The Japan Association of National Universities

Universities UK International

Demonstrating Research Impact: Insights from the UK's Research Excellence Framework

REF Impact Case Studies

Demonstrating Impact: a Social & Educational Example

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My research background

- ***My research interests:***

Cognitive and neural processes involved in Language, especially in reading in alphabetic and non-alphabetic languages, including developmental dyslexia

- ***Research Methods that I use:***

Behavioural studies with cognitive experiments/tests and Neuroimaging studies with fMRI and MEG

What is developmental dyslexia?

- Dyslexia is a specific **learning disability (LD)** that is **neurobiological in origin** (Eden & Moats, 2002)
- Dyslexia is **highly heritable**, with an estimated 30-50% chance of being passed from parent to child (Fisher & DeFries, 2000)

"Some children may experience ***unexpected reading problems*** that cannot be attributed to poor hearing or vision, low intelligence or inadequate educational and social opportunities" (Snowling, 1987)

AS: an English-Japanese Bilingual Adolescent Boy with monolingual dyslexia in English

Media Interest in 1996

The Daily Telegraph

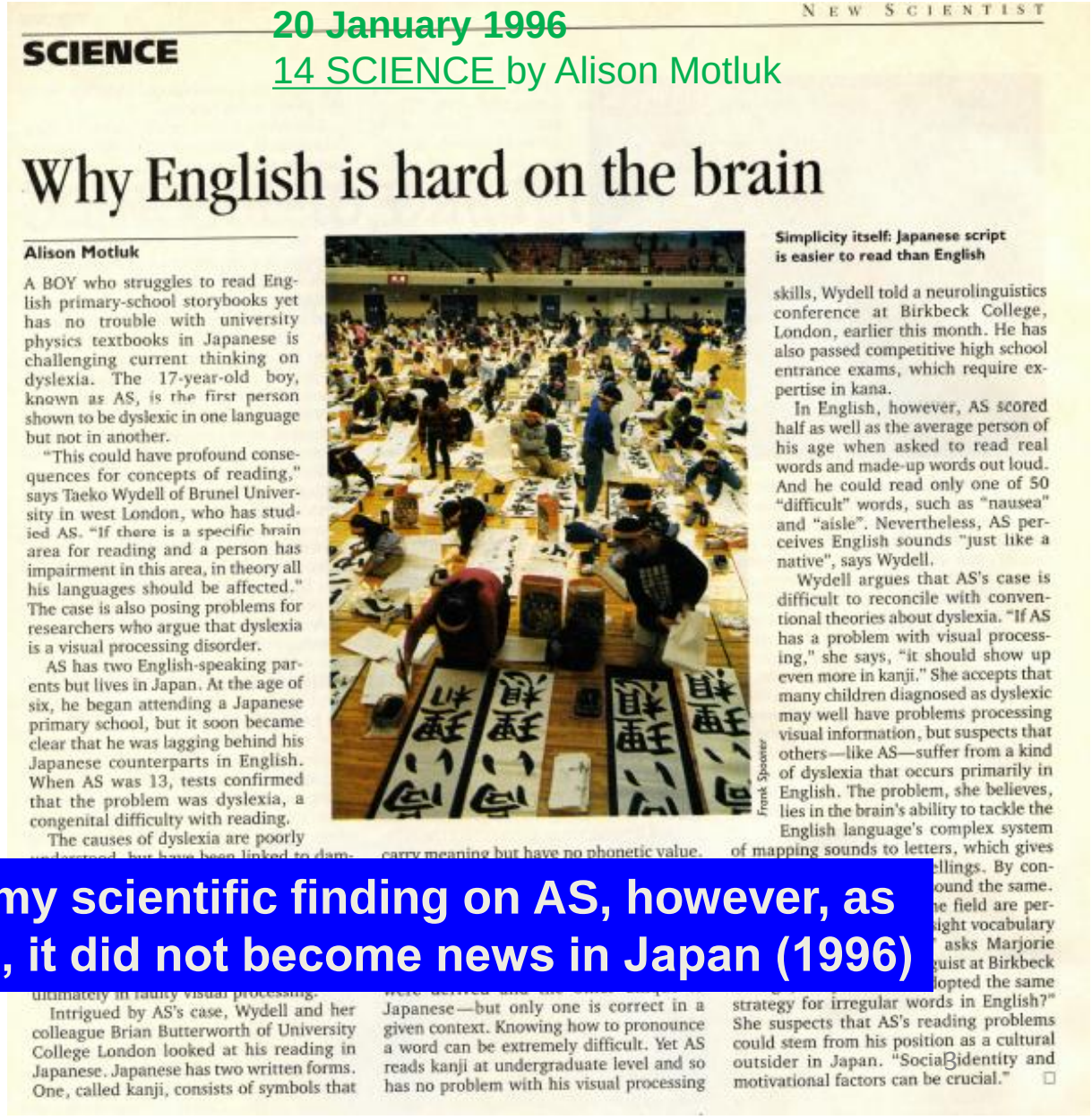
CBC RADIO CANADA

BBC NEWS

BBC WORLD SERVICE

- Daily Telegraph & Independent
- BBC-Greater London, BBC Leicester, BBC Greater Manchester
- Cable T.V. “EBN European Business News”
- BBC World Service
- CBC Michael Enright Show

From New Scientist,
20 January 1996
14 SCIENCE by Alison Motluk



NEW SCIENTIST

SCIENCE

Why English is hard on the brain

Alison Motluk

A BOY who struggles to read English primary-school storybooks yet has no trouble with university physics textbooks in Japanese is challenging current thinking on dyslexia. The 17-year-old boy, known as AS, is the first person shown to be dyslexic in one language but not in another.

"This could have profound consequences for concepts of reading," says Taeko Wydell of Brunel University in west London, who has studied AS. "If there is a specific brain area for reading and a person has impairment in this area, in theory all his languages should be affected." The case is also posing problems for researchers who argue that dyslexia is a visual processing disorder.

AS has two English-speaking parents but lives in Japan. At the age of six, he began attending a Japanese primary school, but it soon became clear that he was lagging behind his Japanese counterparts in English. When AS was 13, tests confirmed that the problem was dyslexia, a congenital difficulty with reading.

