

Introduction

This special issue of **PSYCHOLOGY**, the Journal of the Hellenic Psychological Society, is devoted to *Reading, Spelling and Dyslexia in Europe*. A few years ago the idea for a special edition on the cognitive analysis of literacy and dyslexia might have not been considered at all, due to the fact that the issues of reading, spelling and dyslexia, although introduced almost 20 years ago into Greek psychology, have only recently become an area of interest for an increasing number of researchers in Greece, while the teaching of these subjects is not yet on the syllabuses of all Psychology and Education Departments in Greek Universities. However, the increasing educational need for more effective teaching of learning to read and spell Greek and the demand for the development of diagnostic and treatment methods for specific learning difficulties in literacy acquisition (like dyslexia), make it necessary to focus on these issues. From this perspective, therefore, this special issue of **PSYCHOLOGY** could be regarded as providing impetus for further interest in reading, spelling and dyslexia in Greek psychology and education.

The cognitive and neuropsychological analysis of reading, spelling and the specific difficulties related to the learning of these skills (like dyslexia) is one of those areas of psychological research which, internationally, developed rapidly in the last quarter of the 20th century. This was partly due to the detailed studying of cognitive processes underlying these skills and the formulation of theoretical frameworks on the processing of information during reading and spelling. However, since most of the research was conducted on the English language, it was unavoidable that the theoretical models which were developed reflected the linguistic nature of the English spelling system. Only comparatively recently has evidence accumulated from other spelling systems indicating that the processing of written language is affected by the linguistic nature of each particular spelling system. This made the studying of reading, spelling and the specific difficulties (like dyslexia) related to the acquisition of those skills in each language absolutely essential.

In view of the above, the merit of this special issue lies in the fact that it presents research data on reading, spelling or dyslexia from eight different European languages, that is, from English, Swedish, German, Finnish, French, Norwegian, Spanish and Greek. This is exceptionally rare in international journals of psychology and unique in the present journal. The idea for such an internationally based special issue followed an invitation from the editor of **PSYCHOLOGY**, to undertake the compilation of an issue devoted to reading and dyslexia. By coincidence, this invitation came during a period of unique and fruitful co-operation among the members of a European research group of about 25 European researchers in this field, from 17 countries, under the COST A8 European framework program entitled "Learning Disorders as a Barrier to Human Development". As members of this group we have had a unique opportunity to co-operate, to conduct cross-linguistic research on reading, spelling and dyslexia and to design new long-term cross-linguistic projects which are already underway. One of the main outcomes of this co-operation was the understanding that the cognitive processes involved in reading, spelling and literacy problems (like dyslexia) should not be interpreted on the basis of models developed from research conducted in one language (mainly in the English language) but that they should be studied in every language. This is because the writing systems differ in the degree of transparency in the representation of phonology. By bringing together, therefore, in this special issue, research conducted in eight European languages, which differ in graphemic-

phonemic transparency, we think that we provide the reader with an opportunity to appreciate the major role of linguistic nature in the cognitive processes involved in reading, spelling and dyslexia.

Consequently, as guest editor of this special issue of **PSYCHOLOGY**, I would like to thank the COST A8 network members and distinguished colleagues who accepted my invitation to contribute to this special issue. They are (in the order of article presentation) Professor Philip Seymour (Department of Psychology, University of Dundee, Britain), Professor Åke Olofsson (Department of Psychology, University of Umea, Sweden), Professor Wolfgang Schneider (Department of Psychology, University of Würzburg, Germany), Professor Pekka Niemi (Department of Psychology, University of Turku, Finland), Professor Jean Emile Gombert (Department of Psychology, University of Rennes, France), Professor Finn Egil Tonnessen (Center for Reading Research, Stavanger, Norway) and Professor Francisco Martos (Faculty of Psychology, University of Granada, Spain). They are very well known academic researchers who, for many years now, have been making considerable contributions to European and international psychological literature on reading, spelling and dyslexia and for this reason their work has been well acknowledged by researchers in this field. Therefore, their contributions to the present issue (either individual, or in co-operation with members of their research team) apart from promoting the subjects under consideration, provide an opportunity for this journal to take a step towards the international scientific scene. So, **PSYCHOLOGY**, which started as a journal of psychology for Greece, which became well established through the hard work of its first editor Professor A. Demetriou, is under Professor A. Efklides' painstaking current directorship steadily improving in quality, raising its standards and stepping on to the international scene.

The common feature of the articles included in this edition is that they deal with the issues of reading, spelling or dyslexia. From the total of eight articles, one presents a theoretical account of reading, one is a review article supported by research data, and the rest report empirical research on those issues. The order of presentation follows the lines "from theoretical accounts to reporting of research data" and "from learning to read and spell (and the methods used to help the children in their learning) to reading and spelling difficulties encountered by dyslexic children".

Seymour and Duncan's article presents an outline account of learning to read English by elaborating on Seymour's insightful "dual foundation model" of reading. Based on many years of research carried out by the literacy research group at the University of Dundee, the dual foundation model constitutes an answer to the developmental stage models of learning to read. In order to describe reading acquisition, the model identifies two major cognitive components: Linguistic Awareness (a system in which the segmental structure of speech is represented) and Orthographic Framework (a system in which knowledge of the spelling structure of a language is represented in an organised format). In addition, the model identifies two Foundation processes, a Logographic process (involved in the identification and storage of spellings of whole words) and an Alphabetic process (involved in the sequential decoding and pronunciation of letter sequences). Then the model is presented in four phases of development and each phase is discussed by providing evidence on acquisition of literacy in English and the possible contrast with literacy acquisition in shallower orthographies.

