The Relation of French Immersion Exposure to Orthographic Awareness and Word Decoding in English-Speaking Students

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ABSTRACT

Grade 1 children in English-language (n=25) and French Immersion (n=25) programs were assessed on five occasions in a longitudinal study ending in Grade 3 to examine the potential influence of exposure to spoken French on the development of syllable awareness, phonemic awareness, orthographic awareness and word decoding. Children in each program were closely matched on initial abilities in these factors. Because the syllable is the salient unit of spoken French, compared to spoken English, it was hypothesized that substantial exposure to this distinct spoken structural form by English-language students attending French Immersion programs would have beneficial effects on growth in the aforementioned linguistic skills. Results of multilevel modeling indicated differences between Immersion and English program groups in growth trajectories: Immersion students experienced a more rapid development in phonemic awareness and word decoding. A marginal effect was found for growth in syllable awareness, indicating faster growth among Immersion students. No differences were found for growth in orthographic awareness. Benefits associated with Immersion experience extended to both typically developing and at-risk readers. Results indicated that substantial exposure to distinct second language oral structures can facilitate the development of word decoding, phonemic awareness and (marginally) syllable awareness in a first language.

BACKGROUND

•Language and reading development benefits from knowing a second language (Bialystok et al., 1999)

•French speakers place greater emphasis on syllabic segmentation routine; English on phonemic (Bruck & Genesee 1995)

•Exposure to differing structures of oral English and French can accelerate learning salient units in those languages (Bruck et al., 1997); possible facilitation to syllable awareness in English speakers, and improvement in early reading

•Phonemic awareness is also facilitated by schooling in a second language: English-speaking children in French Immersion exposed to wider range of phonemes (Kovelman et al., 2008)

•Key practice issue for French Immersion: potential for added risk to children with difficulty acquiring reading skills. Benefits of Immersion experience could help ameliorate syllable and onset-rime deficits that are believed to be early indications of reading difficulties (Goswami, 2002)

Questions

•Does early language and reading development benefit from the experience of French Immersion?

•Do children at risk of reading disability benefit from French Immersion in the same way as typically developing children?

Hypotheses

•French Immersion students will demonstrate a more rapid linear improvement in syllable and phonemic awareness over the first two years of elementary schooling, as demonstrated by Elision and Blending Words task performance

•Orthographic awareness and word decoding skills will improve at a more rapid rate for French Immersion students. These benefits will be experienced over and above the influence of syllable awareness

•The benefits of French Immersion experience are expected to be similar for both children who are at risk and not at risk for reading disability

METHOD

Participants

• **25 students** (15 Male, 10 Female)- Recruited from two **French Immersion** Elementary Schools

•**25 students** (13 Male, 12 Female)- Recruited from three **English** Program Elementary Schools

Matching

Program:

•French Immersion students matched with English program students on initial Elision, Blending Words, Orthographic Letter Pairs & Word Identification accuracy

Means and Standard Errors for Participant Characteristics at Initial Testing for French Immersion and English Program Groups

	French Immersion (n=25)	English Program (n=25)
Variable	**M (SE)**	**M (SE)**
Age (months)	82.86 (.64)	82.17 (.90)
Elision	40.40 (4.25)	39.20 (4.29)
Blending Words	48.40 (3.26)	42.60 (1.96)
Orthographic Letter Pairs	72.00 (2.22)	71.20 (2.49)
Word Identification	23.09 (2.49)	27.59 (3.13)

Risk Status:

•Teacher-nominated at-risk readers (14 in French Immersion and 13 in the English program); Risk status verified by standardized language and reading outcomes

•At-risk children in Immersion group matched with at-risk English program children with above matching criteria

•An additional at-risk child in the Immersion program was matched with a no-risk child in the English program

Means and Standard Errors for Participant Characteristics at the Initial Testing Occasion for At-Risk and No-Risk Groups

	At-Risk (n=27)	No-Risk (n=23)
Variable	**M (SE)**	**M (SE)**
Age	83.13 (.85)	81.79 (.63)
Elision	30.00 (1.89)	51.30 (5.21)***
Blending Words	43.89 (2.58)	47.39 (2.91)
Orthographic Letter Pairs	66.48 (2.17)	77.61 (1.91)***
Word Identification	16.07 (1.52)	36.22 (2.52)***

*** p<.001

OUTCOMES

Language:

•**Syllable Awareness:** *Elision* subtest of the *Comprehensive Test of Phonological Processing (CTOPP)*
(no Immersion effect on rate of growth)

•**Phonemic Awareness:** *Blending Words* subtest of the *CTOPP*
(Faster rate of growth for Immersion children – Figure 1)

Reading:

