The Literacy Crisis: What we can learn from languages throughout the world to solve this problem.

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Languages of the World & Our Deep Writing System

Languages throughout the world have writing systems that vary from highly regular and transparent to highly irregular and deep. Finland has an extremely regular and transparent writing system making it very easy to learn to read. The German writing system is considered semi-transparent, making it somewhat harder to learn to read. The English writing system, however, is by far the hardest, being the most highly irregular and deepest in form, making it the hardest language to learn to read and master (HO2).

The English language has one of the deepest, most irregular writing systems in the world. One of the clearest reasons for this is that it encompasses a blend of many languages, as more than half of its words are of foreign origin (HO32). As well, it has a very complex syllabic (syllable) structure (HO27). And, per one study alone, there are 561 different ways of spelling 41 English phonemes (the individual units of sounds within words) (HO2).

Examples of irregularities within the English language abound and are often joked about. Many words with morphological relatedness have different pronunciations. Examples include heal-health, sign-signature, and nation-nationality (HO31). There are different pronunciations for the same vowel graphemes, such as hear, bear, heard and beard (A2O). The letter A, alone, makes at least five different sounds, such as in apple, safe, acorn, alive, and wash (A16).

Numerous studies have been conducted comparing writing systems across languages with economic, cultural and age of onset of formal education taken into account. These studies consistently show that the deeper and more complex the writing system, the harder it is to develop literacy skills. English being the deepest and most complex clearly deviates from most other languages (HO31, HO32, HO2, HO6, HO27). One study shows that English children need twice as much time as most other languages to establish a most minimal and basic level of reading (HO27). As well, the English writing system is shown to exaggerate the effects of dyslexia; thus, the reader suffers more severe impairments (A20, HO27). Another study shows English requiring three years to master reading verses a consistent language that typically requires one year (HO28, HO31). Another estimates the rate of foundation literacy acquisition is slower by a rate of 2.5 to 1 in English than in most European writing systems (HO32).

It makes sense that writing systems with reliable word patterns are learned more quickly than inconsistent ones (HO3). As humans, we search for regularities and patterns to understand our world (HO43). Clearly, it must be easier to engage with one's environment when the writing system is transparent and reliably consistent. Transparent writing systems allow for self-teaching (HO32); our

writing system does not allow for the same flexibility when a struggling or novice reader encounters an unknown word (HO43). Certainly, we can master the English writing system with the proper curriculum, but clearly, there is a price in time and anxiety.

Reading Speed, Syllable Segmentation & Working Memory

Interestingly, in more transparent writing systems, the hallmark of dyslexia is generally slow reading speed, even in semi-transparent languages. Dyslexia in English, however, is marked by both slow reading speed and problems with accuracy (HO4, HO31, HO32, A20).

Regular, transparent languages provide simple one-syllable words that are combined to create fairly simple multisyllable words. Irregular, deep languages, such as English, provide complex, irregular one-syllable words that are then combined to create more complex multisyllable words. Thus, the framework of the English language does not support reading fluency, particularly for dyslexics and struggling readers (HO27), as the complexity of the English language necessitates additional strategies and sometimes complex and error prone strategies to break down words (HO31).

Many dyslexic individuals, also, have problems with working memory (B1). Working memory allows one to efficiently manage information. One cross linguistic study hypothesized that the complexity of the English language exasperates the working memory of children with dyslexia making it more difficult to tackle multisyllable words (A20). Another study showed that English dyslexic children had marked accuracy problems with multisyllable words compared to other test subjects (HO31). Notably, because Finnish words are quite long, early reading materials explicitly segment the syllables within words to specifically alleviate the burdens put on the young child's working memory (HO4).

Phonemic Awareness & Automatic Naming

Phonological awareness is the ability to hear sounds within words. Low phonological awareness in children is less of a concern in transparent languages, as reading instruction in highly predictable languages remediates this issue (HO4, HO31, HO32, A20). In other words, the predictability of the language promotes phonological awareness. In fact, phonological awareness skills hit close to ceiling within twelve months of reading instruction in the most transparent languages, such as Finnish, Greek, Turkish, and Italian (HO4, HO32). In English, however, low phonological awareness in young children is a clear predictor of later reading difficulty, which takes years to remediate.

In transparent and semi-transparent languages, the primary indicator of future reading difficulty is naming speed deficits. Whereby, these children are significantly slower in naming letters and digits. Most dyslexic individuals have this deficit, leading many to believe this to be the primary predictor of reading difficulty across all languages (A22, A23). The complexity of the English language would clearly exasperate this deficit.

