

PROSODIC DEVELOPMENT IN A QUÉBEC FRENCH-ENGLISH BILINGUAL: CROSS-LANGUAGE TRANSFER OR UNDIFFERENTIATED SYSTEMS?*

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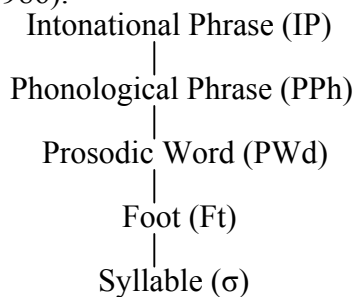
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1. Introduction

- Simultaneous bilinguals differentiate their linguistic systems early (e.g. Genesee 1989, Meisel 1989).
- Some factors in cross-language influence:
 1. Language dominance;
 2. Ambiguous input in one language;
 3. Markedness.
- Patterns in the acquisition of stress by a Québec French-English bilingual, Olivier (age 1;11.10-15), challenge standardly-accepted views on dual language development: are the prosodic components of his grammars truly differentiated?

2. Stress in French and English

- (1) *Prosodic hierarchy* (e.g. Selkirk 1984, 1986; McCarthy & Prince 1986; Nespor & Vogel 1986):



- (2) *Domain in which stress is computed:*

- a. French: PPh (Dell 1984; Post 2003 on phrasing options)

[lə [pət̥si]_{PWd} [gær'sɔ̃]_{PWd}]_{PPh}, *[lə [pət̥si]_{PWd} [gær'sɔ̃]_{PWd}]_{PPh}
[ə [gær'sɔ̃]_{PWd} [æzi'tɛ̃]_{PWd}]_{PPh} ~ [ə [[gær'sɔ̃]_{PWd}]_{PPh} [[æzi'tɛ̃]_{PWd}]_{PPh}

'the little boy'
'a fidgety boy'

- b. English: PWd

[ðə [lɪtəl]_{PWd} ['bɔɪ]_{PWd}]_{PPh} 'the little boy'
[ə [fɪdʒətɪ]_{PWd} ['bɔɪ]_{PWd}]_{PPh} 'a fidgety boy'

- (3) *Foot shape: Headedness:*

- a. French: iambic (right-headed) (e.g. Charette 1991, Scullen 1997):

ka(na'da)_{Ft} 'Canada'

- b. English: trochaic (left-headed):

('kænə)_{Ft} də 'Canada'

* Thanks to Fred Genesee for making the videotapes of Olivier available to us. This research was funded by grants from SSHRC and FQRSC.

(4) *Foot shape: Quantity sensitivity:*

- a. English: Yes – build moraic trochees (e.g. Hayes 1995)

(kæ_μnə_μ)_{Ft} də ‘Canada’
 ðə və(ræ_μn_μ)_{Ft} də ‘the veranda’

- b. French: No(?)

- i. Stress retraction triggered by “intrinsically long” vowels ([e, ø, o, a; ɛ̃, œ̃, ɔ̃, ɑ̃]) (e.g. Walker 1984, Thibault & Ouellet 1996, Armstrong 1999):

[la verɑ̃'da] ~ [la ve'rɑ̃da] ‘the veranda’
 [bo'ku] ~ ['boku] ‘a lot, much’

Footing options: Final stress:

QI (H'L) [la ve(rɑ̃'da)]?

Violates Hayes's (1995) observation that iambic languages with a weight contrast are always quantity sensitive: heavy syllables attract stress; heavy syllables cannot appear in foot-dependent position.

Degenerate (L) [la verɑ̃:(da)]?

Violates Hayes's (1995: 95) Priority Clause: “If at any stage in foot parsing the portion of the string being scanned would yield a degenerate foot, the parse scans further along the string to construct a proper foot.”

(L'L) [la ve(rɑ̃'da)]?

Well-formed if “intrinsically long” vowels are not actually bimoraic. But what about penult stress?

Penultimate stress:

QS (L'H) [la (ve'rɑ̃:)da]

Should be the *only* parse attested if “intrinsically long” vowels are bimoraic.

