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RCCN

THE UNIVERSITY OF AUCKLAND
NEW ZEALAND
Department of Psychology

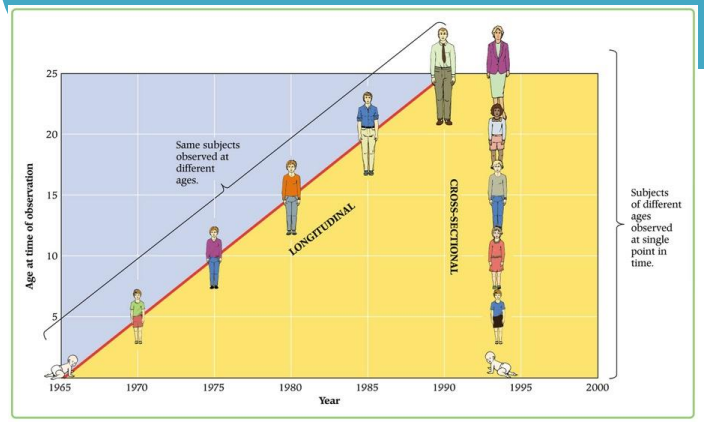
Research Centre for Cognitive Neuroscience

Associate Professor Karen E Waldie
Research Interests

# Neurodevelopmental disorders

| Antecedents, risk factors, correlates, Gene-environment interactions | Neurological and cognitive biomarkers | Remediation / training |
|---|---|---|
| Longitudinal research<br>- DMHDS<br>- ABC<br>- GUiNZ | EEG research<br>fMRI research<br>DTI research | New area – stay tuned |
| | | |

# NZ Longitudinal Research




1. Dunedin Multidisciplinary Health and Development study (DMHDS) Associate Investigator (http://dunedinstudy.otago.ac.nz/)
2. Auckland Birthweight Collaborative (ABC) study Named Investigator (http://weightmanagement.hiirc.org.nz/page/9732/auckland-birthweight-collaborative-study/?section=21)
3. Growing Up in NZ (GUiNZ) study Named Investigator (www.growingup.co.nz)

DEVELOPMENTAL MEDICINE & CHILD NEUROLOGY ORIGINAL ARTICLE

# The catechol-*O*-methyltransferase (*COMT*) Val158Met polymorphism moderates the effect of antenatal stress on childhood behavioural problems: longitudinal evidence across multiple ages

JOHN M D THOMPSON[1] | EDMUND J SONUGA-BARKE[2,3] | ANGHARAD R MORGAN[4,5] | CHRISTINE M CORNFORTH[2] | DARKO TURIC[2] | LYNNETTE R FERGUSON[4,5] | EDWIN A MITCHELL[1] | KAREN E WALDIE[6]

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**This article is commented on by Gadow on page 101 of this issue.**

# What is *Growing Up in New Zealand*?

- A longitudinal study following a group of New Zealand children, in the context of their families, from pre-birth to early adulthood
  - 6846 babies  (52% male)
  - born in Auckland, Counties-Manukau and Waikato district health board areas
  - interviews done in homes antenatally, at 9 months, and 2 years (-planning 4.5 year assessment)
  - 91% born at term (37-41 weeks)

