



Phonological acquisition in CLIL- and non-CLIL-education

Laurent Rasier, Université de Liège Philippe Hiligsmann, Université catholique de Louvain

> Laurent.Rasier@ulg.ac.be Philippe.Hiligsmann@uclouvain.be





Outline of the talk

- 1. The Belgian linguistic landscape
- 2. CLIL vs. non-CLIL in Belgium
- 3. L2 phonological acquisition (L1 French > L2 Dutch)
- 4. Research outline
- 5. Results
- 6. Discussion and conclusion





1. The Belgian linguistic landscape







2. CLIL- vs. non-CLIL (in Belgium)

• <u>Content and Language Integrated Learning</u> (CLIL) = the teaching of some curricular subjects such as history, geography, and science, through the medium of a new target language

• Long history in Canada (first introduced in the 1960's), but much more recent phenomenon in the Belgian context (first school: Lycée de Waha in Liège 1989, official recognition in 1998)





2. CLIL- vs. non-CLIL (in Belgium)

- Huge succes: \pm 300 schools, \pm 30000 pupils
- In the Belgian context, CLIL coexists with traditional education (= non-CLIL)
 - More than 60% pupils choose Dutch as CLIL language, 39% English, and 1% German
 - More than 60% non-CLIL pupils follow English as L2, about 35% follow Dutch as L2 (Dutch is compulsory in Brussels)
- Differences in terms of organisation, methods, goals



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| Non-CLIL-education | CLIL |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Starting age | Starting age |
| - End of primary school or beginning of | - Nursery school, primary school, secunda- |
| secundary school | ry school |
| Amount of teaching time | Amount of teaching time |
| - 2h/week (last two years of primary school) | - 50-75% of L2 curriculum |
| - 4h/week (secundary school) | - Early vs. late immersion |
| Teachers - Non-native speakers with specific training | Teachers - Native speakers (curricular subjects) - Non-native speakers (French, L2 support) |
| Methods | Methods |
| - Communicative approach focussing on | - Curricular subjects taught in L2 and L1 + |
| skills (rather than knowledge) | traditional L2 acquisition classes (support) |
| Goal | Goal |
| - Functional bilingualism (B1) | - Additive bilingualism |





2. CLIL- vs. non-CLIL (in Belgium)

- Results of CLIL vs. non-CLIL in terms of L2 proficiency:
 - On a general level, CLIL learners outperform non-CLIL learners.
 See a.o. Admiraal e.a. 2006, Dalton Puffer 2011, Lasagabaster 2008, Ruiz de Zarobe 2008, 2010, Zydatiß 2007
 - More specific results:
 - Receptive skills: (near-)native (Genese 1987)
 - Productive skills: more erratic results (Ruiz de Zarobe 2011)
 - Global scale: more fluent in L2
 - Formal aspects: still (largely) non-native





2. CLIL- vs. non-CLIL (in Belgium)

• Still not totally clear to what extent and in what respect(s) CLIL learners show increased language gains compared to non-CLIL learners (Dalton-Puffer 2011, Lasagabaster 2008).

• The reason why in recent years, voices have even started downplaying the conclusions drawn from CLIL research (see Bruton 2011, Ruiz de Zarobe 2011).





- 3. Phonological acquisition in CLIL- and non-CLIL L2 learners (L1 French > L2 Dutch)
- Despite its high communicative potential, phonology is not a popular subject in L2 teaching, especially in the context of L2 Dutch in Belgium
- Poor results as far as non-CLIL-learners are concerned:
 - Individual sounds (Hiligsmann 1998)
 - Voice assimilation (Baelen 2011)
 - Prosody (Michaux 2016, Michaux & Caspers 2014, Rasier 2006, Rasier & Hiligsmann 2007, Rasier et alii 2011, 2014)





Phonological acquisition in CLIL- and non-CLIL
 L2 learners (L1 French > L2 Dutch)

• Few comparative data available on the L2 acquisition of phonology in CLIL, especially in the context of L2 Dutch

• Dalton Puffer (2008: 5, 2011: 187) claims that CLIL has little or no influence on L2 learners' phonology





4. Research outline

• Starting from Dalton Puffer's hypothesis, we investigated three phonological variables in advanced francophone CLIL- and non-CLIL-learners of Dutch (L2):

- Voice assimilation
- Word stress
- Pitch accent

• Those variables were chosen beacuse they do not have the same behaviour in Dutch and French and are generally difficult for French-speaking L2 learners of Dutch (see Hiligsmann 1998, Hiligsmann & Rasier 2007 for overviews

of the phonological problems of francophone learners of Dutch)





- 4. Research outline
- Specific research questions:
- Is it really the case that CLIL has no influence on the L2 learners' acquisition of phonology?
- Do we find the same types of phonological difficulties among CLIL- and non-CLIL learners of L2 Dutch?
- Are there differences between segmental and suprasegmental/prosodic variables?





