University Press, 2010).

How people feel about risk influences their choice of occupations. Firefighting, race car driving, oil speculation, and entrepreneurship are among the jobs thought to demand tolerance for risk. People who can handle a lot of risk are believed to be more likely than people who are uncomfortable with risk to choose these occupations.

But why do people differ in their willingness to bear risk? While many factors undoubtedly matter, the one that intrigues me most is genetics.

The results of several different academic studies show that genetic differences are part of the reason people differ in their willingness to take risks. For instance, studies that compare identical and fraternal twins have shown that as much as 55% of the difference between people in their willingness to take risks is genetic.

Moreover, these innate differences in risk-taking influence the very types of risk-taking that occur every day in the business world. Consider, for example, financial risk-taking. By studying identical and fraternal twins, Michael Zypher and his colleagues showed that genetics accounts for 63% of the difference in how people respond to a real investment management company's client questionnaire about how to allocate a hypothetical portfolio between stocks, bonds, and money market funds.

David Cesarini and his colleagues looked at the actual investment decisions made by Swedes as part of their individualized pension savings accounts and found that 25% of the difference between people in the risk they are willing bear in the allocation of their portfolios between stocks, bonds, and other financial instruments, is genetic.

Molecular genetics research has identified several genes associated with risk-taking. Three are related in one way or another to the brain's feel-good chemical, dopamine. Studies show that specific versions of the COMT gene, which is responsible for the production of an enzyme that inactivates dopamine and adrenaline, and the DRD2 gene, which is responsible for the creation of dopamine receptors in the brain, are associated with the tendency to take risks. A study by Camelia Kuhnen and Joan Chiao showed that people with a variant of a different dopamine receptor gene, DRD4, took 25% more risk than individuals with another version of the gene in an investment simulation.

We even have evidence that our genetic makeup influences our tendency to gamble pathologically, which clinicians define as wagering so much money so frequently that it interferes with a person's job or family. Kamini Shah and colleagues found that 55% of the difference between people on one aspect of pathological gambling—"gambling with larger amounts for longer periods than intended"—and 51% of the variance on another aspect of this disorder —"increasing bets to maintain interest"—are genetic.

## SOME INTRIGUING PATTERNS

These innate differences in risk-taking might affect how people respond to opportunities to innovate within an existing business or to start new companies. For example, those innately predisposed to be more tolerant of risk might take different approaches to starting companies or developing new products because they are more comfortable taking chances. Alternately, people who are innately predisposed to be less comfortable with risk might see fewer opportunities because their reaction to risk creates blinders to visualizing the opportunities.

Scientists are in the early stages of learning how genes affect risk-taking, but they have found some intriguing patterns. DNA affects the way neurotransmitters function, which, in turn, affects the biochemistry of risk-taking. In addition, genes influence personality, temperament, and cognitive processes, and through these attributes affect how people approach risk. Researchers have even begun to identify specific genes associated with different aspects of the process.

While investigations of how our genes affect risk-taking are in their infancy, they present intriguing patterns worth exploring. Whatever their jobs, how people react to risk influences how they act in the workplace.

*Influence* is an important word here. Genes matter, but so do where people work, how they were raised, their education, and a variety of other factors. So I'm not saying we should focus solely on DNA if we want to understand how people deal with risk. Rather, I'm suggesting that to understand risk-taking, we need to examine all of the forces that shape it, genetics included.

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