The causes of dyslexia are poorly understood, but have been linked to dam-

carry meaning but have no phonetic value.

Intrigued by AS's case, Wydell and her colleague Brian Butterworth of University College London looked at his reading in Japanese. Japanese has two written forms. One, called kanji, consists of symbols that

Japanese—but only one is correct in a given context. Knowing how to pronounce a word can be extremely difficult. Yet AS reads kanji at undergraduate level and so has no problem with his visual processing

Simplicity itself: Japanese script is easier to read than English

Frank Spooner

skills, Wydell told a neurolinguistics conference at Birkbeck College, London, earlier this month. He has also passed competitive high school entrance exams, which require expertise in kana.

In English, however, AS scored half as well as the average person of his age when asked to read real words and made-up words out loud. And he could read only one of 50 "difficult" words, such as "nausea" and "aisle". Nevertheless, AS perceives English sounds "just like a native", says Wydell.

Wydell argues that AS's case is difficult to reconcile with conventional theories about dyslexia. "If AS has a problem with visual processing," she says, "it should show up even more in kanji." She accepts that many children diagnosed as dyslexic may well have problems processing visual information, but suspects that others—like AS—suffer from a kind of dyslexia that occurs primarily in English. The problem, she believes, lies in the brain's ability to tackle the English language's complex system of mapping sounds to letters, which gives

ellings. By con-
ound the same.
e field are per-
ight vocabulary
asks Marjorie
guist at Birkbeck
lopted the same
strategy for irregular words in English?" She suspects that AS's reading problems could stem from his position as a cultural outsider in Japan. "Sociaβidentity and motivational factors can be crucial." □

Japan Kyodo News contacted me asking about my scientific finding on AS, however, as ‘developmental dyslexia’ was unknown in Japan, it did not become news in Japan (1996)

Wydell, T.N. & Butterworth, B. (1999). An English-Japanese bilingual with monolingual dyslexia. ***Cognition, 70***, 273-305

Developmental Dyslexia
Prevalence in different languages

A high or low incidence of developmental dyslexia seems to depend on the characteristics of writing systems.

In the English-speaking world, the prevalence of dyslexia is around **10%** (Snowling, 2000) to **12%** (Shaywitz et al., 1999).

