

Early-life influences on the ability to cope with later stress, adversity, and trauma –A systematic review of original studies in humans and animal models.

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Extensive evidence shows that adverse early-life conditions impact later functioning and increase vulnerability to psychopathology. Conversely, positive experiences, as living in enriched environments, often provide protective effects against later challenges.

A systematic review was conducted on PubMed and Scopus to unbiasedly assess how different early exposures - from neglect to enhanced parental care - affect adult responses to stress, adversity, or trauma. Studies involving healthy humans, mice, and rats, published in English until the 1st of March 2024, were considered. Eligibility required exposures before age 3 in humans or weaning in rodents, with outcomes assessed in adulthood (PROSPERO CRD42024557152).

From 708 initial records, fifteen articles published between 2002 and 2021 were identified. No human studies met criteria, mainly due to difficulty in isolating exposures within the time-window of interest. Conversely, animal studies allow precise manipulation of timing and type of early-life exposures. Such manipulations included neonatal handling, maternal (and littermates) separation and deprivation, limited bedding and nesting materials, and exposure to variations in maternal care.

Compared to standard laboratory rearing, adverse conditions result in a behavioral profile characterized by heightened threat sensitivity, escaping behaviors to danger, and passive coping strategies to inescapable stress. Such profile may be advantageous in threatening environments. In contrast, high maternal care or neonatal handling reduced threat alertness, or resulted in more active coping strategies to inescapable stress.

Variations in exposure and outcome assessment methodologies partly explain inconsistencies. Strikingly, regardless of the exposures, maternal care consistently appears to be key in exacerbating or mitigating the outcomes.

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Primary author: Dr BERRETTA, Erica (Department of Human Sciences, Guglielmo Marconi University, Rome, Italy)

Co-authors: BALSAMO, Francesca (Department of Human Sciences, Guglielmo Marconi University, Rome, Italy); RIZZUTI, Martina (Department of Human Sciences, Guglielmo Marconi University, Rome, Italy; Laboratory of Experimental and Behavioral Neurophysiology, IRCCS Fondazione Santa Lucia, Rome, Italy); PETROSINI, Laura (Laboratory of Experimental and Behavioral Neurophysiology, IRCCS Fondazione Santa Lucia, Rome, Italy); GELFO, Francesca (Department of Human Sciences, Guglielmo Marconi University, Rome, Italy; Laboratory of Experimental and Behavioral Neurophysiology, IRCCS Fondazione Santa Lucia, Rome, Italy)

Presenter: Dr BERRETTA, Erica (Department of Human Sciences, Guglielmo Marconi University, Rome, Italy)

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