

HOW DARE WE?

Scientists seek the sources of risk-taking behavior

By RICK WEISS

You are desperately clinging to a sheer rock face.

Heart pounding, short of breath, you look above to a teetering sky. Far below, a dizzying impasto of green and brown — and you are frozen in the knowledge that one slip of the toe will send you hurtling to your death on the ledges below.

Sound like your idea of a good time? The scene is nothing short of a nightmare for most, but for some — that spry minority we call rock climbers — this is an ideal Sunday afternoon.

What is it about rock climbers and their kindred risk-takers — sky divers, hang gliders, drag racers and the like — that sets them apart from the average person? How is it that people perceive risk, or at least respond to risk, in such different ways? Such questions are more than academic. They are of immediate concern, for example, to public health officials trying to stem the spread of AIDS, an epidemic closely linked to risky behaviors such as unprotected sex and intravenous drug abuse. And they are of ongoing concern to a variety of specialists, from government and industry planners responsible for designing effective product warnings, to drug counselors and law enforcement officials whose task it is to lessen the individual risk-taker's toll on society.

Until recently, however, the study of risk-taking behavior — or what some have called “motivated irrationality” — has

suffered from a lack of specialized attention from any single group of scientists. A recent conference on “Self-Regulation and Risk-Taking Behavior,” sponsored by the National Institute of Mental Health (NIMH) in Bethesda, Md., addressed that deficit by bringing together psychologists, sociologists, brain scientists and others to pool their understanding of the more venturesome among us. They examined the spectrum of perilous behavior — from scuba diving to drunk driving to cold-blooded murder — and came to the sobering conclusion that although some degree of fearlessness is admirable, U.S. culture as a whole is in the midst of an “epidemic” of violent and self-destructive risk-taking behavior.

says, “It is obvious that it is behavior that transmits the virus that causes AIDS.”

Such conduct Lipsitt aptly calls “behavioral misadventure.” It is the result of a combination of external hazards and internal “behavioral vulnerabilities and risk-taking propensities which often have origins that are as yet poorly understood.”



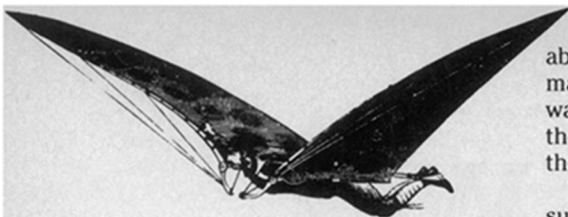
Of the possible explanations for such behavior — which, on its face, appears almost counter-evolutionary — the biochemical rationale is perhaps the most controversial. There is, however, substantial evidence that certain people are biologically predisposed “sensation seekers,” with a preference for novelty, complexity and intensity of experience. Marvin Zuckerman, a psychologist at the University of Delaware in Newark, devised a four-part sensation-seeking scale that measures a person's propensity for “thrill and adventure seeking” (the desire to engage in activities with some physical risk), “experience seeking” (the desire for new experiences through non-conforming lifestyle and travel), “disinhibition” (the penchant for drinking, partying and a variety of sexual partners) and “boredom susceptibility” (aversion to routine experience and predictable people).

“Most people who become debilitated or die prematurely are not victims of disease as much as of behavioral and environmental conditions that are in principle preventable,” says Lewis P. Lipsitt, visiting scientist at NIMH and the conference chairman. “Accidents, suicide and homicide are the major killers of teenagers and young adults,” he notes, “while drinking, drug and eating disorders account for large numbers of additional deaths and debilities.” Similarly, he



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"In general," Zuckerman says, "sensation-seeking scales seem to be the best predictors of risk behavior. They identify people who tend to want a 'new experience.'" Zuckerman found strong neurophysiological and biochemical correlations among people who scored high on the scale.

Compared to the population as a whole, for example, sensation-seekers tend to have lower levels of monoamine oxidase, an enzyme that normally breaks down certain neurotransmitters related to emotion and cognition. (High levels of monoamine oxidase are commonly associated with depression.) Sensation-seekers also tend to have lower levels of DBH, a brain chemical that, when low, has been associated with manic states. In addition, they have higher levels of gonadal hormones—known to play a role in aggressive behavior.