- ii. Phrase-final lengthening as iambic lengthening: ...($\sigma_{\mu}'\sigma_{\mu}$)_{Ft}]_{PPH} → ...($\sigma_{\mu}'\sigma_{\mu\mu}$)_{Ft}]_{PPH} ?
 Suggests that French is QS *but* if phrase-final lengthening involves addition of a mora to short vowels, the presence of stress retraction to the penult would be entirely unexpected: *[ve(rɑ̃:)_{Ft}da:]_{PPH}; cf. well-formed [verɑ̃:(da:)_{Ft}]_{PPH} (Goad & Buckley 2006)

(5) *Extrametricality:*

- a. French: Final syllables are not extrametrical (but final schwa is skipped, Dell 1984):

[ka(na'da)_{Ft}]_{PWd} ‘Canada’
 [(fi'li)_{Ft}pə]_{PWd} ‘Philip’ (formal speech)

- b. English: Final syllables are extrametrical in English nouns (Halle & Vergnaud 1987):

[(kænə)_{Ft} <də>]_{PWd} ‘Canada’

Compare non-derived verbs and adjectives:

[də(vələp)_{Ft}]_{PWd}, *[(dɛvə)_{Ft} <ləp>]_{PWd} ‘develop’

(6) *Iterativity:*

- a. French: Footing is non-iterative:

[la [terminɔ̃(lɔ'ʒi)_{Ft}]_{PWd}]_{PPH} ‘the terminology’

- b. English: Footing is iterative:

[ðə [(tərmɪ)_{Ft} ('nɑlə)_{Ft} <dʒi>]_{PWd}]_{PPH} ‘the terminology’

3. Issues in Bilingual Acquisition

3.1. Language Differentiation

- Simultaneous bilinguals differentiate their linguistic systems early (e.g. Genesee 1989, Meisel 1989).
- Olivier has differentiated syntactic systems, based on evidence from finiteness, negation and pronominal subjects (Paradis & Genesee 1996).
- BUT: Are the prosodic components of his grammars truly differentiated?

3.2. Cross-language Influence

1. *Language dominance*: Bilinguals transfer structures from their dominant language into their weaker language (e.g. Paradis 2001).
2. *Markedness*: If a bilingual encounters cross-linguistically marked structures in one language that are not tolerated in the other, a delay in the development of the marked structure may occur (e.g. Lleó 2002).
3. *Ambiguous input*: If one language presents unambiguous input for some structure and the other language displays ambiguity on this dimension, bilinguals may show transfer from the former system into the latter (e.g. Müller 1998).

4. Predictions

4.1. Language dominance

- Olivier is French-dominant, based on number of word types, multi-morphemic complexity and degree of code-mixing in each language (Genesee, Nicoladis & Paradis 1995).
- *Prediction*: Olivier should transfer properties of French stress into English (but note that he shows no evidence of transfer from French into English in the acquisition of finiteness, negation and pronominal subjects (Paradis & Genesee 1996)).

4.2. Markedness

	French	English	Least marked	Predictions
Domain	PPh	PWd	PWd	PWd
Headedness	Iamb	Trochee	Trochee > Iamb	Trochee
Quantity sensitivity	No	Yes (moraic trochee)	Trochaic systems: not QS (syllabic trochee); Iambic systems: QS	not QS
Extrametricity	No	Yes	No	No
Iterativity	No	Yes	Iambic langs: iterative; Trochaic langs: non-iterative	Non-iterative

(markedness settings based on e.g. Dresher & Kaye 1990, Hayes 1995)

4.3. Ambiguous input

	French	English	Prediction
Domain	PPh, but stress shift in compounds is evidence for PWd as domain; see (7)	Uniformly PWd	Transfer of PWd into French
Headedness	Iambic, but trochaic-type words frequent due to stress retraction (4b)	Uniformly trochaic (but noun-verb asymmetries for extrametricality (5b) could suggest that verbs are iambic)	Transfer of trochees into French
Quantity sensitivity	Probably not QS, but stress retraction (4b) seems to be weight-sensitive	Uniformly QS	Transfer of QS into French
Extrametricality	Uniformly no	Noun-verb asymmetries in (5b)	Transfer of no extrametricality into English
Iterativity	Uniformly non-iterative	Uniformly iterative	–

(7) *Resolution of stress clash in compounds* (Mazzola 1992, Hoskins 1994, Post 2000)

