

Mother nose best: Child body odor provides olfactory clues to developmental stages

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Credit: Petr Kratochvil/public domain

It's no secret that babies generally smell pleasant to their mothers—and teenagers not so much. A team of researchers investigating how body odors affect the mother-child relationship found that a mom's olfactory sense may be capable of detecting her child's developmental stage. The research was published in the journal *Frontiers in Psychology*.

The ability of a mother's nose to know when her child is at certain stages of life through its [body odor](#) could play an important role in signaling key changes in the mother-child relationship, according to the authors.

"This study reveals that children's body odors ... are an important factor affecting the mother-child relationship, and hints toward its importance for affection and caregiving," said Laura Schäfer, lead author of the study and a team member of Ilona Croy's lab at the Dresden University of Technology in Germany.

The researchers tested the olfactory accuracy of 164 German mothers by presenting them with body odor samples of their own and four unfamiliar, sex-matched children who varied in age, from infants to 18 years old. The samples consisted of cotton T-shirts and onesies that the children slept in for one night.

Overall, [mothers](#) classified the developmental status of the child with an accuracy of about 64 percent. Mothers generally scored higher when identifying what the researchers called prepubertal odors versus postpubertal odors. More pleasant odors were classified as prepubertal even when they came from older children, while higher intensity body odor samples were identified as coming from postpubertal children.

"This suggests that infantile body odors can mediate affectionate love towards the child in the crucial periods of bonding," Schäfer said, while postpubertal classifications "could be interpreted as a mechanism for detachment, when the child becomes more independent and separates itself from parental care."

Previous research done by Croy's lab used functional magnetic resonance imaging (MRI) to see how maternal brains react to baby odors. That study found that neural responses to baby odors were similar to other MRI brain studies that tested for facial cuteness.

While the current paper did not explicitly compare body odor to other forms of sensory stimulation, it does add further evidence that olfactory stimuli are an important factor in the mother-child bond.

The team's ongoing investigation into the effects of body odor on the psychological relationship between mother and child could have long-term clinical implications. Schäfer said it could lead to the "development of methods such as neurofeedback with olfactory stimuli or olfactory training to promote the rewarding component of body odors."

In turn, those techniques could be used to treat conditions such as postpartum bonding disorders, she added, perhaps as part of an intervention that combines affective touch and olfactory stimulation.

While the research suggests that a child's body odor does convey developmental cues, how the human nose is actually capable of sniffing out that information remains a mystery. For instance, hormonal levels did not appear to be a factor in how a mother classified samples.

Schäfer said the study is limited in that not all the factors that influence body odor, such as food or culture, can be accounted for in the current design.

In the future, she said, "intraindividual changes should be tracked in a longitudinal study to find further evidence for these results, to map indicators of the transition to puberty, and to find out whether this is reflected in the maternal perception of [body odor](#)."

In addition to Croy and Schäfer, co-authors on the *Frontiers in Psychology* paper include Kerstin Weidner, also with the University of Dresden, and Agnieszka Sorokowska at the University of Wrocław in Poland.

More information: Laura Schäfer et al, Children's Body Odors: Hints to the Development Status, *Frontiers in Psychology* (2020). [DOI: 10.3389/fpsyg.2020.00320](https://doi.org/10.3389/fpsyg.2020.00320)

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