Current U.S. Reading Statistics & OECD Survey

According to Diplomas Count 2010, only 68.8% of the class of 2007 graduated in the U.S.; the major reason suggests literacy related issues (A4). According to the U.S. Department of Education 2007

National Assessment of Educational Progress (NAEP), fewer than 1/3 of 8th graders read and write at proficient level (A1). "According to a major 2007 report from the Educational Testing Service, current labor market trends, demographics, and student data achievement data are combining to create a perfect storm that could inflict lasting damage upon the Nation's economy and upon its social fabric (A1)."

According to a 2013 Organization for Economic Cooperation and Development Survey, "the U.S. ranked 16th out of 23 countries in literacy proficiency, 21st in numeracy proficiency, and 14th in problem solving in technology-rich environments (A3)". Per the report, "diversity cannot explain the lack of progress over time in skills and educational attainment which the U.S. displays relative to other countries, nor can it explain the two-thirds of the low-skilled population born in the U.S (A30)."

The report suggests structural weaknesses in the education, training and skills systems of the U.S. with policy recommendations that tackle basic skills improvement across the board. The report cites Korea and Finland, both high performing countries, as having tackled weak basic skills very effectively suggesting that (1) basic skills can be addressed with strong and effective schooling and (2) it should be possible to address adult skills similarly. The report stresses the speed at which the skills of comparable (and sometimes poorer) countries in the developed world are now outpacing the U.S. as being a matter of deep concern (A30).

The report states, "By international standards, despite a relatively high level of educational qualifications, the basic skills of adults in the United States are relatively weak. Unlike many other countries, there has been little sign of improvement in recent decades. The skills of young people are little different from those of their parents. 36 million adult Americans are living with the consequences of low literacy skills. In addition, the results at the top end of the ability range are not more impressive than those of other countries…Unlike many other countries, the U.S. has not succeeded in improving the education (and therefore skills) level of younger cohorts, as compared with older cohorts. This has allowed, and will continue to allow, other countries to gradually improve the basic skills of their adult populations while those in the U.S. remain largely unchanged (A30)."

However, nowhere in this report is language depth noted. Yet, the two countries touted for their high scores, Korea and Finland, are both known for their extremely transparent writing systems, thus alleviating the extreme burden of tedious reading instruction to a very minimal time frame compared to that of the U.S., thus, alleviating teaching time for other critical subjects.

The national language of Korea, known as Hangul, is known as one of the easiest alphabets to learn and is one of the most well designed, scientific writing systems with an extremely regular and predictable structure. Thus, Korea is known to have a nearly 100% literacy rate (A31, A32, A33).

Finland, as noted earlier, is known for its extremely transparent and predictable writing system (HO2), such that children with low phonological awareness scores are very accurate readers after six months of instruction (HO4). Predictably, this allows more time for other critical areas of instruction and flexibility throughout the school day. Finnish elementary schools provides 75 minutes a day in recess, and provides classes in art, music, cooking, carpentry, metalwork and textiles, which provide further learning experiences in math and science (A36).

Sadly, the U.S. elementary school provides an average of 27 minutes in recess (A36), and its instructional hours are primarily dedicated to reading tasks. On a weekly basis, the average grade 1 through 4

classroom provides 11.6 hours of English, 5.4 hours of math, 2.5 hours of social studies, and 2.3 hours of science instruction (A34).

Reading Disabilities and Mental Health

Per the U.S. National Data on Reading & Learning Disabilities, 15-20% of our population has a language based learning disability, dyslexia probably being the most common (A16). Dyslexic children and adolescents have lower self-esteem and feelings of self-worth; they also have more symptoms of depression and ADHD (A12). Dyslexic students in higher education have much higher levels of anxiety in both academics and other social settings (A13).

In contrast, children who have the neurological difference that causes dyslexia is under reported in languages that have transparent languages, such as Italian and Spanish, as their disability is far less profound. Yet, these same children are often found to be dyslexic only once they attempt to learn to read and write in English (A16, A42).