What's more, Zuckerman says he has found a significant genetic correlation for the trait of sensation-seeking. "What we inherit are different enzymes that regulate our nervous systems. High sensation-seeking is probably not due to high levels of neurotransmitters," he concludes, "but to a lack of certain regulatory controls."

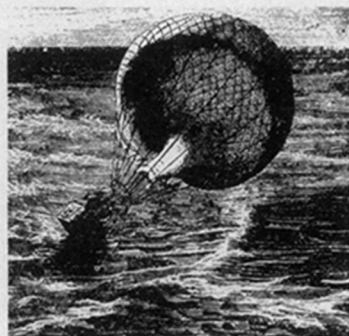
Zuckerman's biochemical model is by no means universally accepted, but it has its appeal among scientists who are trying to understand an otherwise nebulous psychological phenomenon. And his emphasis on the role of biochemical "regulatory controls" resonates with a number of psychological models that relate risk-taking to the concept of *akrasia*, or lack of control.

Akrasia is an ancient Greek concept that some psychologists have revived in recent years in an attempt to understand why people "succumb" to risky behavior when safer alternatives are clearly avail-



able. It assumes that people normally make decisions in an essentially logical way, and that only when weakened will they let some other force get the better of them.

What makes the mind susceptible to such lapses? Some psychologists put the blame on something called "modular cognitive separation," in which packets of information are thought to become overly isolated in the mind, leading to an inability to see the connection between cause and effect, with a resulting misperception of actual risk. A recent article in the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, for example, argues that contrary to the tobacco industry's repeated assertions, teenagers who smoke do not do so on the basis of a truly "informed choice." Adolescent smokers, the study found, greatly overestimated the prevalence of smoking among adults and peers, underestimated their peers' negative attitudes toward smoking and underestimated the risk of smoking-related illness—despite what would appear to be exceedingly clear evidence to the contrary in all of these categories.



Such findings are indicative of the mind's ability to ban selected bits of information to a sort of mental Siberia. The mind is apparently willing to short-circuit itself in this way in order to fulfill certain unrecognized wishes, psychologists say, or because new information may not jive with older experiences, such as important childhood memories.

Moreover, says Leonard Zegans, a psychiatrist with the Langley Porter Psychiatric Institute at the University of California at San Francisco, "Sometimes we act not despite risk, but *because* of it. Risk itself can be seen as a positive change" for someone who needs to affirm a sense of control or a stronger sense of self. At times like that, Zegans says, "actual self-destruction is not as feared as the destruction of one's sense of self."

In addition, he says, "Risk-taking increases in times of confusion, and can even serve as a form of protest." Adolescents, for example, may use risk-taking as a means of asserting independence from—or even inflicting pain upon—their parents, he says. At its extreme, Zegans says, risk-taking can arise from an actual desire to harm oneself, perhaps as an

"appropriate" punishment for an act the risk-taker feels guilty about.

Such explanations share the premise that the mind operates on basically "economic" principles, weighing all possibilities and then choosing the behavior that makes the most sense. A number of studies have shown, however, that people *don't* routinely process information in consistent or logical ways. Decision-making studies show, for example, that people tend to give a disproportionate amount of weight to newer information, and that they usually overestimate how complete their knowledge base is. Other studies show that people prefer voluntary risks over risks that have been foisted upon them, even if the self-inflicted risk is statistically more dangerous. People also tend to disproportionately fear tragedies that involve large numbers of people, even though single-victim accidents actually result in many more injuries per year.

Why are we such poor processors of information, we who pride ourselves as rational beings? Selective media reportage is undoubtedly a factor that influences our sense of "what is really dangerous." But media bias, like biochemical and psychological imbalances, is but an ingredient in the risk-taker's decision-making recipe. Indeed, experts say, a real understanding of risk-taking behavior can come only with an understanding of decision-making itself—one of the most complex, integrative functions performed by the brain.

