



# Linguaggio: disturbi evolutivi e trattamento

## 11. Dislessia e bilinguismo

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DYSLEXIA  
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### ■ Italian Children with Dyslexia are also Poor in Reading English Words, but Accurate in Reading English Pseudowords

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It has been argued that children with dyslexia (DC) are poor at learning a foreign language (L2) and, in particular, reading foreign words. This assumption is so general that an Italian law (law 170, October, 2010) has established that DC may be completely exempted from foreign language learning and, in any case, should not be engaged in tuition via written material. However, evidence of L2 difficulties of DC is scarce and, in particular, absent for Italian children learning English. This absence of data is problematic, as it precludes information on the pattern of weaknesses and strengths, which could be found in DC. The present paper assessed these issues by administering an English word and pseudoword reading test to 23 DC and to 23 control children, matched for age, gender, schooling and IQ. The patterns of difficulties were examined individually for accuracy and speed, and the role of measures of native (L1) competence in L2 difficulties was also taken into account. Results confirmed that Italian DC are also poor in reading English words. However, they are accurate in reading pseudowords, suggesting that they have assimilated English pronunciation rules. Difficulties in L2 were, to some extent, but not completely, explained by difficulties in reading in L1. Copyright © 2013 John Wiley & Sons, Ltd.

**Keywords:** dyslexia; foreign language; reading; bilingualism

### Participants

A group of 23 DC participated in the present study ( $M = 13$  and  $F = 10$ , mean age 12.8 standard deviation (SD) = .79). All participants had received a diagnosis of Dyslexia in a clinical developmental center for DC, on the basis of the standard Italian criteria. This requires that a child has a performance at least 2 SDs below the mean score of the normative sample, in at least a standardized reading decoding test, and excluding a primary role of external factors (i.e. low intelligence, sensory handicap, family problems, emotional disorders, sociocultural problems and poor teaching). They were compared with a control group, matched for age, schooling, gender ( $M = 13$  and  $F = 10$ , mean age 13.2 SD = .63) and level of non-verbal intelligence (Raven Coloured Progressive Matrices, Belacchi, Scalisi, Cannoni, & Cornoldi, 2008). All children were native Italian speakers, who attended public schools in the north of Italy, and were studying English through a standard FL school teaching program. Participants had a typical educational career and regularly attended school. Table 1 presents the mean ages, Raven and reading scores of the two groups.

Table 3. Descriptive measures of foreign language reading efficiency for the two groups

FL reading efficiency measures	Controls		Group with dyslexia	
	M	(SD)	M	(SD)
Total read items				
Words	100.00	(6.78)	71.91	(9.42)
Pseudowords	62.61	(1.88)	59.87	(4.49)
Absolute accuracy score				
Words	140.13	(12.47)	82.09	(7.60)
Pseudowords	86.48	(12.41)	79.09	(4.69)
Accuracy relative score				
Words	70.13%	(4.97%)	57.83%	(8.08%)
Pseudowords	69.00%	(9.32%)	66.34%	(5.75%)
Reading speed (syllable/s)				
Words	1.67	(.34)	.84	(.18)
Pseudowords	1.18	(.29)	.76	(.19)

FL = foreign language; M = mean; SD = standard deviation.



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Research in Developmental Disabilities



## Impact of orthographic transparency on typical and atypical reading development: Evidence in French-Spanish bilingual children



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### ABSTRACT

The present study aimed to quantify cross-linguistic modulations of the contribution of **phonemic awareness** skills and **visual attention span** (VA Span) skills (number of visual elements that can be processed simultaneously) to reading speed and accuracy in **18 Spanish-French balanced bilingual children with and without developmental dyslexia**. The children were administered two similar reading batteries in French and Spanish. **The deficits of the dyslexic children in reading accuracy were mainly visible in their opaque orthography (French) whereas difficulties indexed by reading speed were observed in both their opaque and transparent orthographies.** Dyslexic children did not exhibit any phonemic awareness problems in French or in Spanish, but showed **poor VA Span skills** compared to their control peers. VA span skills correlated with reading accuracy and speed measures in both Spanish and French, whereas **phonemic awareness correlated with reading accuracy only**. Overall, the present results show that the **VA Span is tightly related to reading speed regardless of orthographic transparency**, and that it accounts for differences in reading performance between good and poor readers across languages. The present findings further suggest that VA Span skills may play a particularly important role in building-up specific word knowledge which is critical for lexical reading strategies.