Neurodevelopmental disorders

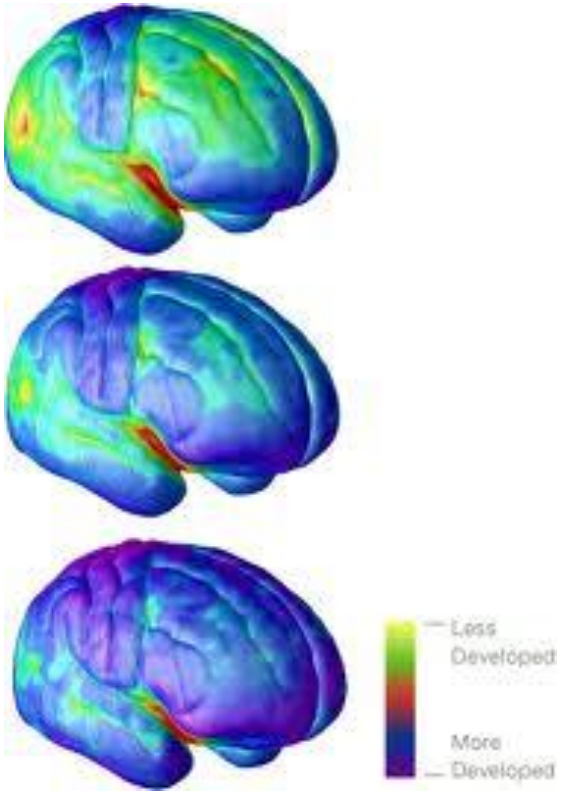
Overall aim of research: Cognitive and Neurological biomarkers

Dyslexia: phonological awareness

Dyscalculia: number sense

ADHD: executive functioning

Aspergers: social awareness




Can insights from neuroscience provide usable knowledge for educators?

# Brain Research Institute



fMRI allows us to map increases in oxygenated blood flow that accompany local brain activity during mental tasks