- a. [ma'ri] + [te'rez] → [ma,rite'rez] 'Marie-Thérèse'
 b. [ma'ri] + ['klɔd] → [,mari'klɔd] 'Marie-Claude'
 c. [(ma'ri)_{Ft}]_{PWd} + [(klɔd)_{Ft}]_{PWd} → [[(,ma)_{Ft} ri]_{PWd} [(klɔd)_{Ft}]_{PWd}]_{PWd}

4.4. Summary

- *Language dominance:*
Single QI iamb right-aligned with PPh edge transferred from French into English
- *Markedness:*
Single syllabic trochee right-aligned with PWd edge in both languages
- *Ambiguous input:*
Moraic trochee right-aligned with PWd edge transferred from English into French

5. Method

5.1. *Subject* (Genesee, Nicoladis & Paradis 1995):

- Olivier, French-English simultaneous bilingual;
- Anglophone mother; francophone father; parents follow 'one parent one language' rule;
- Attended a French language daycare.

5.2. *Procedure* (Genesee, Nicoladis & Paradis 1995):

- Child was videotaped for 45-60 minutes on three occasions over a period of 5 weeks (with both parents, father alone, mother alone).
- 20 minutes of each session (following the first 5 minutes) were orthographically and phonetically transcribed and coded.

5.3. Present Procedure

- Two transcribers retranscribed and coded for phonological measures the same 20 minutes of each session.
- In cases of unresolvable disagreement between transcribers on details related to prosodic development (e.g. presence/absence of stress, vowel length, coda consonants, nasal vowels), the item was excluded from analysis.
- Present focus: the sessions with the child's father (at age 1;11.10) and his mother (at age 1;11.15).
- Utterances were divided into phrases (the domain of stress assignment in French).
- Excluding phrases containing unintelligible material, phrases consisting solely of onomatopoeia or interjections, and cases of transcriber disagreement:

	Session with anglophone mother:	Session with francophone father:
English phrases:	70/123 (57%)	3/98 (3%)
French phrases:	51/123 (41%)	95/98 (97%)
Mixed phrases:	2/123 (2%)	0

6. Results

6.1. Extrametricality

- In both languages, Olivier shows no evidence of extrametricality: foot is right-aligned with PWD.
- Results consistent with cross-language influence due to language dominance, markedness or ambiguous input *OR* with an undifferentiated Franglais grammar for this parameter.

(8) *No extrametricality exemplified for English:*

$[(nei)_{Ft} <bə>]_{PWD}$	→	$[e('bɜ:)]_{Ft}$	'neighbour'
$[(dʌm)_{Ft} <pə>]_{PWD}$	→	$[(dʌm)_{Ft} ('pɜ:)]_{Ft}$	'dumper'
$[(træk)_{Ft} <tə>]_{PWD}$	→	$[(dæk)_{Ft} ('tɜ:)]_{Ft}$	'tractor'

6.2. Foot shape: Headedness and quantity sensitivity

- Five analyses considered for Olivier's outputs:

	Headedness:	Foot-dependent position can contain:
Iambs with non-moraic codas:	Right	CVC, CV
Iambs with moraic codas:	Right	CV
Moraic trochees with non-moraic codas:	Left	CVC, CV
Moraic trochees with moraic codas:	Left	CV
Syllabic trochees:	Left	CVV, CVC, CV

- Results in Tables 1 and 2 (overleaf) show that most data can be captured with:
English: Iambs (with moraic codas) *OR* Moraic trochees (with moraic codas);
French: Iambs (with moraic codas) *OR* Iambs (with non-moraic codas).
- Results not consistent with cross-language influence due to Language Dominance, Markedness or Ambiguous Input.
- Results are consistent with an undifferentiated Franglais grammar for these parameters.

(9) *Foot shape exemplified:*

a. English:

Iambic parse (moraic codas): ('an)(nə'dɜː) 'another'
 (o'pɪn) de ('du) 'open the door'
 *(ma)mi 'mummy'
 ✓(e'be) 'neighbour'

Moraic trochaic parse: ('an)nə('dɜː) 'another'
 o('pɪn) de ('du) 'open the door'
 ✓('mami) 'mummy'
 *e('be) 'neighbour'

b. French:

Iambic parse (moraic codas): i ('feː) (du'dɔ) 'he's going night-night'
 (ba'læː) 'ball'
 *pɜp('pa) 'daddy'
 ✓('tim)mi 'finished'