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## Research report

## Dyslexia in a French–Spanish bilingual girl: Behavioural and neural modulations following a visual attention span intervention



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### A B S T R A C T

We report the case study of a French–Spanish bilingual dyslexic girl, MP, who exhibited a severe visual attention (VA) span deficit but preserved phonological skills. Behavioural investigation showed a severe reduction of reading speed for both single items (words and pseudo-words) and texts in the two languages. However, performance was more affected in French than in Spanish. MP was administered an intensive VA span intervention programme. Pre–post intervention comparison revealed a positive effect of intervention on her VA span abilities. The intervention further transferred to reading. It primarily resulted in faster identification of the regular and irregular words in French. The effect of intervention was rather modest in Spanish that only showed a tendency for faster word reading. Text reading improved in the two languages with a stronger effect in French but pseudo-word reading did not improve in either French or Spanish. The overall results suggest that VA span intervention may primarily enhance the fast global reading procedure, with stronger effects in French than in Spanish. MP underwent two fMRI sessions to explore her brain activations before and after VA span training. Prior to the intervention, fMRI assessment showed that the striate and extrastriate visual cortices alone were activated but none of the regions typically involved in VA span. Post-training fMRI revealed increased activation of the superior and inferior parietal cortices. Comparison of pre- and post-training activations revealed significant activation increase of the superior parietal lobes (BA 7) bilaterally. Thus, we show that a specific VA span intervention not only modulates reading performance but further results in increased brain activity within the superior parietal lobes known to housing VA span abilities. Furthermore, positive effects of VA span intervention on reading suggest that the ability to process multiple visual elements simultaneously is one cause of successful reading acquisition.

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## ■ Neurocognitive Development and Predictors of L1 and L2 Literacy Skills in Dyslexia: A Longitudinal Study of Children 5–11 Years Old

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The aim of this study was to find valid neurocognitive precursors of literacy development in first language (L1, Norwegian) and second language (L2, English) in a group of children during their Pre-literacy, Emergent Literacy and Literacy stages, by comparing children with dyslexia and a typical group. Children who were 5 years old at project start were followed until the age of 11, when dyslexia was identified and data could be analysed in retrospect.

The children's neurocognitive pattern changed both by literacy stage and domain. **Visuo-spatial recall and RAN appeared as early precursors of L1 literacy, while phonological awareness appeared as early precursor of L2 English.** Verbal long term memory was associated with both L1 and L2 skills in the Literacy stage. Significant group differences seen in the Pre-literacy and Emergent literacy stages decreased in the Literacy stage.

The developmental variations by stage and domain may explain some of the inconsistencies seen in dyslexia research. Early identification and training are essential to avoid academic failure, and our data show that visuo-spatial memory and RAN could be suitable early markers in **transparent orthographies like Norwegian.** Phonological awareness was here seen as an early precursor of L2 English, but not of L1 Norwegian. © 2015 The Authors. *Dyslexia* published by John Wiley & Sons Ltd.



ELSEVIER

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COGNITION

### A case study of an English-Japanese bilingual with monolingual dyslexia

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#### Abstract

We report the case of AS, a 16 year-old English/Japanese bilingual boy, whose reading/writing difficulties are confined to English only. AS was born in Japan to a highly literate Australian father and English mother, and goes to a Japanese selective senior high school in Japan. His spoken language at home is English. AS's reading in logographic Japanese Kanji and syllabic Kana is equivalent to that of Japanese undergraduates or graduates. In contrast, his performance in various reading and writing tests in English as well as tasks involving phonological processing was very poor, even when compared to his Japanese contemporaries. Yet he has no problem with letter names or letter sounds, and his phoneme categorisation is well within the normal range of English native speakers. In order to account for our data that show a clear dissociation between AS's ability to read English and Japanese, we put forward the 'hypothesis of granularity and transparency'. It is postulated that any language where orthography-to-phonology mapping is transparent, or even opaque, or any language whose orthographic unit representing sound is coarse (i.e. at a whole character or word level) should not produce a high incidence of developmental phonological dyslexia. © 1999 Elsevier Science B.V. All rights reserved.

# Second Language Learning Difficulties in Chinese Children With Dyslexia: What Are the Reading-Related Cognitive Skills That Contribute to English and Chinese Word Reading?

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SAGE

Kevin Kien Hoa Chung<sup>1</sup> and Connie Suk-Han Ho<sup>2</sup>

## Abstract

This study examined the relations between reading-related cognitive skills and word reading development of Chinese children with dyslexia in their Chinese language (L1) and in English (L2). A total of 84 bilingual children—28 with dyslexia, 28 chronological age (CA) controls, and 28 reading-level (RL) controls—participated and were administered measures of word reading, rapid naming, visual-orthographic skills, and phonological and morphological awareness in both L1 and L2. Children with dyslexia showed weaker performance than CA controls in both languages and had more difficulties in phonological awareness in English but not in Chinese. In addition, reading-related cognitive skills in Chinese contributed significantly to the ability to read English words, suggesting cross-linguistic transfer from L1 to L2. Results found evidence for different phonological units of awareness related to the characteristics of the different languages being learned, supporting the psycholinguistic grain size and linguistic coding differences hypotheses.

