

Children's personalities linked to their chemical response to stress

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Is your kid a "dove" – cautious and submissive when confronting new environments, or perhaps you have a "hawk" – bold and assertive in unfamiliar settings?

These basic temperamental patterns are linked to opposite hormonal responses to stress – differences that may provide children with advantages for navigating threatening environments, researchers report in a study published online July 8, 2011, in *Development and Psychopathology*.

"Divergent reactions – both behaviorally and chemically – may be an evolutionary response to stress," says Patrick Davies, professor of psychology at the University of Rochester and the lead author of the study. "These biological reactions may have provided our human ancestors with adaptive survival advantages. For example, dovish compliance may work better under some challenging family conditions, while hawkish aggression could be an asset in others."

This evolutionary perspective, says Davies, provides an important counterpoint to the prevailing idea in psychology that "there is one healthy way of being and that all behaviors are either adaptive or maladaptive."

Coauthor Melissa Sturge-Apple agrees: "When it comes to healthy psychological behavior, one size does not fit all." The assistant professor of psychology at the University of Rochester adds that the findings "give

us insight into how basic behavioral patterns are also chemical patterns."

To understand the role of stress in children's reactions, Davies, Sturge-Apple, and Dante Cicchetti, a professor of child development and psychiatry at the University of Minnesota, focused on parental conflict in young families. "Research has shown that exposure to repeated aggression between parents is a significant stressor for children," explains Davies.

The study looked at 201 two-year-old toddlers, all from impoverished families with similar socio-economic profiles. Based on interviews and questionnaires with the mothers, the authors assessed children's exposure to levels of aggression between parents.

The researchers also documented the dove or hawk tendencies of the toddlers in a variety of unfamiliar situations. Children who showed dovish tendencies were vigilant and submissive in the face of novelty. The toddlers clung to their mothers, cried, or froze when encountering new surroundings. Hawks used bold, aggressive, and dominating strategies for coping with challenge. They fearlessly explored unknown objects and new environments.

When the researchers exposed the children to a mildly stressful simulated telephone argument between their parents, distinct patterns of hormonal reactions emerged. Children exposed to high levels of interparental aggression at home showed different reactions to the telephone quarrel. Doves with parents who fought violently produced elevated levels of cortisol, a hormone that is thought to increase a person's sensitivity to [stress](#). Hawks from such stressful home environments put the breaks on cortisol production, which is regarded as a marker for diminishing experiences of danger and alarm.

This high-and-low-cortisol reactivity provides different developmental

advantages and disadvantages, the authors write. Heightened cortisol levels characteristic of the doves were related to lower attention problems but also put them at risk for developing anxiety and depression over time. By contrast, the lower cortisol levels for hawks in aggressive families were associated with lower anxiety problems; however, at the same time, these children were more prone to risky behavior, including attention and hyperactivity problems.

Provided by University of Rochester

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