Iambic parse (non-moraic codas): i ('feː) (du'dɔ) 'he's going night-night'
 (ba'læː) 'ball'
 ✓(pɜp'pa) 'daddy'
 *(tim)mi 'finished'

Olivier's word shape	Iamb (codas not moraic)	Iamb (codas moraic)	Moraic Troch (codas moraic)	Moraic Troch (codas not moraic)	Syllabic Troch	Unpredicted (all analyses)
A CVV	('σ _H) 22/22	('σ _H) 22/22	('σ _H) 22/22	('σ _H) 22/22	('σ) 22/22	
B CVC	('σ _L) 9/9	('σ _H) 9/9	('σ _H) 9/9	('σ _L) 9/9	('σ) 9/9	
C CV	('σ _L) 14/14	('σ _L) 14/14	('σ _L) 14/14	('σ _L) 14/14	('σ) 14/14	
D CVV.CV	('σ _H)σ _L 3/5	('σ _H)σ _L 3/5	('σ _H)σ _L 3/5	('σ _H)σ _L 3/5	('σσ) 3/5	('σ _H)('σ _L) 2/5
E CVC.CV	(σ _L 'σ _L) 0/5	('σ _H)σ _L 4/5	('σ _H)σ _L 4/5	(σ _L 'σ _L) 4/5	('σσ) 4/5	('σ _H)('σ _L) 1/5
F CV.CV	(σ _L 'σ _L) 4/10	(σ _L 'σ _L) 4/10	(σ _L 'σ _L) 4/10	(σ _L 'σ _L) 4/10	('σσ) 4/10	('σ _L)('σ _L) 2/10
G CV.CVV	(σ _L 'σ _H) 7/9	(σ _L 'σ _H) 7/9	σ _L ('σ _H) 7/9	σ _L ('σ _H) 7/9	('σσ) 0/9	('σ _L)('σ _H) 2/9
H CV.CVC	(σ _L 'σ _L) 3/4	(σ _L 'σ _H) 3/4	σ _L ('σ _H) 3/4	(σ _L 'σ _L) 0/4	('σσ) 0/4	(σ _L)('σ _L) 1/4
I CVV.CVV	('σ _H)('σ _H) 1/2	('σ _H)('σ _H) 1/2	('σ _H)('σ _H) 1/2	('σ _H)('σ _H) ½	('σσ) 1/2	
J CVC.CVV	(σ _L 'σ _H) 0/2	('σ _H)('σ _H) 2/2	('σ _H)('σ _H) 2/2	σ _L ('σ _H) 0/2	('σσ) 0/2	
N CVC.CV.CVV	(σ _L)(σ _L 'σ _H) 1/1	('σ _H)(σ _L 'σ _H) 1/1	('σ _H)σ _L ('σ _H) 1/1	(σ _L σ _L)('σ _H) 1/1	σ('σσ) 0/1	
Totals	64/83 77%	70/83 84%	70/83 84%	65/83 78%	57/83 69%	8/83 10%

Table 1. Foot shape options for English.