Unfortunately, says Baruch Fischhoff, a research associate at the Eugene (Ore.) Research Institute, very little is known about decision-making *per se*, other than that "it appears to be difficult in some objective sense, and that people often find it a difficult thing to do." Many decisions are easy, Fischhoff concedes. ("You don't find many people stuck on the curb, trying to decide whether or not to cross the street," he notes.) But other decisions can be readily confounded by a number of factors—not least of which may be the way in which the question is framed.



For example, Fischhoff says, studies show that if you give a person a choice of taking a small risk of losing \$500 or incurring a "definite loss" of \$50, most people will choose to risk their \$500. But



when people are given the option of "insuring" their \$500 with a \$50 "premium," most will opt to pay that \$50 premium, even though a premium is the same as a definite loss.

Studies such as these show how subjective are the references by which we gauge our behavior. To make matters even more confusing, that subjectivity is not only personal (based on such variables as age, psychological history and perhaps brain biochemistry) but cultural as well, with some cultures routinely accepting certain risks that other cultures would find intolerable.

So, for example, many American visitors to China are appalled by the high percentage of Chinese men who smoke, and by the huge number of cigarettes they smoke per day. But many Chinese have equal trouble understanding why Americans are so persistent in their overconsumption of alcohol, when research has clearly shown that alcohol is associated with at least half of the traffic fatalities in the United States and with many other types of interpersonal violence. Indeed, despite overwhelming evidence to the contrary, alcohol is not perceived by most Americans as being particularly dangerous.

It is here on the cultural level, psychologists and sociologists agree, that the United States has a particular problem; for U.S. culture exhibits peculiarly ambiguous feelings toward risk-taking behavior. On the one hand, says Zegans, "This culture extols heroes — we'll overlook maladaptive behavior as long as you succeed." On the other hand, he says, we have very high expectations for personal and public health and environmental safety.

"We watch programs like 'Miami Vice,'" he says, "but then we're constantly told, 'Don't take chances.' This is a cultural contradiction we must deal with."

One of the ways we deal with that schism is to channel dangerous urges into "leisure" activities. Unfortunately, notes Lipsitt, much of the nation's obsession with risk-taking behavior never finds its way to such innocent endeavors as rock climbing and hang gliding. Too often, he says, it gets expressed through a

variety of socially destructive activities that constitute "major threats to the lives and safety of large numbers of individuals."

For example, notes Louis J. West, chief of the Neuropsychiatric Institute at the University of California at Los Angeles, in the last 20 years the homicide rate in the United States has more than doubled, to more than 10 murders per 100,000 people per year — 10 times the average homicide rate in the world's other 19 most developed countries. And while some quibbling about statistics is inevitable, he says, there is "no question" that other violent crimes such as rape and child abuse are also on the rise. "We're in the midst of an epidemic of violent behavior" in the United States, and it is closely associated with our attitudes about danger and risk, West cautions.

The AIDS epidemic is no less violent, he says, and it is already the leading cause of death in a number of "high-risk" populations. "Clearly, an investment in research and an orientation toward prevention" is desperately needed, says West, referring not only to AIDS but to the phenomenon of risk-taking in general.

What kinds of approaches do the experts recommend? First and foremost, they agree, there are positive elements of risk-taking to be encouraged — elements of courage, curiosity,

creativity and growth. But parents, educators and the media, they say, must take responsibility for teaching the difference between socially constructive risk-taking and self-destructive behavior.

Specifically, Fischhoff suggests, we must learn how to teach the very art of decision-making, rather than continuing to rely upon our current practice of teaching "correct" answers to specific questions. This is especially important, he says, given the vast amounts of information we must deal with today.

Michael Cataldo, director of psychology at the John F. Kennedy Institute at Johns Hopkins University in Baltimore, believes that in light of the growing likelihood of humanity's self-inflicted annihilation, the study of risk-taking behavior should become a national priority. "It's probably time to either do it or forget it," he says.

Recalling President Roosevelt's 1942 gathering of experts to develop the world's first atomic bomb, Cataldo suggests that the federal government consider "a new mechanism, like the Manhattan Project," to look intensely at the problem of maladaptive risk-taking. "We already have the methods and the knowledge base for changing the behavior of individuals in society," he says. "Now we need something that would see how to effect changes in the behavior of a society as a whole." □

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