Explicit, Systematic Reading Instruction & Word Patterns

The National Reading Panel recommends reading programs that teach phonics both systematically and explicitly (B2). As Dr. Miriam Cherkes-Julkowski points out in her book *FIND THE VAWOL, READ THE RIME, LEARN TO READ*, "to figure out new words easily and efficiently….you need to be attuned to where to find familiar and informative patterns." She points out that the most basic patterns found in words is within the onset and rime, as the rime pattern is phonologically more accessible to both beginning and adult readers. She specifically emphasizes the rime, as in: AG in rAG, AGE in rAGE, OUGHT in bOUGHT. This insight, once explicitly and systematically taught, enables the reader to recognize syllables in multisyllable words, allowing for fluidity in future reading. This type of instruction alleviates anxiety in the learner, as it reduces the ambiguity of our very deep and complex writing system (B1).

Decodable texts are small books utilized by students in explicit, systematic reading programs. These books contain words with corresponding patterns that the student has mastered, giving him or her practice in decoding strategy and fluency. As the student masters more patterns, the books become more expansive and difficult (A26, B1, B2).

There are two studies that strongly correlate developmental dyslexia with reduced sensitivity to print regularities. One study shows less activation in the part of the brain called the Visual Word Form Area that affects various visual and nonvisual information fields (A24, A25). The other study finds a generalized procedural learning impairment, again, affecting other areas outside the print domain (A41). Regardless of the terminology, however, both studies validate the importance of explicitly teaching regularities and patterns within our print system. As Dr. Miriam Cherkes-Julkowski indicates, "for reading, it's important to figure out new words easily and efficiently. To do that, you need to be attuned to where to find familiar and informative patterns (B1)."

Reading Practice, Fluency & Comprehension

Even with the best instruction in elementary school, however, many kids need continued instruction, practice, and monitoring in the later years (A4). Children that struggle with reading in the U.S. tend to get a great deal of support in the early grades with overall positive results, but these same children tend to fall off without continual reading practice (HO41). Continual exposure to print and independent reading is critical for continual fluency development (HO43, A2). Unfortunately, older students in middle school and high school that lack reading fluency tend to find little support (A2), and if they do, research has shown very little impact (A4). Yet, we know the more students of all ages read, their reading skill and vocabulary will grow (A6, B2).

It's hard to comprehend text when reading in a halting fashion; thus, the ability to read in an easy fluent fashion is critical to understanding what you're reading (A5). Yet, cognitive energy used to decode words can sometimes be depleted in order for the reader to comprehend text (A2). Reading fluency is important for (1) comprehension, (2) motivation to read (as otherwise laborious and not fun), (3) being able to keep up with the volume of work for further academics, and (4) exposure to further words to increase one's vocabulary (A10). The ability to analyze word structure and effortlessly segment syllables within words allows the reader to become fluent; this develops over a long period of time, however (A10, A18).

Spelling Reform

The English writing system has been debated throughout the centuries. In fact, there have been several well-known campaigners of spelling reform throughout history, including the likes of Noah Webster, Theodore Roosevelt, Charles Darwin, Benjamin Franklin, and Samuel Johnson (A14, A27).

Masha Bell of the U.K. has written several books on English spelling. An avid advocate of spelling reform and a former English language teacher herself, she is also fluent in Lithuanian and Russian, and has studied German, French and Spanish. Her experiences has thoroughly convinced her that the irregularities of English spelling makes learning to read extremely cumbersome and time consuming beyond the scope of other languages, invariably leading to poor reading and writing outcomes. Yet, the public at large, including educators, who are notoriously blamed for poor reading outcomes, have little awareness of this issue (A28).

From an evolutionary perspective, reading is a fairly new phenomena. Thus, our brains are not naturally wired to learn to read (A23). Science shows the human brain has not evolved a dedicated mechanism for reading (A25). In turn, we must remember that our writing systems were developed by humans and passed on to be learned by each generation. Bottom line, what man-made language system we inherit cannot be taken lightly.

The awareness that complex, deep language systems cause problems for the learner is not new (HO32). There is history of spelling reform throughout various languages across the world. Of course, this is a controversial topic, as countries deeply identify with their language of origin. Reforming the English language is highly unlikely to say the least; the undertaking would be a massive feat, as our writing system is deeply embedded throughout the world. The question is – can we make the English language more accessible without actually reforming the writing system? Is there a creative solution to this problem? And, why is this not being discussed among our politicians and mainstream media when

education is clearly a national concern? Obviously, they simply must not be aware of this issue. Yet, it needs to be part of the discussion, as we are the most creative and entrepreneurial country in the world. We can solve this problem.