- 4. Research outline
- These issues are investigated in a series of case studies which relate to a larger ARC-project *Assessing Content and Language Integrated Learning (CLIL): Lin-guistic, Cognitive, and Educational Perspectives* (spokesman: Ph. Hiligsmann)
 Profile of the target populations of L2 learners:
 - French-speaking learners of Dutch in a late immersion setting who have been learning Dutch for 5-6 years
 French-speaking learners of Dutch in a non-CLIL setting who have been learning Dutch for 5-6 years
- Both groups took a L2 proficiency test to estimate their proficiency level in Dutch (B1 in terms of the *CEFR*)





- 5. Results: study 1: voice assimilation
- Progressive voice assimilation: /f, γ , k, p, s, t, v, X, z/ + / γ , v, z/
- \rightarrow 2 voiceless consonants (= devoicing process)
- 20 participants (10 CLIL- and 10 non-CLIL-learners), last year of secundary school, i.e. L2 Dutch classes for 6 years
- Shadowing experiment (see also Baelen 2011)
 - The learners have to repeat a sentence they hear through head phones and in which the target phonemes are masked by noise, e.g. *De prinse<u>s</u> vist een boek uit haar tas*
- 9 x 3 phonemes = 27 combinations which were placed in carrier sentences in which the progressive voice assimilation always takes place between the subject and the main verb.





5. Results: study 1: voice assimilation



- No significant difference between CLIL/non-CLIL
- Progressive voice assimilation is difficult for both CLILand non-CLIL-learners





5. Results: study 1: voice assimilation



- Hierarchy in terms of difficulty: $\gamma < z < v$ as second phoneme
 - CLIL-learners get slightly better results for /ɣ/ and /v/ than non-CLIL-learners (/ɣ/: 45,5% vs. 40,6%); /v/: 17,3% vs. 9,1%).
- Same general pattern in the two group of learners, although we also see a slightly different error distribution



5. Results: study 1: voice assimilation



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- Most frequent ypes of errors:
 - Hypercorrection (48% vs. 42%): the learners produce the sounds according to the orthography and do assimilate (= devoice) C2
 - Negative transfer (15,5% vs. 16%): the learners assimilate in the regressive direction (= voicing of C2 instead of devoicing)
 - **Disfluency** (19% vs. 26%): the learners produce a pause between C1-C2
- Contrary to what could be expected, negative transfer is not the main cause of errors in both groups of learners





- 5. Results: study 1: voice assimilation
- Progressive voice assimilation is difficult for CLIL- and non-CLIL-learners (27% vs. 23% of correct instances)
- Same hierarchy in terms of difficult phoneme combinations, i.e. γ < z < v as target phoneme, although CLIL-learners do get slightly better results for /v/ and /γ/ than non-CLIL-learners
- Same causes of errors, but in slightly different proportions: hypercorrection, negative transfer, disfluency
- These results seem to confirm Dalton Puffer (2008, 2011)'s hypothesis that CLIL has no influence on phonological skills





- Word stress production in Dutch endocenric compounds,
- e.g. <u>aard</u>appel, ge<u>van</u>genisstraf, to<u>neel</u>stuk
- 60 target words embedded in carrier sentences (question - answer pairs), always in a [+ focus]-position/context
- 83 participants (40 non-CLIL- and 43 CLIL-learners) with the same profile and L2 proficiency level as in the previous study





| | CLIL | Non-CLIL | |
|-----------------------------------------|----------------------|---------------------|--|
| Correct stress | 48,42% (1249) | 19,67% (471) | |
| Correct word part, wrong syllable | 4,41% (114) | 1,05% (25) | |
| Incorrect stress | 47,17% (1217) | 79,28% (1898) | |
| Total | 100% (2580) | 100% (2394) | |

• Correct word part cq. syllable is stressed significantly more often by CLIL-learners than by non-CLIL-learners

• Despite their better results, the stress production of CLIL-learners cannot be characterized as 'near-native' or 'nativelike'



