

Arguments in the Home Linked With Babies' Brain Functioning

March 25, 2013

Being exposed to arguments between parents is associated with the way babies' brains process emotional tone of voice, according to a new study to be published in [*Psychological Science*](#), a journal of the [Association for Psychological Science](#).

The study, conducted by graduate student Alice Graham with her advisors Phil Fisher and Jennifer Pfeifer of the University of Oregon, found that infants respond to angry tone of voice, even when they're asleep.

Babies' brains are highly plastic, allowing them to develop in response to the environments and encounters they experience. But this plasticity comes with a certain degree of vulnerability — research has shown that severe stress, such as maltreatment or institutionalization, can have a significant, negative impact on child development.

Graham and colleagues wondered what the impact of more moderate stressors might be.

“We were interested in whether a common source of early stress in children's lives — conflict between parents — is associated with how infants' brains function,” says Graham.

Graham and colleagues decided to take advantage of recent developments in fMRI scanning with infants to answer this question.

Twenty infants, ranging in age from 6 to 12 months, came into the lab at their regular bedtime. While they were asleep in the scanner, the infants were presented with nonsense sentences spoken in very angry, mildly angry, happy, and neutral tones of voice by a male adult.

“Even during sleep, infants showed distinct patterns of brain activity depending on the emotional tone of voice we presented,” says Graham.

The researchers found that infants from high conflict homes showed greater reactivity to very angry tone of voice in brain areas linked to stress and emotion regulation, such as the anterior cingulate cortex, caudate, thalamus, and hypothalamus.

Previous research with animals has shown that these brain areas play an important role in the impact of early life stress on development — the results of this new study suggest that the same might be true for human infants.

According to Graham and colleagues, these findings show that babies are not oblivious to their parents' conflicts, and exposure to these conflicts may influence the way babies' brains process emotion and stress.

Support for this work was provided by the Center for Drug Abuse Prevention in the Child Welfare System (1-P30-DA023920); the Early Experience, Stress, and Neurobehavioral Development Center (1-P50-MH078105); a Ruth L. Kirschstein National Research Service Award (F31-10667639); and the Lewis Center for NeuroImaging at the University of Oregon.