A Creative Solution: Noah **Text**

As indicated above, predictable written languages have clear syllable breaks, and predictable vowel patterns. The importance of this is obvious. When we don't know a word, those are the first things we look for. Thus, to "simulate" a predictable language, we must simply highlight these important factors. We highlight syllable breaks and accentuate long vowels, similar to an acute accent mark, which is used in many languages. We also highlight patterns (rimes) within one syllable words. We do all this while keeping the words intact. The result is this:

This is an example of the way words look in a higher level book modified in **No**ah **Text** (Syllables + Long vowels):

The **pro**nun**ci**a**tion** of **na**tion is **dif**fer**ent** from **na**tion**al,** as well as the words r**e**al and **re**al**i**ty, s**i**gn and **sig**na**ture.** This is **con**fu**s**i**ng** to new and **strug**gling **read**ers and to th**o**se that are **dys**lex**ic.** That's why **No**ah Text **high**l**i**ghts **crit**i**cal pat**terns. It's l**i**ke **giv**ing the **read**er a k**e**y to the **puz**zle!

This is an example of the way words look in a simple early reader modified in **No**ah **Text** (Rimes + Long Vowels):

Th**ese** sm**all** w**ords** t**each us** h**ow** t**o** r**ead** wh**en** ch**unks are in** b**old,** s**uch as** w**ould, could,** sh**ould, and** l**ight,** n**ight,** r**ight, and** f**ight!**

Noah **Text** comes in several versions to give educators and individuals optimum flexibility.

Early Readers – Noah Text (Rimes + Long Vowels)*
For maximum benefit.

Early Readers – Noah Text (Just Rimes)*
For slightly more skilled readers.

Chapter Books – Noah Text (Syllables + Long Vowels)
For maximum benefit.

Chapter Books – Noah Text (Just Syllables)
For slightly more skilled readers.

Chapter Books – Plain Text
For proficient readers.

Noah Text is currently endorsed by Educational Diagnostician and Consultant, Dr. Miriam Cherkes-Julkowski, which she outlines in a letter at the beginning of each book. As well, Noah Text falls within the National Reading Panel's guidelines of evidence-based reading instruction and can be used as an instructional scaffold.

*Note: The word "rime" is a linguistic term and refers to the pattern of letters starting with the vowel and going to the end of the syllable.

Noah **Text** is a creative way of tackling our literacy crisis and was developed with the following in mind:

The English writing system is highly inconsistent and extremely deep, requiring extensive reading instruction and practice.

The English writing system causes a further barrier to those born with dyslexia exasperating its effects.

We know the proper way to teach reading, with programs such that Dr. Miriam Cherkes-Julkowski endorses, ones that systematically teach word **patterns** making our language less ambiguous and phonologically more accessible. However, many kids tend to fall off without consistent reading practice and continuous exposure to print. Thus, reading higher level texts becomes a burdensome task.

Noah **Text** fills the gap – from instruction to fluency. It continues where instruction and decodable texts leaves off by continuing to guide the reader toward the most critical information within our print system – **patterns**.

According to the National Reading Panel, phonological awareness is crucial for reading development and onset/rime instruction, syllable segmentation, and individual vowel sound instruction are critical features of the NRP's recommendations. **No**ah **Text** highlights these critical features while keeping words intact and imbedding it into text.

Many languages clearly identify their long vowels with acute accent marks, such as Czech, Hungarian, Irish, and Slovak (A29). The Germans utilize umlaut signs to mark vowel changes (A20). **No**ah **Text** is utilizing this same technique without altering the current print system.

Noah **Text**, coupled with the right instruction, brings transparency and regularity to our complex writing system.

Noah **Text** allows the reader to tackle both multisyllable words and single syllable words with ease.

Noah **Text** promotes self-teaching by "simulating" a predictable writing system.

Noah **Text** allows the reader to read with comfort, eliminating anxiety, while promoting further independent reading experiences.

Noah **Text** alleviates the burden it puts on working memory, so that the reader has better comprehension.

Noah **Text** may be utilized by anyone that struggles with reading speed and fluency, whether they are new readers, struggling readers, those with reading disabilities and delays, or ESL students.

Noah **Text** can be used as a short-term tool or as a long-term tool, depending on the reader's comfort and skill level.

Noah **Text** is currently being offered under its own book series with the anticipation that it will be picked up by other authorized publishers, computer software companies, etc.

This information is brought to you by **No**ah **Text** (patent pending).

