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Young infants infer the closeness of social relationships via saliva sharing interactions

Imagine you're an infant. Just a few months in the world, trying to gather your faculties, testing gravity — you're pretty helpless and fully reliant on the people around you. As a result, one of your primary tasks as a new person — even before hand-eye coordination and responding to your own name — is to figure out how the people you've just met are connected to each other.

"Children are born into a very social world," said Brandon Woo, a researcher in UC Santa Barbara's Department of Psychological & Brain Sciences. "Because it's so important for children to work with others and collaborate with others, they need to map out these social networks." One key piece of evidence, according to Woo and collaborators from Harvard University and MIT: saliva.

The researchers' findings are published in the journal Evolution and Human Behavior.

Saliva is thicker than water

A developmental psychologist by training, Woo is broadly interested in life from the baby's point of view, namely how they make sense of others' actions, minds and relationships, all in service of understanding human sociality.

“We were inspired by studies that found that across cultures, people in close relationships are often more comfortable sharing saliva with each other,” he said. “So imagine seeing two people licking the same ice cream cone — could you guess how they might know each other?”

In previous work, Woo and collaborators found that older babies and toddlers could reliably infer how close — or “thick” — a relationship is based on intimate saliva-sharing, such as kissing, or sharing foods and utensils. “Our past work found that by the time infants are around eight months of age, when they view people sharing saliva, they are making inferences that those individuals will respond to each other’s distress,” he said.

For this work, the question wasn’t about just whether babies could infer relationship thickness; the researchers were curious about how soon they could do it. Relative to the older children, infants at four to six months of age would have had less opportunity to observe such behaviors, are less likely to look at faces, and they ingest foods that are typically not shared with others.

Taking groups of babies at four to six months of age, the researchers conducted two experiments. In the first, a human protagonist put an orange slice in their mouth, took it out and inserted the food in an actor puppet’s mouth, representing a scenario of shared saliva. This was contrasted with another human protagonist taking a ball and passing it to the puppet, representing sharing without saliva; the puppet would then express distress. The researchers watched the baby viewing the interaction to see who the infant looked at longer — the person who gave the puppet an orange slice or the person who gave the ball.

In the second experiment, a human protagonist put their finger in their own mouth, in the puppet’s mouth and then back in their own, contrasted with the same human doing similar actions with another puppet but touching foreheads instead. The human would then “cry” as the baby was observed to see which puppet they expected to respond.

“The first experiment focuses on a very familiar action: food sharing,” Woo explained. “The second behavior, with the finger in someone’s mouth versus someone else’s mouth, is not as common in children’s everyday lives.” The finger-in-mouth scenario was also there to see whether the infants truly tracked saliva

exchange and not the food itself.

In both experiments, when the actor expressed distress, the infants looked longer at the “thick” relationship partner — the one who had shared saliva, rather than the ones who had shared the ball or touched the forehead.

“I think it’s really cool that babies are still making inferences in both cases. That even with less familiar actions they are making inferences about closeness,” Woo said. “It’s fascinating that they seem to have this abstract knowledge about relationships that applies across different actions.”

This work delivers nuance to a longstanding debate scholars in human development have had about how much babies know of the world.

“Some scholars argue that babies are blank slates that know nothing,” he said. “This work is aiming to get at just how babies are starting to make sense of the social world, of social relationships, and what the role of experience is.” The work also helps researchers understand what the foundations of children’s social knowledge could be, he added.

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