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Ancestral Threats vs. Modern Threats

Kevin Bennett
Department of Psychology, Pennsylvania State University, Beaver, Monaca, PA, USA

Introduction

Survival threats posed by the environment have continuously tormented and challenged human beings. From an evolutionary perspective, the brain mechanisms associated with fear were designed by natural selection to contend with these threats. The list of hazards likely faced by our ancestors included snakes, spiders, heights, darkness, and strangers. Our ancestors' concerns about dangerous stimuli such as these have been carried over to modern humans. In addition to evolutionary threats (e.g., predators and diseases), modern humans encounter a staggering array of novel threats (e.g., ionizing radiation, automobile accidents, and chain saws) that did not exist until very recently on an evolutionary time scale.

Ancestral Threats

Throughout human evolution, the ability to identify threatening situations has been a critical feature of our psychological structure. A failure to recognize and thwart a threat could have been fatal for our ancestors. The concept of biological preparedness – a theory about the psychology of fear and our reactions to threats – argues that the successful identification of environmental threats leads to a reproductive and survival advantage for the individual (Seligman 1971). In this view, children learn to fear some threats more quickly than others and, consequently, seem biologically prepared to avoid poisonous animals but less prepared to detect the difference between the sidewalk and street traffic.

The environment of evolutionary adaptedness (EEA) is the ancestral environment to which a species is adapted or the set of selection pressures that shaped an adaptation. A central premise of evolutionary science is that forces in our distant past helped make us who we are today. The EEA refers to a group of selection pressures occurring during an adaptation's period of evolution responsible for producing the adaptation (Tooby and Cosmides 1992). A selection pressure can be any factor in a population that impacts reproductive success. Physical, social, and intrapersonal pressures from our ancestral past help to shape our current human design because all animals have heritable variations that are selectively favored or disfavored in accordance with reproductive success (Buss 1995). Each adaptation has its own EEA, or set of adaptive problems, that shaped it over evolutionary time.

Researchers have found that some of the threats present in the EEA (e.g., snakes and spiders) can induce stress responses to modern humans even at

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the very young age of 6 months (Hoehl et al. 2017). It is not even necessary for humans today to have had negative experiences with the creatures to fear them. They are likely embedded in us thanks to our ancestors' coexistence with them for 40 to 60 million years. More modern threats include knives, airplanes, and syringes, but they have not been around long enough to establish a threat response from birth.

Modern Threats

A modern threat is anything that poses a problem today that was not prevalent throughout human history. While snakes, spiders, and other predators are referred to as ancestral threats, today we must also be cautious of fast-moving automobile traffic, firearms, and razor blades, A brief list of deadly modern threats would include automatic weapons, electricity, weaponized nanotechnology, pollution, fried foods, alcohol, drug overdoses, decompression, power drills, and helicopters.

An adaptationist approach to studying behavior involves examining the environment in which the brain evolved; at the same time, the modern industrialized world of today differs in many important respects from the EEA. This mismatch serves as a useful starting point for understanding the function and design of current psychological mechanisms. The primary threats to most people today, especially in modern urban settings, are different than the environmental threats dominant up until a few centuries ago. We now increasingly face threats that are substantively different, more technical, and in some ways less tangible.

The list of novelties offered by our modern world but not present in the EEA includes agriculture, electricity, refrigeration, large-scale weapons, medicines, mass communication, effective contraceptive devices, and virtually unlimited access to all types of proteins and carbohydrates. We are navigating our current social and physical world with psychological mechanisms designed to solve problems associated with survival and reproduction in an ancestral environment much different than the one we live in now.

Because adaptations evolved over many generations, they are said to be "in tune" with reliable features of the environment. It is possible for an adaptation to fail to perform properly (i.e., fall "out of tune") if the environment changes. A behavior that is maladaptive in one environment may not be maladaptive in other environments. Returning to an earlier example, one could make the case that salt, fat, and sugar negatively impact health when consumed in large quantities over long periods of time. However, this is not an evidence of maladaptivity in the EEA. Moreover, the "lack of fit" to the current environment does not change the intense desire for those substances formed in the EEA.

Natural selection molded mechanisms into our ancestors' brains that were specialized for focusing cognitive energy on humans and other animals. These adaptive traits were then passed on to us. According to some research, humans today are biased to pay attention to other people and animals much more so than nonliving things, even if inanimate objects are the primary hazards for modern, urbanized populations (New et al. 2007).

Globally, the top causes of death in 2016 according to the World Health Organization (WHO) were heart disease, stroke, pulmonary disease, respiratory disease, and Alzheimer's and other dementias. Combined, these five issues are implicated in approximately 23 million deaths (World Health Organization 2016). If the danger detectors in our brains were perfectly in tune with our current industrialized world, we would focus our attention on threats that have a greater chance of bringing us down. Statistically speaking, you are much more likely to die from heart disease in our modern world than jet engine failure or a lion attack. Yet we seem to be overly anxious about airplane crashes and the odd death-by-tiger story and less panicked by cardiac health and lung infections.

Conclusion

Throughout human evolution, the ability to identify threatening situations has been a critical feature of our psychological structure. A failure to recognize and thwart a threat could have been

fatal for our ancestors. In contrast, the primary threats to most people today, especially in modern urban settings, are different than the environmental threats dominant up until a few centuries ago. We now increasingly face threats that are substantively different, more technical, and in some ways less tangible.

Cross-References

- ▶ Landscape Preferences: Climate and Weather
- ▶ Natural vs. Artificial Environments
- ▶ Orians, Gordon
- ▶ Savanna Hypothesis and Landscape Preferences, The

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