

Is empathy born in mom's first hugs?

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Show your baby your love, and you'll get a kinder, gentler adult child as your reward, a new study suggests.

More than 20 years ago, researchers in Israel began studying the impact on newborns of time spent in [physical contact](#) with their mothers.

The investigators followed these infants, born in the mid- to late-1990s, for two decades.

Now, their latest results—based on nearly 100 [young adults](#)—show that the maternal contact received all those years ago had a measurable impact on [social brain](#) functioning decades later, and the ability to empathize and relate to others.

"What proximity to the mother's body did was enabling mother and infants to be more in tune, more in sync with one another throughout the 20 years of their development. That synchrony in turn sensitized the brain to be better able to empathize with the [emotions of others](#)," said study author Ruth Feldman. She is a professor of developmental social neuroscience at the

Interdisciplinary Center Herzliya in Israel with a joint appointment at Yale Child Study Center in New Haven, Conn.

The study included three categories of babies: full-term healthy infants who could easily have contact with their moms; preemies who were incubated and for at least a couple of weeks could not have physical contact with their mothers; and more stable preemies whose moms committed to hold them, skin-to-skin, for at least an hour a day for at least 14 consecutive days.

That third group of babies would otherwise have had limited physical contact with their mothers during the study, but their mom's warmth took the place of the incubator for those hours, Feldman said.

"We believed that proximity to the mother's body would be beneficial for the children for a variety of reasons, for the attachment, for the self-regulation, just like any other mammalian young that needs all the provisions that are in the mother's body and physical proximity," Feldman said.

The researchers periodically checked in with the children and their families and assessed their interactions, their "mother-child social synchrony," starting with [nonverbal cues](#) and responses early on.

Over time, mothers and children built more complex abilities to see the other person's side, and allowing the person to have their opinion, Feldman said. "You see adult mother-children interactions that are positive and mutual, and they're both sitting on the couch and they're laughing together," she noted.

In early adulthood, they assessed the grown children's brains.

"What we looked for in the brain was the brain's ability to empathize with the different feelings of others, to empathize with the other person's sadness and distress, but also empathize with

another person's joy," Feldman said.

The areas of the brain that were specifically sensitized were the amygdala and the insula, she said. Feldman described the amygdala as a center of non-conscious identification of emotions, and the insula as an area where you integrate signals from your own body with signals from another person's emotional state.

"Those two areas were sensitized by the life-long synchrony to function better, to be better able to have empathy with others," Feldman said.

The study adds to the data that the early years of life are profoundly important, said Dr. Michael Yogman, a pediatrician at Cambridge Health Alliance in Massachusetts. He called the research "groundbreaking."

Parents become more sensitive to their baby's cues when they're regularly in direct contact, even if it's not skin-to-skin, said Yogman, past chair of the American Academy of Pediatrics committee on psychosocial aspects of child and family health.

"That begins to synchronize biorhythms, circadian rhythms, hormonal variation ... and the host of changes in the brain that [Feldman] documents," Yogman said.

Yet even for preemies who did not receive this type of contact in those early weeks of life, when they went home to loving, comforting parents, they still did well, he noted.

"So that speaks to the resilience, all is not lost, but we're learning more and more about high-quality care early on, that parenting really matters in these early years," Yogman said.

Though the study didn't focus on fathers' synchrony with children, Yogman said he thinks when fathers are engaged early on, the impact can be quite similar.

Feldman agreed. When fathers are committed to infant care, there are pathways that would make fathers just as beneficial to the baby, she said.

"I assume that any loving, stable relationships in the child's life are important," Feldman said. "And I also assume that fathers would be very meaningful, and the parents most likely will be more beneficial than grandparents, but grandparents could be hugely beneficial."

The study was published online March 30 in the journal *PNAS*.

More information: Adi Ulmer Yaniv et al. Synchronous caregiving from birth to adulthood tunes humans' social brain, *Proceedings of the National Academy of Sciences* (2021). [DOI: 10.1073/pnas.2012900118](https://doi.org/10.1073/pnas.2012900118)

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