

Metalinguistic Awareness in Italian-French Bilingual Preschoolers Compared to Italian and French Monolinguals.

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Background.

Many studies have repeatedly pointed to **advantages in bilinguals in metalinguistic awareness** (henceforth, MLA. Reynolds, 1991; Baker, 1998; Hamers & Blanc, 1988: 2000; Bialystok, 2001, 2004; Adesope et al. 2010; Friesen & Bialystok, 2012)

- **word awareness** under two basic forms, i.e. awareness of the arbitrary relation between name and referent and awareness of the boundaries between words

- **grammatical and syntactical awareness** under different forms of

judgments of grammaticality.

Based on these outcomes, bilingualism has been seen as a ***causal factor of MLA*** and an ***accelerator of its normal course***, compared to what is observed in monolinguals at the same age.

However, the extension of research to other metalinguistic subdomains, such as phonological or print awareness, and a more fine-grained analysis of metagrammatical abilities did not always confirm bilinguals' superiority over monolinguals (Bialystok, 2004), especially when studies spanned over the years of primary school

More recent reviews point to a series of **other factors** which significantly **modulate the role of bilingualism**.

- **proficiency in each language** and relative balance, which would favour fully balanced bilinguals.
- The **cultural milieu** of the families influencing the bilingual growth of their children.
- **Language of the MLA administered**, which may be more or less familiar to the participants;
 - Last but not least, the **specific language pairs** involved in the type of bilingualism considered.

Our study.

General Aim:

Exploring **Metalinguistic awareness (MLA) in bilinguals** as compared to monolinguals, in the **transitional phase from kindergarten to primary school,**

i.e., before the formal teaching of language-related practices solicit this type of awareness in all children.

Levels of the study

1) At the most general level, by comparing a sample of **Italian-French bilingual children** with a sample of **monolingual controls of both languages**, Italian-speaking and French-speaking children on cognitive and metalinguistic measures.

Hypothesis: *bilingual children would show significantly more advanced metalinguistic abilities than both types of monolinguals.*

2a) Exploring **MLA within the bilingual sample**, as a function of **early onset of the bilingual practice** →→

by comparing **simultaneous** and **consecutive bilinguals** on all measures.

Hypothesis:

*Differences were expected in **favour of the simultaneous bilinguals**, **although moderate** because of the reduced temporal gap between the two subsamples in the onset of the bilingual experience (At 1 y-old vs. 3 y-old approximately)*

2b) Exploring **MLA in the bilingual sample** as a function of **one or the other of their two main languages**, French or Italian, as linguistic versions of the same MLA test →→

By comparing bilinguals receiving the MLA test in the Italian version (**TAM-1**) to those receiving the French version (THAM-1) also on a random basis.

Hypothesis: *Some differences in favour of the language of the context (Italian, in this case), were expected, but not significant.*

3) Exploring possible **differences in MLA in the monolingual sample** →→

By comparing **Italian-speaking** to **French-speaking** monolinguals, each tested in their respective language and country.

Hypothesis: *no differences in the cognitive measure were expected.*

No precise hypothesis as to MLA differences in general, nor in particular.

Participants:

101 5 year-old children

- **47 Italian-French** bilinguals (Mean age: 5, 3677; SD: ,28225), enrolled in a French kindergarten in an Italian city,

31 raised as **simultaneous**

16 as **consecutive** bilinguals.

- **54 monolinguals** (Mean age: 5, 3830; SD: 2,1000):

27 Italian-speaking enrolled in an Italian kindergarten of the same **Italian city**

27 French-speaking enrolled in a French kindergarten in a **French city**.

Table 1. Distribution of the participants in the bilingual and the monolingual samples

		Italian-French Bilinguals (N = 47)	Monolinguals (N = 54)
Age (years)		5.37 ± .28 ^a	5.38 ± .21 ^a
Sexual gender (%)	Males	22 (46.8)	29 (53.7)
	Females	25 (53.2)	25 (46.3)
Bilingualism (%)	Simultaneous	31 (66.0)	
	Consecutive	16 (34.0)	
Monolingualism(%)	Italian-sp.		27 (50.0)
	French-sp.		27 (50.0)

^a Values shown as mean ± sd

SES:

In all samples, bilingual and monolingual, families were from **upper middle class,**

Gender distribution: balanced.

