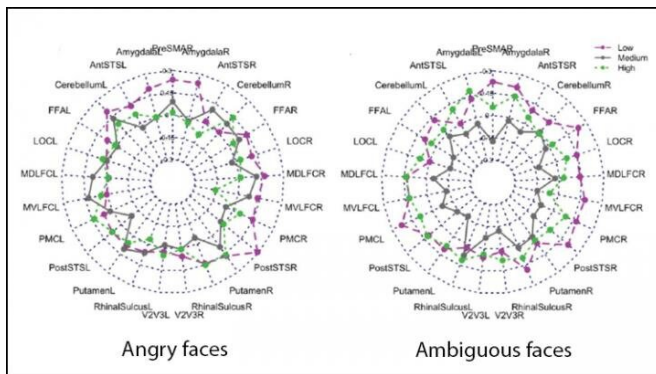


# Lower testosterone during puberty increases the brain's sensitivity to it in adulthood

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Changes in blood flow in brain regions when viewing angry and ambiguous facial expressions. Purple = low puberty testosterone, gray = medium, and green = high. Credit: Liao et al., *JNeurosci* 2021

Young men with lower testosterone levels throughout puberty become more sensitive to how the hormone influences the brain's responses to faces in adulthood, according to new research published in *JNeurosci*.

During prenatal brain development, sex hormones like testosterone organize the brain in permanent ways. But research suggests that [testosterone levels](#) during another developmental period—puberty—may have long-lasting effects on brain function, too.

Liao et al. examined the relationship between puberty testosterone levels and the brain's response to faces. Liao's team recruited 500 men around age 19 who had been participants in the Avon Longitudinal Study of Parents and Children, a British birth cohort study established in 1991-1992. The [longitudinal study](#) collected [blood samples](#) at several time points throughout puberty, which the research team used to determine

testosterone levels.

The study participants were asked to watch videos of facial expressions while in an fMRI scanner and provide a saliva sample on the day of the scan. For men with lowest testosterone levels during puberty, high levels of testosterone on the day of the fMRI scan were linked to greater brain activity in areas sensitive to faces. However, men with higher levels of testosterone throughout puberty did not show an increase in activity in these brain areas with high testosterone levels.

These results highlight that an individual's history, not just their state on a given day, may contribute to the individual differences often seen in brain responses.

**More information:** Pubertal Testosterone and Brain Response To Faces in Young Adulthood: an Interplay Between Organizational and Activational Effects in Young Men, *JNeurosci* (2021). [DOI: 10.1523/JNEUROSCI.0190-20.2021](https://doi.org/10.1523/JNEUROSCI.0190-20.2021)

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