CLIL-learners



Non-CLIL-learners

| | Stress pattern in target word | | | Stress pattern in target word | |
|-----------------------------------|----------------------------------|-----------------------|--------------------------------------|----------------------------------|-----------------------|
| | 1st part | 2nd part | | 1st part | 2nd part |
| Correct stress | 46,96% (1151) | 75,97% (98) | Correct stress | 17,41% (396) | 62,50% (75) |
| Correct word part, wrong syllable | 3,84% (94) | 15,50% (20) | Correct word part, wrong syllable | 0,97% (22) | 2,50% (3) |
| Incorrect stress | 49,20% (1206) | 8,53% (11) | Incorrect stress | 81,62% (1856) | 35% (42) |
| Total | 100% (2451) | 100% (129) | Total | 100% (2274) | 100% (120) |

• Same general pattern in both populations, i.e. stress on the 2nd part of the compound is easier than stress on the 1st part (> French)

CLIL better than non-CLIL but still far from 'nativelike'





- 5. Results: study 2: word stress
- Length of the compound
 - The longer the compound, the more mistakes non-CLILlearners make >< CLIL-learners = not necessarily more mistakes when they have to produce long(er) compound
- Types of errors
 - Same categories in the two groups of learners, though in slightly different proportions:
 - Multiple stresses, whereby the learners emphasizes two (or more) syllables in one and the same compound
 - Stress shift, whereby the main stress is shifted (1) from the left to the right or (2) from the right to the left





Multiple stresses



| | CLIL | Non-CLIL | | CLIL | Non-CLIL |
|------------|---------------------|------------------------|----------------------------|-------------------------|-------------------------|
| 2 stresses | 100% (89) | 97,45% (662) | 1st \rightarrow 2nd part | 99,03% (1117) | 98,36% (1199) |
| 3 stresses | 0% (0) | 2,36% (16) | 2nd → 1st part | 0,97% (11) | 1,64% (20) |
| 4 stresses | 0% (0) | 0,19% (1) | Total | 100% (1128) | 100% (1219) |
| Total | 100% (89) | 100% (679) | | | |

- Multiple stresses: rarely more than 2 stresses per word in both groups
- Stress shift: shift from the 1st to the 2nd part of the compound in both groups so that the stress lies on the last syllable of the final part (> French final stress) (± 73% of the cases in the two groups)





- 5. Results: study 2: word stress
- CLIL-learners outperfom non-CLIL-learners as far as stress production is concerned
- CLIL-learners' production of L2 Dutch stress does not reach (near-)native level
- Factors influecing L2 production:
 - Cognitive factors: L1 influence (cf. word final pattern)
 - Linguistic factors: Type of stress pattern, word length





- 5. Results: study 3: pitch accent
- Pitch accent production and perception
 - Perception test: identification of accented words in a dialogue
 - Production test: pitch accent assignment in a reading task, a picture description task, and a discussion
- 25 participants (16 non-CLIL- and 9 CLIL-learners) with the same profile and L2 proficiency level as in the previous study





5. Results: study 3: pitch accent

- Perception experiment:
 - Higher identification rates for CLIL-learners than for non-CLIL-learners (see also Rasier 2011), L1 influence noticeable in both groups (final pattern)
- Production experiment (picture description taks):
 - Tendency to produce a pattern with an accent in NP-initial and -final position (cf. French « arc accentuel »; see also Rasier 2006, 2011) but more variation among CLIL-learners than among non-CLIL-learners
 - Influence of pauses on non-CLIL-learners' pitch accent assignment
- Factors affecting L2 pitch accent
 - Perception > production (both groups)
 - Production: little influence of the type of task on CLIL-learners' production, non-CLIL-learners make more mistakes in the discussion and text-reading task than in the sentence-reading task
 - Link between the quality of the accentuation and the presence/absence of pauses in the NP (= fluency)





6. Discussion and conclusion

- In terms of production correctness, the CLIL-learners outperformed the non-CLIL-learners for the 3 phonological variables.
- The CLIL-learners do not reach native level of performance on any variable (// Dalton Puffer 2008, 2011)
 - Even in an input-rich environment, native(like) level of L2 phonological performance is not achieved automatically
- Influence of various factors:
 - Cognitive factors: L1, hypercorrection ('spelling pronunciation')
 - Linguistic factors: disfluencies, word length, articulatory features of individual sounds
- More explicit and contrastive attention to (phonological) form is needed, even in CLIL (Kupfberg & Ohlstain 1996)



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Thanks for your attention!

