

SHORT-TERM SCIENTIFIC MISSION SCIENTIFIC REPORT

REFERENCE:

Short Term Scientific Mission, COST IS0703

Beneficiary: Dr Bruno DE CARA, University of Nice-Sophia Antipolis, France

Host: Prof. Usha GOSWAMI, University of Cambridge, UK

Period: from 1/03/2010 to 26/03/2010 Place: CAMBRIDGE (UK)

Reference code: COST-STSM-IS0703-05588

AMOUNT: 2300 EUR

• Purpose of the STSM:

The aim of this short-term scientific mission was to investigate the relationship between the emergence of phonological awareness and spelling. The degree to which segmental representation has taken place is assumed to determine how easily the child will become phonologically aware and will be able to read and spell words. In this project, we aimed at understanding the origin of difficulties to discriminate between phonemes. According to us, these difficulties are notably caused by 2 factors: 1^o sonority profile (or vowel-likeness) which governs the degree of affinity between segments within the rime; 2^o phonology-to-spelling inconsistency (irregular mappings from sounds to letters) which provides inconsistent graphemic feedback for representing segmental information at the phonemic level.

• Description of the work carried out during the STSM:

First, the grant holder gave a talk on recent findings about spelling development in French. These findings suggest a gradual process for word-specific orthographic representations in spelling and draw new directions for research with reference to internal (subject's mind) spelling consistency. Second, further analyses were carried out on previously collected data, by expanding upon a successful collaboration between the grant holder and Prof. Goswami at the host institution (see De Cara & Goswami, 2002; 2003). Special attention was given to the role played by the sonority profile of the syllable. According to a number of linguists, syllables that end with a sonorous phoneme such as a liquid or a nasal have a more ideal sonority profile than those that end with a less sonorous phoneme such as a stop (Clements, 1990).

• Description of the main results obtained:

From the Oddity task (Bryant & Bradley, 1983), pre-readers showed no differences between vowel and coda changes for rimes with high-sonorous codas ("fill, will, tell" not different from "seal, wheel, team") whereas vowels were better discriminated than codas for rimes with low-sonorous codas ("bit, sit, wet" better than "beat, meat, feed"). The argument was made that high-sonorous consonants (such as liquids) behave like vowels. Thus, vowels and consonants play distinct roles in rime processing but these roles seem to be quite similar in the case of liquids. However, when children have to pull out the components of the rime (e.g. for making phonological judgements about the final consonant or for spelling rimes), a maximal contrast in sonority, as in vowel + stop rimes, would help children to distinguish the final consonant from the vowel. Our results were exactly in line with this prediction as rimes with low-sonorous codas ("beat, meat, feed") were better segmented and spelled than rimes with high-sonorous ("seal, wheel, team"). Lastly, evidence was found for amplified effects of sonority profile for inconsistent rimes in a spelling task. These patterns have to be linked to the high degree of orthographic variability for rimes with high-sonorous codas compared to rimes with low-sonorous codas in both English and French.

• Future collaboration with host institution (if applicable):

Several questions need to be addressed from cross-linguistic studies in spelling development. In particular, examining whether the pattern of behavioural results reported here can be modelled computationally, e.g. with reference to internal (subject's mind) spelling consistency, would be of interest for future collaboration between the grant holder and Prof. Goswami at the host institution.

- Foreseen publications/articles resulting or to result from the STSM (if applicable):

We plan to submit a first paper based on the phonological awareness data we collected in pre-readers. In this paper, we will discuss the emergence of phonemic representations prior to the acquisition of literacy. Sonority profile provides a linguistic model for assigning specific roles to consonant and vowel in rime phonological awareness. Then, we will prepare a second paper based on the older children, comprising a follow-up study and a cross-linguistic spelling study. These data provide further evidence for the linguistic model, and also demonstrate the interactions between sonority profile and orthographic transparency.

- Confirmation by the host institution of the successful execution of the STSM:

I am happy to confirm that Dr De Cara was able to work intensively on the data described above while in Cambridge. He first prepared his new data from French for presentation to the research group, and we were able to discuss effects of internal consistency. He was then able to devise new analyses which clarified the effects of sonority in young children's phonological awareness judgements in data collected during our previous work together. These new analyses then enabled us to link the phonology data to the development of spelling. This work gives the basis for 2 research papers which can be submitted to psycholinguistic journals.



Usha Goswami
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- References:

- Bradley, L. & Bryant, P.E. (1983). Categorising sounds and learning to read: A causal connection. *Nature*, 310, 419-421.
- Clements, G. (1990). The role of the sonority cycle in core syllabification. In M. Beckman & J. Kingston (Eds.), *Papers in phonology I: Between the grammar and the physics of speech* (pp. 283-333). Cambridge: Cambridge University Press.
- De Cara, B., & Goswami, U. (2002). Statistical analysis of similarity relations among spoken words: The special status of rimes in English. *Behavior Research Methods, Instruments, & Computers*, 34, 416-423.
- De Cara, B., & Goswami, U. (2003). Phonological neighbourhood density: Effects in a rhyme awareness task in five-year-old children. *Journal of Child Language*, 30, 695-710.