References

Articles, studies, etc.:

A1. Heller, Rafael, PhD. The Scope of the Adolescent Literacy Crisis. *AdLit.org*. http://www.adlit.org/adlit_101/scope_of_the_adolescent_literacy_crisis/

A2. Rasinski, Timothy V., Padak, Nancy D., McKeon, Christine A., Wilfong, Lori G., Friedauer, Julie A., Heim, Patricia. (2005, September). Is reading fluency a key for successful high school reading? *Journal of Adolescent & Adult Literacy,* 49:1.

A3. Rogers, Megan. (2013, October 8th). Troubling Stats on Adult Literacy. https://www.insidehighered.com/news/2013/10/08/us-adults-rank-below-average-global-survey-basic-education-skills

A4. Salinger, Terry. Addressing the "Crisis" in Adolescent Literacy. *American Institutes for Research.* Prepared for the U.S. Department of Education. https://www2.ed.gov/programs/slcp/finalcrisis.pdf

A5. Heller, Rafael, Ph.D. Fluency. *AdLit.org*. http://www.adlit.org/adlit_101/improving_literacy_instruction_in_your_school/fluency/

A6. Sedita, Joan. Sustained Silent Reading. *AdLit.org. http://www.adlit.org/ask-the-experts/21135/*

A10. Spear-Swirling, Louise. (2006, May). Preventing and Remediating Difficulties with Reading Fluency. *LD Online.* http://www.ldonline.org/spearswerling/Preventing_and_Remediating_Difficulties_with_Reading_Fluency

A12. Boetsch, Elizabeth A., Green, Phyllis A., Pennington, Bruce (University of Denver). (1996). Psychosocial correlates of dyslexia across the lifespan. *Developmental and Psychopathology*. Volume 8, Issue 03, Summer 1996, pp 539-562. Abstract: http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=4493944

A13. Carroll, J. M. and Iles, J. E. (2006). An assessment of anxiety levels in dyslexic students in higher education. *British Journal of Educational Psychology*. 76: 651–662. Abstract: http://onlinelibrary.wiley.com/doi/10.1348/000709905X66233/abstract%3bjsessionid=2CF356619751700F00E0838659D37493.f03t02?deniedAccessCustomisedMessage=&userIsAuthenticated=false

A14. G.L. | London. (2010, September 15th). English spelling reform. Wy can't we get it rite? *The Economist.* http://www.economist.com/blogs/johnson/2010/09/english_spelling_reform

A16. Dyslexia Statistics. *Learning Inside Out.com. http://www.learning-inside-out.com/dyslexia-statistics.html*

A18. O'Brien, Beth A., Wolf, Maryanne, Miller, Lynne T., Lovett, Maureen W., Morris, Robin. (2011, January 7th). Orthographic processing efficiency in developmental dyslexia: an investigation of age and treatment factors at the sublexical level. *The International Dyslexia Association, Ann. Of Dyslexia.* 61:111-135.

A20. Landerl, Karin, Wimmer, Heinz, Frith, Uta (Department of Psychology, University of Salzburg, Hellbrunnerstr. MRC Cognitive Development Unit, London, UK). The impact of orthographic consistency on dyslexia: A German-English comparison. *Cognition* 63 (1997) 315-334.

A22. Wolf, Maryanne (Tufts University), Greig Bowers, Patricia (University of Warloo). The Double-Deficit Hypothesis for the Developmental Dyslexias. *Journal of Educational Psychology*, 1999, Vol. 91, No. 3, 415-438.

A23. Norton, Elizabeth S., Worf, Maryanne. (Center for Reading and Language Research, Eliot-Pearson Department of Child Development, Tufts University). Rapid Automatized Naming (RAN) and Reading Fluency: Implications for Understanding and Treatment of Reading Disabilities. *Annu. Rev. Psychol.* 2012. 63:427-52.

A24. Project Coordinator: Prof. Dr. Gerd Schulte-Körne. Project coordinator organization: Ludwig-Maximilians University of Munich. Project acronym: *Neurodys*. Project title: Dyslexia Genes and Neurobiological Pathways. Specific Targeted Research Project. Sixth Framework Programme, LifeSciHealth Priority-5, Life Sciences, Genomics and Biotechnology for Health. Publishable final activity report. Period covered: from 01.07.2006 to 30.26.2009.

A25. Dehaene, Stanislas, Cohen, Laurent. The unique role of the visual word form area in reading. *Trends in Cognitive Sciences*, June 2011, Vol. 15, No. 6.