Contact:

Laurent Rasier: <u>laurent.rasier@ulg.ac.be</u>

Philippe Hiligsmann: philippe.hiligsmann@uclouvain.be



References (1)



Admiraal, W., G. Westhoff & K. de Bot (2006), 'Evaluation of bilingual secondary education in the Netherlands: Students' language proficiency in English. In: *Educational Research and Evaluation*, 12, 75–93. Beheydt, L. (2008), 'Immersieonderwijs en contrastieve taalkunde', in: Ph. Hiligsmann et alii (eds), Neerlandistiek in Frankrijk en Franstalig België, Louvain-la-Neuve: Presses universitaires de Louvain, 13-24. Baelen, M. (2011), [z] dat [s]o moeilijk? Productie van stemassimilatie in het Nederlands van Franstalige vreemdetaalleerders, unpublished Phd thesis, Université catholique de Louvain.

Bruton, A. (2011), 'Is CLIL so beneficial, or just selective? Re-evaluating some of the research'. In: *System* 39, 523-532.

Dalton Puffer, C. (2011), Content-and-Language Integrated Learning: From Practice to Principles? In: Annual Review of Applied Linguistics 31, 182–204.

Hiligsmann, Ph. (1998), 'De uitspraak van Franstalige leerders van het Nederlands: een theoretische en didactische benadering', In: *Acta Universitatis Wratislaviensis* 171-182.

Kupfberg, I. & E. Ohlstain (1996), 'Explicit contrastive instruction facilitates the acquisition of L2 forms', In: *Language Awareness* 5, 149-165.

Lasagabaster, D. (2008). 'Foreign language competence in content and language integrated learning'. In: *Open Applied Linguistics Journal*, 1, 31–42.

Michaux, M.-C. (2016), 'La perception de l'accent lexical néerlandais par les apprenants francophones', In: *Langages* 202-2, 47-74.

Michaux, M.-C. & Caspers, J. (2014), 'The production of Dutch word stress by Francophone learners', In: P. Mertens & A. C. Simon (eds), *Proceedings of the Prosody Discourse Interface Conference 2013*, Louvain, 89-94



References (2)



Rasier, L. (2006), *Prosodie en vreemdetaalverwerving. Accentdistributie in het Frans en Nederlands als vreemde taal*, unpublished Phd thesis, Université catholique de Louvain.

Rasier, L. & Ph. Hiligsmann (2007), 'Prosodic transfer from L1 to L2. Methodological issues and description', In: *Nouveaux Cahiers de Linguistique Française* 28, 41-66.

Rasier, L., A.V. Bui, A. Jouniaux & Ph. Hiligsmann (2014), 'Klemtoon in het Nederlands van Franstalige immersie- en niet-immersiellerlingen', In: L. Degand et alii (red.), *In het teken van identiteit. Taal en cultuur van de Nederlanden*, Louvain-la-Neuve: Presses universitaires de Louvain, 203-219.

Rasier, L., J. Caspers, Ph. Hiligsmann & V. van Heuven (2011), 'Production and perception of accentuation in Dutch and French as foreign languages', In: K. Dziubalska-Kolaczyk, M. Wrembel & M. Kul (eds), *Achievements and Perspectives in the Acquisition of Second Language Speech*, Peter Lang, 227-238. Ruiz de Zarobe, Y. (2008). 'CLIL and foreign language learning: A longitudinal study in the Basque country'. In: *International CLIL Research Journal* 1, 60–73.

Ruiz de Zarobe, Y. (2010). 'Written production and CLIL: An empirical study'. In C. Dalton-Puffer, T. Nikula, & U. Smit (Eds.), *Language use and language learning in CLIL classrooms*. Amsterdam, the Netherlands: John Benjamins, p. 191–212.

Ruiz de Zarobe, Y. (2011), 'Which language competencies benefit from CLIL? An insight into applied linguistics research'. In: Y. Ruiz de Zarobe, J. M. Sierra & F.G. del Puerto (eds.) (2011), *Content and Foreign Language Integrated Learning. Contributions to Multilingualism in European Contexts*. Bern: Peter Lang, 129-153.

Zydatiß, W. (2007). *Deutsch-Englische Züge in Berlin (DEZIBEL). Eine Evaluation des bilingualen Sachfachunterrichts in Gymnasien: Kontext, Kompetenzen, Konsequenzen*. Frankfurt am Main: Peter Lang.