Laboratoire Cognition, Langage & Développement





□ Academics

A Content, J Leybaert, Ph Mousty J Alegria, D Holender

Post-Docs

F Chetail (FNRS), F Gabriel (Wiener-Anspach@Cambridge), C Mussolin (FNRS), J Nys (ULB)

Doctorants

JF Asueta (Wiener-Anspach), C Bayard (ULB), V Drabs (FNRS), M Guillaume (FNRS), MT Huynh (ULB Cooperation)



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Main themes

Language and cognition at the interface of development and education

- Language and cognitive development in hearing disabilities
- Numerical cognition and arithmetic acquisition
- Visual and spoken word recognition, acquisition and learning disorders (perceptual organization and segmentation)



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Hearing disabilities and visual language



Multimodal integration

Role of visual cues in speech (McGurk effect)

In hearing and hearing-disabled populations

- Lipreading/audio integration in HD with cochlear implants
- Hands/Lips integration in cued speech
- Lips/speech/hands integration in HD with cochlear implants
 + cued speech
- Behavioral tasks, oculometry, ERPs and fMRI

Numerical Cognition



The "number sense"

Numerosity and Surface comparison : number interference in the surface comparison task

+ Ss stronger in arithmetic show larger number interference Nys & Content (2012) Judgement of discrete and continuous quantity in adults: Number counts! Quart. J. Exp. Psych.



Arithmetic score



Mental Arithmetics

Strategies in complex mental arithmetics (Nys & Content, Canadian J. Psych. 2011; Guillaume, Nys & Content, J. Cognit. Psych., 2012)

Relation between arithmetic strategies and number sense



Influence of instruction

Unschooled adults are less precise in nonsymbolic comparison and matching tasks

The "number sense" is influenced by educational experience

Nys, Ventura, Fernandes, Querido, Leybaert & Content Trends in Neuroscience & Education, in press



Influence of language

Dissociation of exact and approximate number abilities

SLI children impaired in exact but not approximate arithmetic.

Nys, Content & Leybaert J.Speech Hearing Res., in press



In progress

Effect of language/phonological training on arithmetic abilities acquisition in SLI/language-delayed children

JF Asueta, J Leybaert & A Content Fondation Wiener-Anspach

Collaboration avec D. Szucs & F. Gabriel Center for Neuroscience in Education, University of Cambridge Spoken and visual word recognition



Perceptual organization

Role of the syllable in spoken word recognition

- Dumay & Content, Searching for syllabic coding units in speech perception
 J. Mem. Lang., 2012
- Role of the syllable in word
 recognition and reading acquisition
 E Chetail





Perceptual organization

- Lexical competition effects
- The syllable frequency effect : longer RTs for words with a high frequency first syllable
- Influence of the frequency distribution of competitors
- Orthographic, not phonological effect





Chetail, Colin & Content, Neuropsychologia, 2012



Current work

Alphabets include two classes of signs : consonants and vowels □ The C/V distinction is a powerful perceptual organization principle. C/V organization drives perceptual encoding C/V organization influences word recognition How is it learned ?



Current work

 Syllable counting : Ss under- or overestimate the number of syllables as a function of nb of vowel groups (ex. chaos, piano)

Chetail & Content, J.Mem. Lang, 2012; Lang. Speech in press

- Length illusion : Ss under- or overestimate the physical length of letter strings, as a function of nb of vowel groups
- □ In progress
 - Se movements, ERPs
 - Cross-language studies
 - Development

LEARNING ARTIFICIAL WRITING SYSTEMS



Alphabet of pseudo-

Different mappings



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Alphabet of pseudo-

Different mappings



TESTING HOLISTIC/ANALYTIC WORD PROCESSING

The composite Same/Different task (Young et al., 1987; Hole, 1994; Le Grand et al., 2004)





Hsiao & Cottrell (2009)

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Hsiao & Cottrell (2009)

TESTING HOLISTIC/ANALYTIC WORD PROCESSING

The composite task: Adaptation for words (Wong et al. 2011)

	Congruent		Incongruent	
	study	test	study	test
same	crew	crew	crew	crop
different	crew	stop	crew	stew







	With J.	Hsiao
Chinese University	of Hong-	Kong)