

Comparison of hair corticosterone and ultrasonic vocalizations in offspring nursed in a shelved environment

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Early-life experiences are critical modifiers of development. Maternal interactions play a crucial role in early-life development of offspring, which can be modified by stress. Throughout nursing, mothers are typically allocated to single-level cages where they are in constant demand of the pups, a stressful situation not reflective of the natural environment. Accordingly, mothers regularly removed from the nursing environment interact differently with their offspring, leading to long-term changes in offspring physiology and behavior. Such changes commonly include modifications within the hypothalamic-pituitary-adrenal axis, of which corticosterone is a major component. Modifications in the hypothalamic-pituitary-adrenal axis may also be manifested through changes in affective behavior and assessed via ultrasonic vocalization analysis. As a means of assessing the impact of rearing in a shelved environment, we allocated mothers to standard single-level cages or cages with an integrated shelf, which allowed the mother to temporarily escape pups. Here, we show the relationship between multi-day ultrasonic vocalization analysis and hair corticosterone as a means of exploring how a shelved environment influences long-term offspring behavior.

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