Adaptation to Harsh Environments:
Insights from Evolutionary Mathematical Modelling and Empirical Studies

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Abstract:

Biologists use mathematical modeling and empirical research to study the evolution of developmental plasticity, and how plasticity adapts individuals to safe as well as harsh environments. Studies on the mental skills and abilities of humans who grow up in harsh environments have, however, focused primarily on deficits, as people from such environments tend to score lower on a variety of cognitive tests (e.g., IQ, delay of gratification). My colleagues and I take a different perspective, by proposing that harsh environments do not exclusively impair cognition. Rather, people also developmentally tailor, or 'specialize,' their minds for solving problems relevant in such conditions. These problems might require different skills and abilities from those assessed on conventional tests. This hypothesis predicts that harsh-adapted people may show enhanced performance on tasks that match recurrent problems in their environments, compared with safe-adapted people. In this talk, I will present results of a preregistered study examining whether exposure to, and involvement in, violence enhances people's (N=126) learning and memory for danger, but not for location, information. The better we understand harsh-adapted minds—including their strengths—the more effective we can tailor education, policy, and interventions to fit their needs and potentials.

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