A26. Using Decodable Text. *The Reading Genie.* http://www.auburn.edu/academic/education/reading_genie/decodable.html

A27. Nordquist, Richard. The Case for Spelling Reform, by Benjamin Franklin. http://grammar.about.com/od/readingsonlanguage/a/The-Case-For-Spelling-Reform-By-Benjamin-Franklin.htm

A28. Bell, Masha. About me. http://www.englishspellingproblems.co.uk/about-me/

A30. Policy Recommendations for the United States. *OECD Skills Studies, 2013.* Chapter 3.

A31. Rahman, Hasinur. (2013, March 1st). Hangul. *ABCDEFRIDAYS, A typographic Inspiration Blog. Tyler School of Art of Temple University.* http://abcdefridays.blogspot.com/2013/03/hangul_1.html

A32. Ahn, Matthew Y. (Rev. 4-27-01). AhnMaTae Phonetic Hangul Keyboard. *AhnMaTae.*

A33. Quotes about Hangeul. *Friendly Korea, my friend's country.* http://korea.prkorea.com/wordpress/english/quote/quotes-about-hangeul/

A34. Stats in Brief. (2007, May). Changes in Instructional Hours in Four Subjects by Public School Teachers of Grades 1 Through 4. *National Center for Education Statistics, Institute of Education Sciences.*

A36. Abrams, Samuel E. (2011, January 28th). The Children Must Play, What the U.S. could learn from Finland about education. *New Republic.* https://newrepublic.com/article/82329/education-reform-finland-us

A41. Gabay, Yafit, Thiessen, Erik D., Holt, Lori L. Impaired Statistical Learning in Developmental Dyslexia. *Carnegie Mellon University, Dept. of Psychology.* 2015 Jun; 58(3):934-45. doi: 10.1044/2015_JSLHR-L-14-0324.

A42. Leutwyler, Kristin. (2001, March 16th). Scientists Explain Rates of Dyslexia. *Scientific American.* http://www.scientificamerican.com/article/scientists-explain-rates/

Books:

B1. Cherkes-Julkowski, Miriam, PhD. (2005). *Find the Vawol, Read the Rime, Learn to Read.* Kearney, NE: Morris Publishing.

B2. Shaywitz, Sally, M.D. (2005). *Overcoming Dyslexia.* New York: Vintage Books.

Articles obtained from *Handbook of Orthography and Literacy*, Edited by R. Malatesha Joshi (Texas A & M University) and P. G. Aaron (Indiana State University), Lawrence Erlbaum Associates, Publishers, Mahwah, NJ. (2006):

HO2. *Literacy Acquisition in Norwegian*, Bente E. Hagtvet (University of Oslo), Turid Helland (University of Bergen), Solveig-Alma H. Lyster (University of Oslo).

HO3. *Literacy Acquisition in Danish: A Deep Orthography in Cross-Linguistic Light*, Carsten Elbro (University of Copenhagen).

HO4. *Children's Language Development and Reading Acquistion in a Highly Transparent Orthography,* Heikki Lyytinen and Mikko Aro (University of Jyväskylä and Niilo Mäki Institute, Jyväskylä), Leena Holoppainen (University of Joensuu), Matti Leiwo, Paula Lyytinen, and Asko Tolvanen (University of Jyväskylä).

HO6. *Orthography and Literacy in French*, Jean-Pierre Jaffré (CNRS Villejuif, France, Université Blaise-Pascal CNRS, Paris), Michel Fayol (CNRS and Université Blaise-Pascal CNRS, Paris).

HO27. *Theoretical Framework for Beginning Reading in Different Orthographies*, Philip H. K. Seymour (University of Dundee).

HO28. *Orthography, Phonology and Reading Development: A Cross-Linguistic Perspective*, Usha Goswami, University of Cambridge.

HO31. *Reading Acquisition in Different Orthographies: Evidence from Direct Comparisons,* Karen Landeri (University of Salzburg).

HO32. *Learning to Read: The Effect of Orthography*, Mikko Aro (University of Jyväskylä and Niilo Mäki Institute).

HO41. *Genetics?? and Environmental Influences on the Development of Reading and Related Cognitive Skills*, Richard K. Olson (University of Colorado, Boulder).

HO43. *Foundations for Studying Basic Processes in Reading*, Richard L. Venezky (University of Delaware).