

# MATH COMES EASILY TO BABIES

## Eight-month-old babies intuitively understand statistical math concepts without explicit teaching.

Researchers at the University of British Columbia set up six different experiments to compare the numerical intuition of infants with that of adults. They found that babies share adult abilities to predict information about large populations from small samples, and vice versa.

Such intuitive statistical ability seems to develop in babies at about the age of eight months, says lead researcher Fei Xu. *"When we conducted our experiments on six-month-old*

*babies, they did not perform well. By the time they reached eight months old, most of them were just as capable of rational thinking as the adults were."*

To test the ability of both babies and adults, researchers set up a series of magic shows in which actors manipulated coloured ping pong balls in surprising and predictable ways. In one test, for example, participants were shown the interiors of two boxes. One box contained lots of red balls interspersed with a few white balls, while in the other were white balls interspersed with red. The actor then pulled five ping pong balls out of each of the boxes. Four red balls and one white ball coming from the box containing more red balls would be predictable. The opposite was a surprise.

Sixteen adults rated the predictability of

each case on a scale of one to seven. Then, 20 seven-and-a-half to eight-and-a-half month-old infants watched the show. The length of time they looked at each case was recorded with video cameras. Researchers found that babies' reactions matched parent ratings in that babies looked significantly longer at unexpected situations.

*"Our findings were quite surprising, which is why we kept replicating experiments to make sure that they were robust," says Xu. "We hope these ideas will inform parents about their infants' natural learning abilities. Children are not afraid of math. They like numbers. They like thinking about simple calculations. That's important for our society to know."*

BY TRACEY ARIAL

Ref.: Xu F, Garcia V. Intuitive statistics by 8-month-old infants. *Proceedings of the National Academy of Sciences of the United States of America* 2008;105(13):5012-5015.



## BULLETIN

This bulletin is a joint publication of the Centre of Excellence for Early Childhood Development (CEECD) and the Strategic Knowledge Cluster on Early Child Development (SKC-ECD). The CEECD is one of the four Centres of Excellence for Children's Well-Being funded by the Public Health Agency of Canada (PHAC). The SKC-ECD is funded by the Canadian Social Sciences and Humanities Research Council (SSHRC). The views expressed herein do not necessarily represent the official policies of the PHAC and the SSHRC.

**Editors:** Kristell Le Martret, Michel Boivin and Richard E. Tremblay  
**Managing Editor:** Claire Gascon Giard  
**Collaborators:** Tracey Arial, Alison Palkhivala  
**Scientific Proofreading:** Lucie Blais, Michel Boivin, Bernard J. Crespi, Joanne Cummings, Suzanne Dionne, Adrienne Einarson, Alicja D. Fishell, Cynthia Forster-Gibson, Lisa Goos, Martha Herbert, Anita Kozyrskyj, Michael S. Kramer, Jacques Lacroix, Catherine Lemière, Janice MacAulay, Michael Meaney, Claude Mercier, Isabelle Ouellet-Morin, Richard E. Tremblay, Fei Xu  
**Copy Editors:** Sandra Braun, Lana Crossman, Donna Riley  
**Layout:** Guylaine Couture  
**Printing:** QuadriScan

Centre of Excellence for Early Childhood Development  
 GRIP-Université de Montréal  
 P.O. Box 6128, Succursale Centre-ville  
 Montreal, Quebec H3C 3J7

Telephone: (514) 343-6111, extension 2541  
 Fax: (514) 343-6962

E-mail: [cedje-ceed@umontreal.ca](mailto:cedje-ceed@umontreal.ca)  
 Web site: [www.excellence-earlychildhood.ca](http://www.excellence-earlychildhood.ca)  
[www.skc-ecd.ca](http://www.skc-ecd.ca)

ISSN 1499-6219  
 ISSN 1499-6227