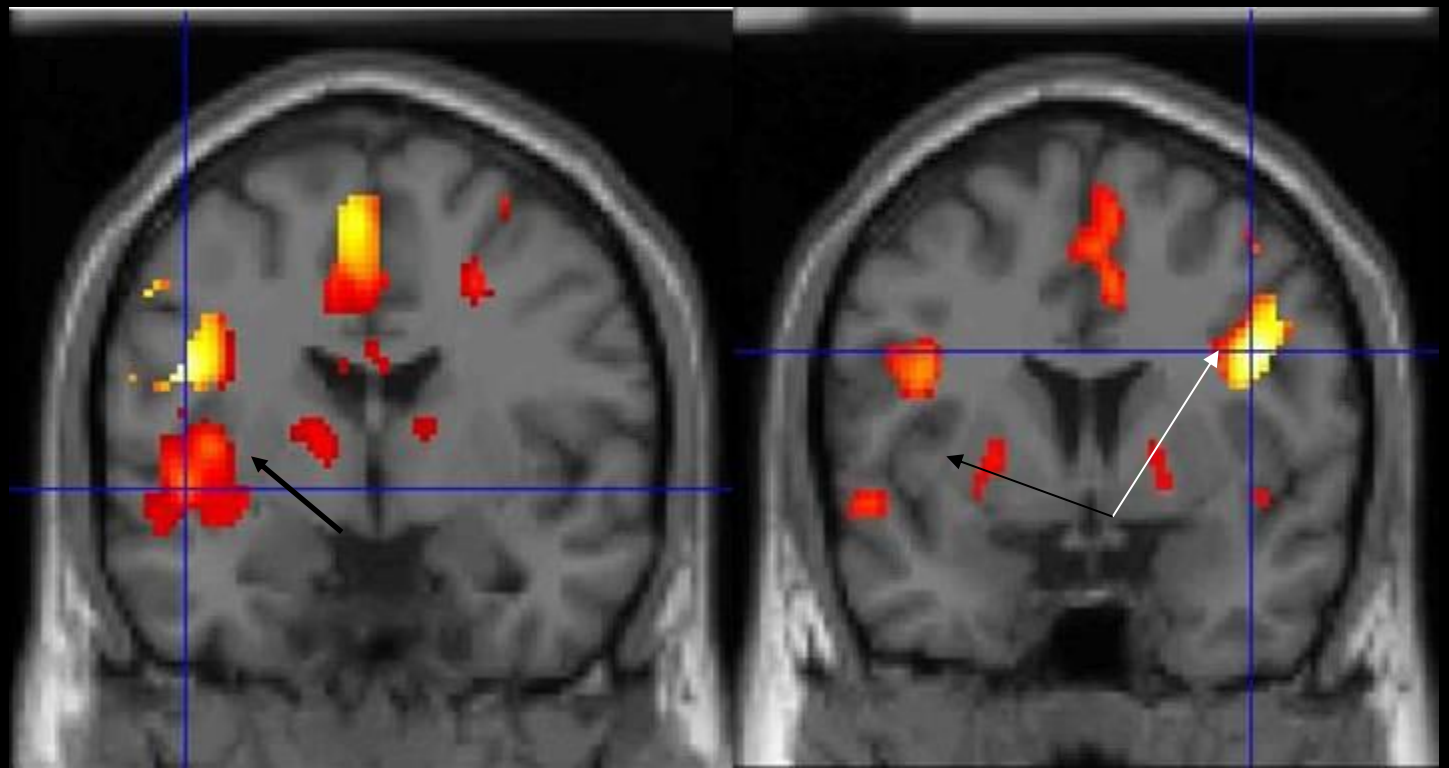
# 129 EEG electrodes

**WALDIE KE.** Introduction to developmental neuroscience: Neurological development and the mechanisms underlying reading. In Jason Low and Paul Jose (Eds., pp.20-30), *Lifespan Development: The New Zealand Context*. Auckland, Pearson, 2005

# Dyslexia: Left hemisphere networks functionally disrupted

Minimal left, maximal in right inferior frontal areas

A. B.



# Breakthrough dyslexia study a first for New Zealand

**By Sarah Moyes**

It's one of those things that everyone's heard of, but no one really understands.

Dyslexia affects 7.7 percent of New Zealanders, however only a small number of people can define the reading disability.

Auckland University department of psychology senior lecturer Dr Karen Waldie is conducting a study about dyslexia and the maths learning disability dyscalculia.

"A lot of people with dyslexia also have dyscalculia. If you have one disability you're more than likely to have another," she says.

Dyslexia has been defined as the selective impairment of reading and spelling that is not caused by other reasons such as hearing or vision problems.

It affects people's ability to read even though they've had a good education.

"I'm trying to let people know that when you are talking about people with dyslexia and dyscalculia they are bright and educated people," Dr Waldie says.

She is originally from Canada, where dyslexia is recognised throughout the school system.

She says the New Zealand education system was slower to accept the worldwide evidence about dyslexia.

"The Education Ministry finally formally acknowledged the existence of dyslexia at the end of 2006.

"Teachers in New Zealand aren't trained properly about dyslexia," Dr Waldie says.

When she first came to New Zealand she says people had no conception of what a learning disability was.

"Kids who struggled were seen as lazy and stupid. There are a lot of misconceptions and rumours about dyslexia."

A study in Dunedin that Dr Waldie was involved in showed 48 percent of 32-year-old dyslexic adults had no school qualifications, compared to 14 percent of non-dyslexics.

Dr Waldie's current study hopes to raise awareness of dyslexia.

There are a few stages to the study, the most important being the final brain-imaging scan.

Using a new non-invasive brain-imaging technology – functional magnetic resonance imaging – Dr Waldie can see clearer images of the brain, allowing such a study to be done for the first time in New Zealand.

With the technology, Dr Waldie can map increases in oxygenated blood flow that accompany brain activity during reading.

"In the scanner we can see the structure of the brain.

"The person performs different tasks – the machine can see what happens.

"We need to understand what causes it and why so many people have the two learning disabilities."

Dr Waldie is looking for people who have dyslexia and no other disability. Participants will be given an in-depth clinical report explaining their strengths and weaknesses.

For more information email Dr Waldie on k.waldie@auckland.ac.nz or LDstudy.auckland@gmail.com.


**Postdoctoral fellow / colleagues**

Anna J Wilson, Ian J Kirk, Michael Corballis, Ed Mitchell, John Thompson

**The University of Auckland Faculty of Science Development Research Fund (2007-2014)**

# International Journal of School and Cognitive Psychology Related Conferences

- 2nd International Conference on Alzheimer's Disease and Dementia

- 3rd International Conference on Psychology, Autism & Alzheimer's Disease

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