The prevalence of dyslexia in **transparent or regular orthographies** is lower, e.g., **in Italian** it is around **3 – 4%** (Barbiero et al., 2012)

In Japanese, the prevalence of reading difficulties differs across different scripts (Uno, Wydell, Haruhara, Kaneko & Shinya, 2009):

0.2% in **transparent** syllabic **Hiragana**
1.4% in **transparent** syllabic **Katakana**
6.9% in **opaque** logographic **Kanji**

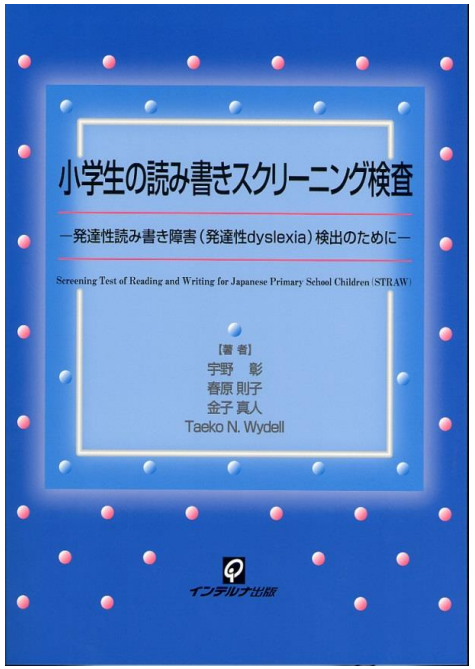
Uno*, A., **Wydell, T.N.***, Haruhara, N., Kaneko, M., & Shinya, N. (2009). Relationship between reading/writing skills and cognitive abilities among Japanese primary-school children: normal readers versus poor readers (Dyslexics). ***Reading & Writing, 22* (7),** 755-789 . * Joint First Authors.

STRAW and STRAW-R
(Uno, Haruhara, Kaneko & Wydell, 2006; 2008; 2018)

Development of the first and only Standardised Tests for assessing reading and writing attainment of **Japanese children from 8 to 18 years** old and screening for those with **Developmental Dyslexia *(Over 1,500 children were tested)***

STRAW

Screening **T**est of **R**eading **a**nd **W**riting for **Japanese Primary School Children**



The project was funded by the **Japan Society for the Promotion of Science** (JSPS).

STRAW-R

Standardized Test for Assessing the Reading and Writing (Spelling) Attainment of **Japanese Children and Adolescents**: Accuracy and Fluency (**STRAW-R**)

The project was funded by the **Japanese Ministry of Health.**

REF Impact Case Study – Timeline of preparation

- Approx 2-3 years before submission:
  - Asked to prepare an Impact Case Study by Vice President of Research
  - Introduced to our dedicated Impact Case Study Coordinator (Dr Lee)
  - Attended a few workshops on how to write impact case studies
- Approx 1 year before submission:
  - Regular meetings with the VP and the allocated Impact Case Study Coordinator to check progress
- 6 months before submission:
  - Requested purchase & distribution data from publisher (as part of impact evidence)
  - Started to draft the case study document
- 3 months before: Started gathering testimony statements
- 2 months before: Started final draft
- At Brunel the policy is that the final editing of the REF Impact case study document is done by the university REF Impact Case Study Coordinator and submitted by the university
- Approx 12 months after submission: **Received outcome which was 4*, the highest score**

Sources of Evidence for My Impact Case Study – REF2014

Data from Publisher:

STRAW & STRAW-R could not be purchased by private individuals and therefore each sale represented an institution using the tests

- Data about who bought it
- Reach – different institutions public, educational sector, and health professionals
- Geographical reach – from Hokkaido to Okinawa in total 47 prefectures.

Testimony (6 testimonials which best described social, and educational impact were chosen).

- Schools – senior experienced teachers, SEN teachers, Members of local Educational Boards.
- Hospitals – Paediatricians who specialise in developmental disorders

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Thank you for listening.

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Mrs Ayako Chiba, Publishing Manager for **STRAW** & **STRAW-R**, Interuna Publishing, Tokyo, Japan

Dr Jeung Lee, Head of Institutional Effectiveness/ REF Impact Case Study Coordinator, Brunel University London.

Brunel University London