

OPINION

Active brains

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Baby-Brains-Article2.jpg

Studies of the infant siblings of children with autism sometimes find markers — behavioral, electrophysiological or biological — that may predict a later diagnosis. But one of the challenges researchers face in interpreting their findings is that these markers have never been studied in typically developing children, making it hard to determine what — if anything — is awry in the baby sibs.

Two new studies may help. In December, researchers reported that healthy newborns **prefer their mother's voice** to those of strangers. In the first 24 hours after birth, the researchers say, infants show more activity in the left temporal lobe, associated with language processing, in response to their mother's voice. The voices of strangers, by contrast, activate the right temporal lobe, a region associated with voice recognition.

The left-dominant brain activation pattern continues throughout infancy: hearing the mother's voice activated the left hemisphere 77 percent of the time compared with 40 percent of the time in response to a stranger's voice.

This preferential attention speeds up language development — an area in which the infant siblings of children with autism are known to **lag behind**.

I heard **Charles Nelson** present similar work at the **Autism Consortium Symposium** in October. Nelson's team at Children's Hospital in Boston scanned the brains of baby sibs to track blood flow and brain wave patterns as they listened to their mother's voice at 3, 6, 9 and 12 months. Even at 12 months, the siblings didn't show the typical left-brain activation when they heard their mothers speak.

Another study of healthy infants focuses on 'resting state' brain networks — active even when someone is not engaged in any activity like speaking or walking. Mapping the brains of 70 healthy infants, researchers found that although various resting state networks appear to develop at different rates, all are largely **complete in full-term babies**. This suggests, they say, that resting state networks are formed in the third trimester, during a period of rapid neural growth.

One of these circuits, the 'default mode' network — thought to be switched on when the brain is engaged in introspection, rather than focused on external tasks — may be **disrupted in autism**.

Both these studies show that the brains of newborns are far from blank slates at birth — and point to ways in which the brains of children with autism and some of their siblings may already be inscribed with **different signatures**.