•**Orthographic Awareness**: *Orthographic Letter Pairs* (word likeness judgment accuracy for 20 pairs of letter strings)
fant - tanf – "tanf" violates English orthography
udda - ddua – "ddua" violates English orthography
(no Immersion effect on rate of growth)

•**Word Decoding**: *Word Identification* subtest of the *Woodcock Reading Mastery Test-Revised (WRMT)*
(Faster rate of growth for Immersion children – Figure 2)
(Benefits of Immersion for both At-Risk and No-Risk children)

Note: all variables measured in percent correct

Figure 1: Growth in Phonemic Awareness

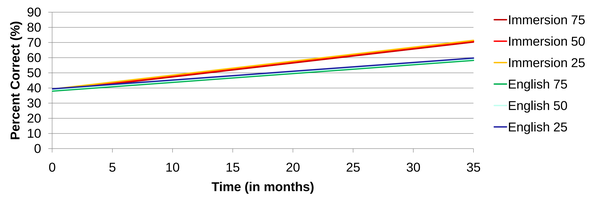
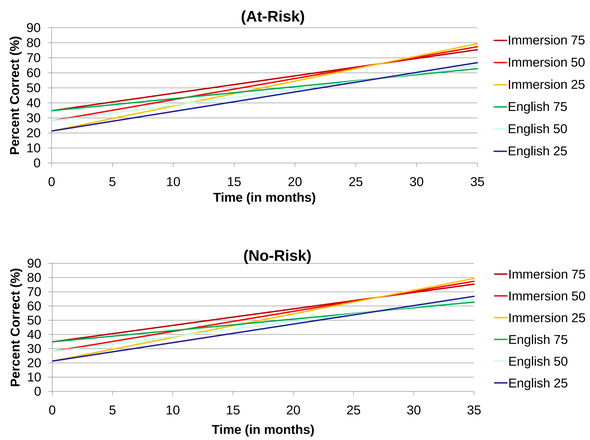


Figure 2: Growth in Word Decoding



Note: all figures include model-estimated growth trajectories for 75th, 50th, and 25th percentiles on Elision

Linear Growth Models for Outcome Variables

		Elision		Blending Words		Orthographic Letter Pairs		Word Identification	
Fixed Effects		**Model A**	**Model B**	**Model A**	**Model B**	**Model A**	**Model B**	**Model A**	**Model B**
	Initial Status	35.38*** (3.20)	48.72*** (3.67)	38.76*** (2.18)	38.69*** (2.15)	72.07*** (1.93)	74.03*** (1.99)	19.90*** (1.90)	28.03*** (1.95)
	At-Risk		-24.29*** (4.30)				-5.09* (1.96)		-16.14 (2.40)
	Rate of change	.68*** (.09)	.68*** (.09)	.74*** (.10)	.58*** (.11)	.41*** (.10)	.45*** (.10)	1.20*** (.08)	1.05*** (.08)
	Immersion				.34** (.12)				.36*** (.10)
	ELR_C[a]			-.04 (.08)	-.03 (.08)	.24** (.08)	.19* (.08)	.32*** (.06)	.27*** (.05)
	ELR C* Rate			.007* (.004)	.007~ (.004)	-.007~ (.004)	-.007~ (.004)	-.01*** (.002)	-.01*** (.002)
Variance Components									
Level 1	**Within-person**	108.94***	109.14***	94.11***	94.66***	104.05***	101.35***	16.65***	16.46***
Level 2	**In Initial Status**	359.90***	245.87***	77.85*	71.64~	12.04	1.64	143.70***	87.98***
	In Rate of Change	.09	.08	.11~	.09	.05	.07	.21**	.14***
	Covariance	-1.20	-1.87	-.71	-.67	-.48	-.36	-.10	-1.97*
Goodness of Fit									
	Deviance	1879.3	1854.9	1796.4	1789.0	1589.1	1583.1	1549.9	1504.3

Model A: Unconditional model; Model B: Final model including significant Level-2 effects

[a] Elision, centred on overall mean; ~ p<.10; * p < .05; ** p < .01; *** p <.001

CONCLUSIONS

•French Immersion students experienced a more rapid linear increase in phoneme awareness and word decoding compared to English Program students over the first three years of formal schooling

•Benefits associated with the Immersion experience extended to both typically developing and at-risk readers

•No significant variance in rates of change in syllable or orthographic awareness remained to be accounted for by Program (however, exploratory analysis showed Immersion accounted for variance in growth in syllable awareness)

•It is possible that we did not see the desired growth in syllable and orthographic awareness as these skills had already developed enough so that no further differential cross-language facilitation was possible for Immersion students

•Cross-language transfer of phonemic skill may facilitate development of reading skills in Immersion students

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