Olivier's word shape		Iamb (codas not moraic)	Iamb (codas moraic)	Moraic Troch (codas moraic)	Moraic Troch (codas not moraic)	Syllabic Troch	Unpredicted (all analyses)
A	CVV	('σ _H) 7/7	('σ _H) 7/7	('σ _H) 7/7	('σ _H) 7/7	('σ) 7/7	
B	CVC	('σ _L) 10/10	('σ _H) 10/10	('σ _H) 10/10	('σ _L) 10/10	('σ) 10/10	
C	CV	('σ _L) 44/44	('σ _L) 44/44	('σ _L) 44/44	('σ _L) 44/44	('σ) 44/44	
D	CVV.CV	('σ _H)σ _L 0/1	('σ _H)σ _L 0/1	('σ _H)σ _L 0/1	('σ _H)σ _L 0/1	('σσ) 0/1	('σ _H)('σ _L) 1/1
E	CVC.CV	(σ _L 'σ _L) 1/8	('σ _H)σ _L 4/8	('σ _H)σ _L 4/8	(σ _L 'σ _L) 4/8	('σσ) 4/8	('σ _H)('σ _L) 3/8
F	CV.CV	(σ _L 'σ _L) 63/76	(σ _L 'σ _L) 63/76	(σ _L 'σ _L) 9/76	(σ _L 'σ _L) 9/76	('σσ) 9/76	(σ _L)('σ _L) 4/76
H	CV.CVC	(σ _L 'σ _L) 5/7	(σ _L 'σ _H) 5/7	σ _L ('σ _H) 5/7	(σ _L 'σ _L) 2/7	('σσ) 2/7	
G	CV.CVV	(σ _L 'σ _H) 7/7	(σ _L 'σ _H) 7/7	σ _L ('σ _H) 7/7	σ _L ('σ _H) 7/7	('σσ) 0/7	
K	CVC.CVC	(σ _L 'σ _L) 1/1	('σ _H)('σ _H) 0/1	('σ _H)('σ _H) 0/1	(σ _L 'σ _L) 0/1	('σσ) 0/1	
I	CVV.CVV	('σ _H)('σ _H) 0/1	('σ _H)('σ _H) 0/1	('σ _H)('σ _H) 0/1	('σ _H)('σ _H) 0/1	('σσ) 0/1	'σ _H ('σ _H) 1/1
L	CV.CV.CV	('σ _L)(σ _L 'σ _L) 2/3	('σ _L)(σ _L 'σ _L) 2/3	σ _L (σ _L 'σ _L) 0/3	σ _L (σ _L 'σ _L) 0/3	σ('σσ) 0/3	(σ _L)('σ _L)('σ _L) 1/3
M	CV.CV.CV.CV	(σ _L 'σ _L)(σ _L 'σ _L) 1/1	(σ _L 'σ _L)(σ _L 'σ _L) 1/1	(σ _L 'σ _L)('σ _L 'σ _L) 0/1	(σ _L 'σ _L)('σ _L 'σ _L) 0/1	(σσ)(σσ) 0/1	
Totals		141/166 85%	143/166 86%	86/166 52%	83/166 50%	76/166 46%	11/166 6%

Table 2. Foot shape options for French.

6.3. *Iterativity*

- Tables 1 and 2 reveal evidence of iterative footing within PWds in both languages.
- Results do not support provide support for cross-language influence due to language dominance, markedness or ambiguous input.
- Results are suggestive of an undifferentiated Franglais grammar for this parameter.
- However, there are few long words (most 3- and 4-syllable target words that are attempted are truncated to bisyllabic) so the results must be interpreted with caution.

(10) *Truncation exemplified:*

a. To iambic-shaped words:

i. English:
[ə'nʌðə] → [nə'dɜ] 'another'

ii. French:
[ɔlivje] → [jɛje] 'Olivier'

b. To trochaic-shaped words:

i. English:
[ə'nʌðə] → [nədɜ] 'another'

ii. French:
[ɔlivje] → [jeje] 'Olivier'

6.4. Domain

Domain:	Context:	English (n=73)	French (n=146)
1. Domain is PPh:	PPh (PPh contains 2 PWds/lex; only rightmost is stressed)	1 (1%)	9 (6%)
2. Domain is PWd:	a. PWd (PPh contains 2 PWds: 2 stressed lex)	8	5
	b. PWd (PPh contains 2 PWds: stressed fnc + stressed lex)	2 (14%)	9 (10%)
3. Can't determine domain:	a. PPh contains clitic (fnc) + 1 lex (PWd)	4	25
	b. PWd=PPh (PPh is exactly 1 PWd/lex)	58 (85%)	98 (84%)

- Results (i.e. 10% domain PWd for French) provides marginal support for cross-language influence due to markedness or ambiguous input.

(11) *Domain exemplified:*

a. Domain is PPh:

- i. English: [ʌl 'gɑ:m] → [a 'kɔ:] 'all gone'
- ii. French: [bo 'bɛk] → [bo 'bɛh] 'nice kiss'

b. Domain is PWd (PPh contains 2 PWds: 2 stressed lex):

- i. English: ['bɪg 'bɜ:d] → ['bɪg 'bɜ] 'big bird'
- ii. French: [pətsi sɑ̃'dæ] → [pɛ'ti sɑ̃'n'dæ] 'small sandal'

c. Domain is PWd (PPh contains 2 PWds: stressed fnc + stressed lex):

- i. English: [ʌn 'flɔr] → [a: 'fwah] 'on floor'
- ii. French: [a ve'lo] → [a ve'lo] 'on bike'

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