

Impact case study (REF3b)

<p>Institution: Middlesex University</p>
<p>Unit of Assessment: 4 (Psychology, Psychiatry and Neuroscience)</p>
<p>Title of case study: Supporting people with dyslexia in Iran and the UK</p>
<p>1. Summary of the impact (indicative maximum 100 words) Research in dyslexia carried out within the Unit has had impacts on practitioners and services in education, health and welfare. Pioneering research by Dr Bahman Baluch and Dr Maryam Danaye-Tousi (University of Guilan, Iran) on Farsi, and the relationship between orthography and the process of learning to read, has made a significant contribution to the ways in which reading is taught in Iran throughout the curriculum. Research on a common underlying deficit in dyslexia by Dr Nicola Brunswick, which lead to her appointment as Trustee of the British Dyslexia Association (BDA), has helped improve services for people with dyslexia in the UK.</p>
<p>2. Underpinning research (indicative maximum 500 words) Research in orthography, reading and dyslexia within the Unit commenced in the late 1990s (3.1), and has developed a distinctive focus on the underlying nature of the disorder and its cross-cultural, linguistic, and orthographic similarities and differences. This work has been supported by prestigious research carried out by Brunswick before she arrived at Middlesex (see Paulesu et al, 2001, <i>Science</i> 291, 2165-2167, & <i>Nature Neuroscience</i> 3, 91-96). A key finding is that although there appear to be significant differences across languages, these are likely due to the different relationships between orthography and phonology and are filters through which a common neuro-cognitive bias is manifest (3.2, 3.4). Subsequent research has examined some of these language-specific difficulties with a view to tailoring dyslexia support and interventions to specific language populations (3.3).</p> <p>Baluch pioneered research using peculiarities of Farsi orthography in understanding cognitive processes of skilled reading. Farsi is an interesting language due to some words being written in only consonants, and others in only vowels, making reading a blend of orthographic opaqueness and transparency. The work has provided evidence for the universality of reading processes in different writing systems irrespective of their spelling to sound relationships (3.1). More recently his work in collaboration with Danaye-Tousi has investigated Farsi orthography amongst developmental dyslexics and skilled readers with regard to short term memory processes (3.2) and issues surrounding teaching and counselling for students with dyslexia (3.3). This has lead to significant impacts on the teaching of Farsi in Iran.</p> <p>More recently Baluch (in collaboration with Raman) has extended this line of research to languages such as Turkish and Polish, with a focus on how the generic underlying deficits of dyslexia are manifest in different orthographies. These studies focus on children learning to read, and address the degree to which orthographic transparency is associated with developmental dyslexia and normal reading (both Polish and Turkish are transparent orthographies, although Turkey adopted a transparent Roman alphabet in 1928).</p> <p>Brunswick's research has extended ideas about common underlying deficits in dyslexia to examine the role of visuospatial skills of adults with dyslexia (3.4, 3.5). This research has involved the administration of a comprehensive battery of real-life and laboratory-based visuospatial measures to large samples of dyslexic and non-dyslexic adults. The findings indicate that the reported spatial superiority in dyslexia may be primarily attributable to the performance of dyslexic men (dyslexic women appear to display particularly poor visuospatial ability), a finding which may explain many of the inconsistencies reported in the literature regarding visuospatial strengths and weaknesses in dyslexia. This research has been complemented by a series of large-scale studies carried out with colleagues from UCL, the Royal College of Art, and Swansea Metropolitan University since 2009. These studies have explored drawing ability, visual memory and</p>

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mathematical ability in dyslexic and non-dyslexic art students, and have found that ability at drawing is related to being good at maths and finding it enjoyable. Links have also been found between higher drawing ability and both sex (in the biological sense, males drawing better than females), and gender (those who perceive themselves as more masculine draw better, whether they are biologically male or female). Poor drawers are less accurate at copying angles and proportions, and their visual memory is poorer.

These separate findings from different orthographies, in addition to the work on a common underlying bias, have contributed to a more nuanced view of dyslexia and how it should be approached. This research has led to a variety of impacts as outlined below.

3. References to the research (indicative maximum of six references)

- 3.1 Baluch, B. (1996). Word frequency effects in naming for experienced and previously experienced adult readers of Persian. *Reading and Writing - An Interdisciplinary Journal*, 8, 433-441. doi: 10.1007/BF00404004 (citation count: 4)
- 3.2 Baluch, B. & Danaye-Tousi, M. (2006) Spelling transparency and its impact on dyslexic and unimpaired children's memory for words. *Annals of Dyslexia*, 56, 2, 319-334. doi: 10.1007/s11881-006-0014-2 (citation count: 3)
- 3.3 Baluch, B. & Danaye-Tousi, M. (2007). A pilot investigation into unimpaired and dyslexic Persian children's word naming and spelling: Implications for models of reading and counselling. *Counselling Psychology Quarterly*, 20,1, 41-50. doi: 10.1080/09515070701197495 (citation count: 2)
- 3.4 Brunswick, N., Martin, G.N. & Marzano, L. (2010). Visuospatial superiority in developmental dyslexia: myth or reality? *Learning and Individual Differences*, 20, 421-426. doi: 10.1016/j.lindif.2010.04.007 (citation count: 13)
- 3.5 McManus, I.C., Chamberlain, R., Loo, P.-W., Rankin, Q., Riley, H. & Brunswick, N. (2010). Art students who cannot draw: An exploration of the relations between personality, dyslexia, perceptual problems and drawing skills. *Psychology of Aesthetics, Creativity, and the Arts*, 4, 1, 18-30. doi: 10.1037/a0017335 (citation count: 10)
- 3.6 Brunswick, N., Martin, G.N. & Rippon, G. (2012). Early cognitive profiles of emergent readers: a longitudinal study. *Journal of Experimental Child Psychology*, 111, 268-285. doi: 10.1016/j.jecp.2011.08.001 (citation count: 9)

Evidence of excellence:

Citation counts for all references are provided above. All journals are high quality and peer reviewed.

