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Sex Differences in Fear Response

An Evolutionary Perspective

Springer

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Human Behavior, Biology and Evolution

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Chapter 1
Fear, Sex Differences and the 'Staying Alive' Hypothesis

Fear is "an evolutionarily conserved affective motivational system that can be activated under conditions of novelty, sudden or intense stimulation, reactions to danger prepared by evolution, social interactions with unfamiliar conspecifics and conditioned responses to punishment" (Rothbart & Bates, 1998, p. 109). It is "a system that detects danger and produces responses that maximise the probability of surviving a dangerous situation" (LeDoux, 1998, p. 128). The adaptive benefits of an efficient fear system are therefore evident as the speedy recognition and avoidance of life-threatening dangers enhance survival and thus improve the chances of leaving offspring who also survive and reproduce. While intuitively it seems that the evolutionary advantages of staying alive should be the same for both sexes in mammals (such as humans), this might not be the whole story (Campbell, 1999, 2013). In this volume, we focus on why this might not be the case, and specifically why an adapted fear system may help explain sex differences in behaviours such as risk taking and aggression as a way of ensuring the survival of females and their offspring.

1.1 The Evolution of Sex Differences

Before we begin discussing the central premise of this review, it is necessary to briefly examine evolutionary theory surrounding why sex differences in behaviours may emerge to begin with. This requires a brief overview of two prominent evolutionary theories: sexual selection theory (Darwin, 1871/2004) and parental investment theory (Trivers, 1972).

Although both sexes are equally represented at a population level (due to the Fisher condition—Fisher, 1930), a scarcity of females impacts upon population growth more seriously than a lack of males. This is because females invest more heavily in offspring (in terms of time, energy and resources) and are more crucial to their survival in the early stages of their development. As females make a higher

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