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## **Predicting the IQ of young children from early developmental markers**

The article presented by Peyre et al, this edition, addresses the extent to which we can predict the IQ of 5-6 year-old children, an age where in many countries children will enter formal education, from early assessments of developmental milestones. The study uses baseline data from a large population-based sample of French children from the EDEN prospective mother-child cohort study<sup>1</sup> and presents data from 1100 children assessed at follow-up aged 5-6 years. The authors use developmental questionnaires completed by parent/carer at 6, 8, 12 and 24 months and use a predictive validity coefficient model to look at correlations with subsequent IQ. Findings include that developmental milestones during the first year of life predict only a small part of the IQ variance at age 5-6 years, but at 24 months, milestones predict a substantial part of the later IQ variance, and that early language skills more strongly predict later IQ than the other cognitive domains. They were also able to predict those children falling at the extreme ends of the IQ distribution from language scores at eight months-an important finding.

The challenge of measuring intelligence in infants continues to be an issue of significant clinical and research interest. Good quality prediction models would not only identify vulnerable individuals and facilitate early intervention, but also allow insights into how diseases affecting the brain and CNS progress or respond to intervention/treatment. They would also allow exploration of differential sensitivity to environmental or genetic variations in early development. One recent illustration of the importance of valid reliable neurodevelopmental assessment methods concerns the controversial debate into whether there are developmentally important neurotoxicity effects accruing from exposure to early general anaesthesia.<sup>2</sup> The use of intelligence testing in young children as an outcome variable within trials (and at the individual level) requires awareness of the limitations of the approach conceptually, as well as good quality evidence on the reliability and validity of the tests used.

There is currently little evidence that 'general intelligence' or 'g' is discernible in infancy. Experimental tests using habituation or electrophysiological paradigms in infants, and delayed gratification and other behavioural paradigms in young children offer some evidence of abilities that may have some association with the concept of 'IQ' later in development. However, the relative lack of reliability and unknown validity of these approaches limits their predictive utility. There is more robust evidence for the increasing emergence of the unitary construct of 'g', and for the increasing individual stability of that construct from middle childhood i.e. IQ testing in children around the age 5-6 years has a strong correlation with adult IQ. Longitudinal studies looking at IQ aged 5 and 16 years tend to find high correlations between +0.8 and +0.9.<sup>3</sup> We also know that tests of Verbal IQ tend to correlate more highly than measures of non-verbal IQ across time, also confirmed by Peyre et al. There has been surprisingly little large scale research on infant and child intelligence in recent years. The study by Peyre and colleagues is commendable in scale and methodological rigour.

## References

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