4. Details of the impact (indicative maximum 750 words)

In 2006, Baluch and Brunswick were involved in hosting a workshop at Middlesex University on 'The Role of Orthographies in Reading and Spelling'. A major text based on this – *Reading and Dyslexia in Different Orthographies* (edited by Brunswick, de Mornay Davies, and Sine McDougall who at the time was professor of psychology at Middlesex) – was published by Psychology Press in 2010 to positive reviews (5.1).

Baluch's collaboration with Danaye-Tousi (who at the time was advisor to the Iranian Ministry of Education, and is now Assistant Professor of General Linguistics at the University of Guilan in Iran) stemmed from Baluch's work on Farsi orthography. The research has been directly applied in Iran to the way in which teaching across the national curriculum is delivered. This collaboration resulted in Danaye-Tousi being awarded second prize in the Farabi International Awards for her work on elements of the Iranian National Language Curriculum (5.2), and has led to other research and impact, including UNICEF-funded work on the education of Afghani refugees (of which there are approximately 1.4 million in Iran). It also led to significant changes in how

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Farsi is taught throughout Iranian schools, and has led to more precise target setting and measures of achievement for all children from first to twelfth grade. The significant scope of this impact has been recognised officially by the Iranian Government (5.3). The work has also informed the delivery of teaching at Guilan to BA and Masters level students (5.4). Specific impacts of the research include greater attention on literacy acquisition and the role of word recognition, reading comprehension and working memory. These impacts apply directly to educational planners and teachers, and indirectly to students.

Brunswick's research into the psychology of language and developmental dyslexia has influenced policy in the British Dyslexia Association (BDA), on whose Board she served for six years as a Trustee. The BDA is the second largest dyslexia charity in the UK with reach into universities, schools, communities and government. The direct effects of the revised policies have been improvements in public services for children and adults affected by dyslexia, for example through rewriting the organisation's official definition of dyslexia to take proper account of best research evidence, and these policies were drawn on in the conclusions of the Rose review of primary education (2009). Through her work for the BDA she was invited to edit the annual BDA Dyslexia Handbook (2009/10) which summarises academic research and makes it accessible to people with dyslexia, their families and teachers. All members of the BDA receive a copy. Thus, she has directly facilitated public engagement with scientific discourse, removing the need for a non specialist reader (who may of course have reading challenges) to negotiate academic literature. She is regularly asked by the organisation to comment on its behalf on scientific developments in dyslexia and to explain these to the public, appearing, for example, on BBC News 24, and her research was recently featured in a BBC4 Documentary, 'Growing Children'. She served on the organising committee for the BDA's 8th International Conference (held in June 2011), and is currently helping organise the 9th International Conference (to be held in March 2014). She was appointed associate editor of the journal *Dyslexia* (Wiley) which published a special issue in November 2011 including articles from invited conference presenters. Subscribers to this journal include members of the BDA, parents, teachers and Special Educational Needs Co-ordinators from around the world. The BDA gave Brunswick an 'Outstanding contribution to the field of dyslexia' award in 2012 (5.1).

Brunswick's book, *Dyslexia - A Beginner's Guide* (Oneworld), written for the general public and published in 2009, is recommended reading on BDA training courses and in university Dyslexia Support Units around the UK. It directly disseminates academic research to parents, teachers and employers of dyslexic individuals and has been very positively reviewed (5.6). In January 2011, this book was selected by Warwick University's Knowledge Centre to be their book of the week. An extract from the book, on the genetics of dyslexia, was featured on the website for discussion (5.7). A U.S. school library edition of this book was published in January 2011 – this version is available to high-school students and their teachers across America to teach them about dyslexia. At the request of the BDA, a second book, *Supporting Dyslexic Readers in Higher Education and The Workplace* (Wiley-Blackwell) has been published, which disseminates current research and practice in supporting the particular needs of dyslexic adults to educational and occupational psychologists, specialist dyslexia tutors, speech and language therapists, researchers, disability advisors and welfare officers.

The impact of our research is thus international, including non-English-speaking countries. Beneficiaries range from user organisations (e.g. BDA), professionals in education and related services, and people with dyslexia and their families. Through public engagement in Britain and the United States, it is also enhancing understanding of dyslexia in the general public.

5. Sources to corroborate the impact (indicative maximum of 10 references)

5.1 Peer review comments on Brunswick, McDougall & de Mornay Davies; *Reading and*

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Dyslexia in Different Orthographies:

<http://www.amazon.co.uk/Reading-Dyslexia-Different-Orthographies-Brunswick/dp/1841697125>

- 5.2 Danaye-Tousi's prize for work on the Iranian National Language Curriculum.
<http://www.farbiaward.ir/en/module/winner/385/>
- 5.3 Links to original and translated versions of letter from Dr Majid Gadami, Head of the Institute of Research and Educational Planning, Iranian Government. [need appropriate host and url]
- 5.4 Use of Baluch's work in Guilan University, Iran. See <http://staff.guilan.ac.ir/mdana/?lg=0>
- 5.5 BDA confirms around 3000 copies of the BDA handbook sold each year, approximately 50% of which go to schools (see contacts for details).
- 5.6 Peer review comments on Brunswick's *Dyslexia: A Beginners Guide*:
<http://www.oneworld-publications.com/authors/nicola-brunswick>
- 5.7 Warwick University Knowledge Centre:
<http://www2.warwick.ac.uk/alumni/knowledge/projects/bookclub/23/>