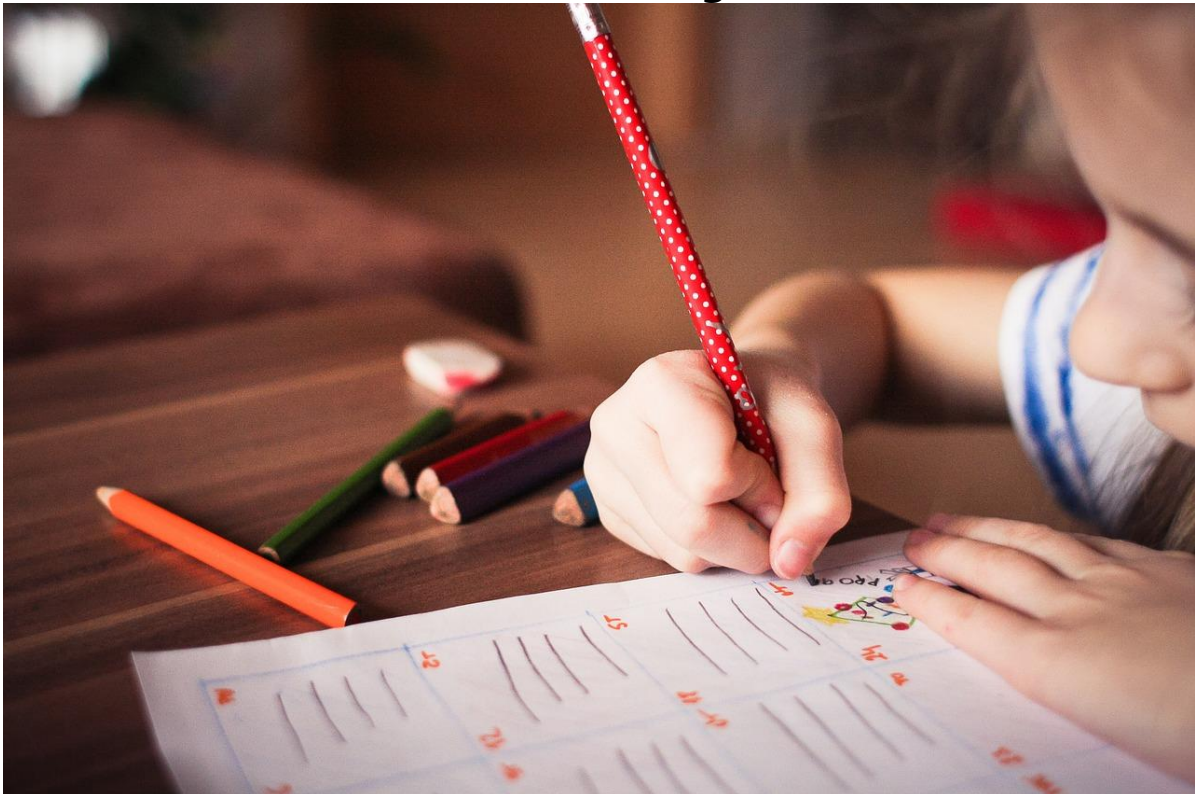




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PRESS RELEASE

## Right-handed or left-handed? It is decided as early as in the first few months of gestation



**New research has confirmed that hand preference is already known at the gestational phase. This may have implications on the early recognition of neurological and mental disorders**

4 December 2017

Are you born or do you become right-handed or left-handed? A study led by Valentina Parma, researcher at the International School for Advanced Studies - SISSA of Trieste, and Professor Umberto Castiello of the University of Padua, just published on *Scientific Reports*, shows that hand preference is already well defined at the 18th week of gestation. Analysing the characteristics of several foetal movements, the researchers have been able to accurately foresee the motor preference observed in the same boys and girls at age nine. The predictive capacity of the method used seems to be a good starting point for the early recognition of pathologies characterised by cerebral asymmetries, such as depression, schizophrenia and autism spectrum disorders.



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It takes a few months for a newborn to be able to grasp an object, a few years to draw and then to write, manifesting the possible preference for the use of one hand or other parts of the body. And yet, a study just published on *Scientific Reports* shows that as early as in the maternal womb, hand preference is well defined and the motor system is highly sophisticated.

The researchers have studied foetal kinematics to predict manual dominance of 29 fetuses. After nine years they compared their predictions with the preference shown by the same boys and girls obtaining an accuracy that ranged between 89% and 100% depending on the parameters used. In particular, the researchers analysed the movements of the hands of the fetuses at the 14th, 18th and 22nd week of gestation using a 4D ultrasound scan, viewing the three dimensional image in real time and in movement, in 20-minute sessions. They studied three types of movements: two of greater precision, directed to the eyes and mouth, and one directed to the uterine wall, as a control. The results have shown that starting from the 18th week the fetuses execute significantly more quickly the movements requiring precision with that which will become the preferred hand.

The study, conducted by the International School for Advanced Studies - SISSA of Trieste, the Integrated University Hospital of Trieste - ASUITs, Ab.Acus of Milan, the University of Padua and the Lincean Centre Beniamino Segre of Rome, shows the elevated level of maturation and specialisation of the motor system in utero. But not just that. The accuracy of the method used in this study opens new perspectives for its use in the clinical field. Hand preference, in fact, is due to the prevalence of one cerebral hemisphere, the contralateral one, over the other. This characteristic has sometimes been associated to pathologies which involve a cerebral asymmetry, such as depression, schizophrenia and autistic spectrum disorders. Foetal kinematics could be used to identify new markers that would allow to intervene at an early stage and compensate for any development problems.

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#### USEFUL LINKS:

Full paper: <http://rdcu.be/z5oi>

#### IMAGE:

Credits: Pixabay

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