Test and measures:

MLA was assessed with a test made up of seven **(7) metalinguistic tasks**.

First developed and validated in **Italian, as TAM-1** (*Test di Abilità Metalinguistiche n.1.*, Pinto, Candilera, 2000),

then developed in other linguistic versions, namely,

- **English, as MAT-1** (*Metalinguistic Ability Test n.1*; Pinto, Titone, Trusso, 1999),
- **Spanish, as THAM-1** (*Test de Habilidades Metalingüísticas n.1*, Pinto, Titone, Gonzales Gil, 2000),
- **French, as THAM-1** (*Test d'Habilités Métalinguistiques n.1*, Pinto & El Euch, in press),

The tasks:

Word order:

Canonical word order is upset and the child is asked to re-establish it suitably.

Word length evaluation :

Words of different length are presented, and the child is asked to say if the word is "long" or "short".

Lexical segmentation:

The child is presented with increasingly longer sentences, and has to identify and number the linguistic units they contain.

Rhyme test:

The child is asked to associate one word pertaining to a given words pair with a triad of others words on purely phonetic grounds, disregarding semantic associations.

Symbol substitution:

The child must substitute a given word for another in a regular sentence.

This substitution violates grammatical rules and produces a marked grammatical and/or semantic conflict.

The child has to resist the grammatical and/or the semantic conflict (highly demanding task in terms of control processes, according to Bialystok, 2001)

Printed words, letter and number identification:

The child must recognize linguistic units of different size and length, in stripes containing letters, monosyllabic and multisyllabic words, in alternation with numbers, drawings and a complete sentence.

Morphology and functions of written sign):

The child is asked whether certain types of signs can be read *per se*. 4 parts:

number 21 (*2 digits*)

articles: "a" (it. "un"; *2 letters*) and "the" (it. "il", *2 letters*)

punctuation marks: ? ! . ,

text: where to start from, how to go on, what is the role of the blanks, etc.

- In addition to the metalinguistic awareness tests, a non-verbal intelligence measure was used: the **Raven's Progressive Matrices PM47** (Raven, Raven, & Court, 1988).

Statistical Analyses

For each type of comparison, we used the **t-test for independent samples** with Cohen's d as an estimate of the effect size (Cohen, 1988).

RESULTS

1) General level comparison:

Bilingual and monolingual samples on all the cognitive and metalinguistic measures (**Table 2**).

*As predicted, the two samples had **comparable levels of abstract cognitive abilities**, as measured by the Raven's PM47,*

*whereas their **MLA performances differed very significantly** in nearly all the measures of the MLA test, except the Rhyme task.*

*N.B. ! Looking at the **effect size, 4 out of 7** significant differences were over the upper limit, showing therefore a **very large** effect size.*

Table 2. Comparisons between Bilinguals and Monolinguals (t-test for independent samples).

Scales	Bilinguals (N = 47)		Monolinguals (N = 54)		Statistics		
	Means	SD	Means	SD	t	p	Cohen's d
PM47	18.51	4.12	16.94	4.03	1.91	n.s	---
SS	4.83	3.83	2.78	3.27	2.91	.004	.57
W.O.	11.19	3.06	6.63	4.51	5.85	<.001	1.18
L.S.	6.81	2.41	2.54	2.25	9.19	<.001	1.83
W.L.E	10.34	2.52	8.30	3.28	3.46	.001	.69
R.T	13.51	3.48	11.94	4.70	1.87	ns	---
P.W.L.N.I.	10.02	4.89	6.13	5.02	3.93	<.001	.78
M.F.W.S.	8.28	1.71	5.94	2.70	5.08	<.001	1.03
Total Test	64.98	13.36	44.26	16.91	6.75	<.001	1.35

2a) MLA within the bilingual sample:

MLA as a function of the **age of onset of the bilingual experience** (**Table 3**).

