

Left hand - right hand, premature babies make the link

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Preterm baby holding a cylinder. Credit: Frédérique Berne-Audéoud, CHU de Grenoble

From the 31st week of pregnancy, preterm babies are capable of recognizing with one hand an object they have already explored with the other. This ability, known as "intermanual transfer", has been demonstrated in premature infants by a team from the Laboratoire de Psychologie et Neurocognition in collaboration with the Laboratoire de Psychologie de la Perception and the CHU de Grenoble. These results show that the corpus callosum, also known as the colossal commissure, i.e. the brain structure involved in information transfer, is functional from this early age. This work has been published online, on the journal *Child Development's* website.

Recognizing that an object already manipulated with one [hand](#) is the

same as that held in the other hand is an important ability of the brain known as “intermanual transfer”. This activity reflects the brain's capacity to memorize information on an object, store it as memory and compare it with information taken in by the opposite hand. Medical imaging has shown that the transfer of information relies on the integrity of the posterior part of the corpus callosum. Composed of a series of neural fibers, this bundle connects the two hemispheres of the brain and thus ensures the coordination of information. Due to its very slow maturation, it is the final [brain structure](#) to develop in foetuses. The question is therefore to determine at what point it becomes functional.



Preterm baby holding a prism. Credit: Frédérique Berne-Audéoud, CHU de Grenoble

In 2010, for the first time, Edouard Gentaz's team demonstrated preterm babies' ability to memorize the shape of objects by touching them. This new study revealed that [preterm babies](#) born after only 31 weeks of pregnancy (i.e. 33 gestational weeks), are already capable of "intermanual transfer". In fact, after placing in the babies' left hand an object they had already manipulated with their right hand (and vice-versa), the researchers observed a decrease in holding time. On the

contrary, babies presented with new objects keep them in their hand for longer. These results thus show that preterm infants are able to recognize with one hand an object already familiar to the other hand.

These perceptual capacities suggest that the corpus callosum, although immature, is already functional and sufficiently developed as of the 31st week of pregnancy. The researchers thus stress the importance of premature babies' tactile sensitivity and the role such ability plays on these infants' brain development and health. They also make certain recommendations, such as: avoiding, as far as possible, to restrain babies' hands (mittens, hands bound), facilitating freedom of movement and tactile manipulation, while respecting sleep-wake cycles. This work was carried out in close collaboration with the maternity services of the CHU de Grenoble, which already uses these practices in preterm infant care.

More information: Inter-Manual Transfer of Shapes in Preterm Human Infants from 33 to 34+6 Weeks Post-Conceptional Age. Lejeune, F., et al. (2012). *Child Development*, April 2012.

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