Olofsson reports on a longitudinal study which evaluates Swedish preschool children's reading-related development. The study focuses on the ages of three to five, that is, the period that precedes school and the onset of formal reading instruction. During those two years the children were assessed every six months through a number of tasks referring to

concepts about print, writing and phonological awareness. The recorded data provide a detailed description of the children's individual development in the concepts of reading, writing and language awareness. The results indicate that preschool children show clear signs of meta-linguistic and reading-related knowledge. This demonstrates that reading related development starts early in the preschool years and that it does not come suddenly at school starting age. In addition, the results show that there is a developmental spurt in phonemic awareness after the age of four.

Roth and Schneider present a longitudinal training study, conducted in German kindergarten, in order to explore the efficiency of programs that aim at facilitating literacy acquisition and at helping in preventing the development of reading and spelling problems in at-risk children. Two are the main goals of their study: First to test the assumption that training programs focusing on children's phonological awareness and letter knowledge should help these children by preventing the development of difficulties in subsequent reading and spelling acquisition at primary school. Second, to evaluate the "phonological linkage hypothesis" according to which an intervention program that combines training in phonological awareness with training in letter-sound correspondences can have the best long-term effects on literacy acquisition. The authors test the efficiency of these three training programs by using three experimental groups of children at risk for dyslexia and one control group of "normal" kindergarten children. On the basis of the results they come to two main conclusions: First, that all three intervention training programs contribute to decreasing children's risk of becoming dyslexic at school. Second, the intervention program that combines phonological awareness and letter-sound training is the most effective way to improve young children-at-risk's literacy acquisition.

Niemi, Poskiparta, and Vauras investigate the long-term persistence of phonological awareness training in Finnish children. In a longitudinal study they examine the benefits gained by children-at-risk in the autumn term of grade one, by testing those children's reading performance (assessed by tasks on word recognition, lexical decision, story-reading speed and accuracy, reading comprehension and reading habits) in grades two and three. The results show that the children trained in phonological awareness maintain their progress approximately up to the end of the second grade. By the end of grade three, the differences between intervention and control groups disappear. Interpreting these findings the authors underline that it is not the value of the phonological awareness intervention training programs in assisting reading acquisition of children-at-risk which is questioned, but rather the limitations and transferability of phonological training that has to be closely studied.

Gombert and Peereman present a training study in which French children were trained in artificial alphabet. By conducting a series of experiments they aim at confirming the use of analogy processes in the onset of reading acquisition and investigating whether the rime unit has a specific status in the analogy processes for French. In order to control for the knowledge the children might have with alphabetical material, the authors employ an artificial written language. This allows them to examine the ease in learning print-to-sound correspondences based on -VC, CV-, or grapheme units independently of the respective frequencies in the French orthography. In the first experiment they compare the natural and artificial written languages in prereaders and also compare prereaders and beginning readers using only artificial characters. According to the results the prereaders use analogy while first grade children decipher. In prereaders the expected advantage of rime analogy over analogies on CV-units is only observed with the natural alphabet. In the second experiment they use a concatenated artificial alphabet in which rime, CV- or C-C is coded by

a single character in order to force the reader to encode correspondences on multi-phonemic units. The results do not show any reliable effects of conditions and age when single characters encode multi-phonemic units. The authors interpret it as showing that the children are disturbed when they encounter a script system where each phoneme does not correspond to at least one character.

Tonnessen and Skaug's article presents a study, the aim of which is to find out whether Norwegian children with phonological difficulties exhibit more auditory and linguistic problems than ordinary children. For this they form an experimental group of 19 children with phonological difficulties and a control group of 19 ordinary children. The children of the two groups are matched in gender and grade level. The children's auditory and linguistic abilities are assessed by audiometric tests and by seven subtests of the ITPA. In all these tests the children with phonological difficulties score significantly lower than the control children. The authors attribute these results to inappropriate use of attention which seems to underlie auditory, phonological and general linguistic problems.

Martos' article is a comprehensive review of dyslexia from a particular perspective. From the beginning the author states that the article will not examine dyslexia as a difficulty related to linguistic and phonological factors (which is supported by many investigators) but that it will be a review of the different hypotheses that have related or attributed dyslexia to deficits in visual perception. Then he presents and analyses five different hypotheses that have been reported so far and have etiologically linked dyslexia with various aspects of dysfunctioning visual perception. Each of these hypotheses attributes dyslexia to one of the following factors: lack of eye dominance, problems in parafoveal vision, deficit in oculomotor control, deficits in early stages of visual processing and dysfunctions of the magnocellular pathway. The author presents his own research data with Spanish readers and critically evaluates two of the above hypotheses: the oculomotor control deficit hypothesis (that is, the eye movements deficit hypothesis) and the early visual processing deficit hypothesis. In concluding his review the author accepts that there is evidence supporting the link between perceptual dysfunction and dyslexia but an explanation is needed on how this deficit affects specifically the reading skill and not other activities of the dyslexics.

Finally, Porpodas examines the cognitive strategies employed in reading and spelling by first grade Greek children, who are either normal or low achievers in literacy development, and relates it to the "developmental stage models" and the "dual foundation model" of literacy. The participants are tested in word reading and spelling after six months of reading and spelling instruction. Their performance is assessed on the basis of reading time (which is divided into "recognition" and "pronunciation" time), accuracy level and error types in reading and spelling. The main conclusions drawn from the findings are: first, that children, taking advantage of the consistency of the Greek orthographic system, regardless of their literacy development level, do not use a logographic process in reading words but instead they employ a phonological recoding process in reading any type of Greek word; second, the children's reading development seems to have reached the morphographic level; and third, in word spelling the children use a process which involves deriving the orthographic form of a word on the basis of sound-spelling correspondence knowledge.

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