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## English Word Reading Difficulties and Orthographic Processing Weaknesses in Chinese–English Bilingual Adolescents With Dyslexia

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Is dyslexia in Chinese for Chinese–English bilinguals associated with difficulties in reading English, given differences in L1 and L2 orthographies? Among 11 Hong Kong Chinese adolescents with dyslexia, who were diagnosed by professional psychologists using the diagnostic criteria set out in a standardized test, and 14 adolescents without dyslexia, Chinese word reading was tested at the age of 9 years; English word reading was tested across ages 9, 10, 11, and 12 years; and English orthographic processing was tested in a lexical decision task at the age of 13 years. The lexical decision task required participants to judge whether or not stimuli appeared to “look like” a possible real word in English across 3 conditions (real words, look-like words that were orthographically possible in English, and nonwords that violated orthographic rules of English). English word reading differed significantly between the 2 groups in 2 of the 4 years. Both groups found it easier to identify nonwords that violated English orthographic rules than those that did not. However, compared with peers without dyslexia, adolescents with dyslexia had more difficulties with English orthographic rules in accuracy but not reaction time, suggesting that children with dyslexia may manifest specific difficulties in English orthographic processing.  
**Key words:** *biliteracy development, Chinese dyslexia, English orthographic processing*

## Developmental dyslexia in bilingual-biliterates

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**ABSTRACT.** Dyslexia in bilinguals has been of interest for the implications it holds for the understanding of the brain and language. Several types of dissociations have been reported in the acquired dyslexias among adult bilinguals. However, reports of differing types and difficulties in the acquisition of two or more scripts among developmental dyslexics are relatively rare. This paper describes two such cases of developmental dyslexia in whom learning to read English as compared to Kannada and Hindi (two Indian scripts) were differentially affected. The implications of these findings for the understanding of reading acquisition and models of reading are discussed.

*Reading and Writing: An Interdisciplinary Journal* 4: 297–306, 1992.

Applied Psycholinguistics 28 (2007), 47–68  
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## Reading strategies of bilingual normally progressing and dyslexic readers in Hindi and English

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### ABSTRACT

This study examined the reading accuracy of dyslexic readers in comparison to chronological age-matched normally progressing readers in Hindi and English using word reading tasks, matched for spoken frequency of usage, age of acquisition, imageability, and word length. Both groups showed significantly greater reading accuracy in Hindi than in English. For normally progressing readers, spoken frequency of usage had no significant effect in Hindi and a significant effect in English, whereas for dyslexic readers it had a significant effect in both languages. In Hindi, normally progressing readers produced only nonword errors; dyslexic readers produced a far greater percentage of nonword than word errors. In English, normally progressing readers produced greater percentage of word than nonword errors, whereas dyslexic readers produced greater percentage of nonword than word errors. Results are discussed in terms of orthographic transparency, sublexical, and lexical reading strategies.

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## Profiling dyslexia in bilingual adolescents

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### Abstract

This article addresses the issue of whether difficulties with reading and writing in a second language learner stem from developmental dyslexia or from issues associated with second language acquisition. In line with a phonological explanatory model of dyslexia, phonological processing and reading (decoding at both word and text levels) were tested, using data from 10 Spanish–Swedish speaking adolescents whose teachers had identified them as possibly having dyslectic difficulties, and a matched comparison group of 10 Spanish–Swedish speaking adolescents with no reading difficulties. Unlike previous studies, this analysis takes into account results from both languages and uses a matched bilingual comparison group as the norm. Based on these results, a *bilingual dyslexia continuum* is proposed as an analytical tool to be used for the assessment of developmental dyslexia from a bilingual perspective. The systematized continuum offers various degrees of difficulty—from high indications of dyslexia to no indications of dyslexia—and the positioning along this continuum by the target group participants of this study provides examples of both over- and under-identification of dyslexia. Overall, a greater number of participants in the target group were under-identified rather than over-identified by the schools. An important insight of this study is that the positioning of bilingual participants on the continuum would have been different if the analysis had taken only one of the two languages into account. Furthermore, possible effects from differences between Spanish and Swedish orthographies and syllable structure were observed, as, in general, the participants read more accurately in Spanish. The present data also suggest that decoding processing might vary more in second-language learners with dyslexia compared to monolingual individuals with dyslexia.

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## Difficulties of Polish students with dyslexia in reading and spelling in English as L2



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### ABSTRACT

The aim of our study was to describe specific difficulties in reading and spelling in English (L2) of Polish (L1) students with dyslexia, as compared with Polish students without dyslexia. We found that Polish students with dyslexia, as compared with the controls, were less accurate and fluent in reading actual words and nonwords in L2. They made more phonological and orthographic errors in single L2 word spelling task; phonological spelling errors were more frequent than orthographic errors in both groups. The criterion group had more limited L2 vocabulary, regardless of the word difficulty. We also observed a positive correlation between the speed and accuracy of reading, and spelling in the two languages, though this relationship was more conspicuous in the control group. Our results corroborate Linguistic Coding Differences Hypothesis. Acquiring a second language poses substantial problems for the dyslexic students, who struggle with phonological processing deficits in L1 and L2.

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**English:** non-transparent deep orthography, less transparent than  
**Polish:** a semi-transparent orthography (Miles, 2000)