No significant differences appeared between the two groups, although the means of the simultaneous are always slightly higher than those of the consecutive bilinguals, as can be seen especially in the total test (**67.74 vs. 59.63**)

Table 3. Comparisons between Simultaneous and Consecutive Bilinguals (t---test for independent samples).

Scales	Simultaneous (N = 31)		Consecutive (N = 16)		Statistics		
	Means	SD	Means	SD	t	p	Cohen's d
PM47	18.71	4.18	18.13	4.11	.45	n.s	---
SS	5.52	3.89	3.50	3.34	1.75	n.s	---
W.O.	11.45	3.16	10.69	2.91	.80	n.s.	---
L.S.	7.32	2.42	5.81	2.10	2.11	n.s.	---
W.L.E	10.55	2.64	9.94	2.29	.78	n.s.	---
R.T	13.87	3.50	12.81	3.44	.98	ns	---
P.W.L.N.I.	10.68	4.57	8.75	5.37	1.28	n.s.	---
M.F.W.S.	8.35	1.76	8.13	1.66	.43	n.s	---
Total Test	67.74	13.13	59.63	12.48	2.04	n.s	---

2a) MLA within the bilingual sample:

Bilinguals' performances as a function of the **linguistic version of the test**, via the **TAM-1 (Italian)** or the **THAM-1 (French)**, randomly assigned (Table 3).

*Again, this within-bilingual sample comparison **did not yield any significant difference.***

*Overall, as expected, the total test score obtained via the **Italian version** (in this case, the language of the context), was **a little higher** than the total obtained via the **French version** (67.08 vs 62.78).*

Table 4. Comparisons between Bilinguals' performances as a function of the linguistic version of the metalinguistic test, TAM---1 (Italian) or THAM---1 (French) (t---test for independent samples).

Scales	THAM---1 (N = 23)		TAM---1 (N = 24)		Statistics		
	Means	SD	Means	SD	t	p	Cohen's d
SS	3.83	3.88	5.79	3.55	1.81	n.s.	..
W.O.	10.91	3.26	11.46	2.91	.60	n.s.	..
L.S.	6.96	1.71	6.67	2.95	.40	n.s.	..
W.L.E	9.61	2.62	11.04	2.25	2.01	n.s.	..
R.T	13.22	3.45	13.79	3.56	.56	n.s.	..
P.W.L.N.I.	10.22	4.94	9.83	4.94	.26	n.s.	---
M.F.W.S.	8.04	2.01	8.50	1.38	.91	n.s.	..
Total Test	62.78	14.26	67.08	12.36	1.1	n.s.	---

3° Aim:

MLA in the two **monolingual samples (French-speaking vs Italian-speaking)** (Table 5).

As expected, no differences appeared in the general cognitive measure.

No differences, as well, in some tasks, namely:

Symbol substitution and **Word Order**, respectively, highly demanding on control and analysis (Bialystok, 1991, 2001).

But !

French-speaking monolinguals were **significantly higher** than the Italian-speaking counterparts in **all the other tasks and in the total test score:**

Lexical segmentation (3.41 vs. 1.67; $t_{(52)} = 3.05, p = .004$),
Word length evaluation (9.67 vs. 6.93; $t_{(52)} = 3.24, p = .002$),
Rhyme task (14.00 vs. 9.89; $t_{(52)} = 3.54, p = .001$),
Printed word, letter and number identification (9.00 vs. 3.26; $t_{(52)} = 5.08, p = <.001$),
Morphology and function of written signs (7.33 vs. 4.56; $t_{(52)} = 4.36, p = <.001$),
Total test (53.07 vs. 35.44; $t_{(52)} = 4.45, p = <.001$).

*Moreover, all the estimates of the **effect size** measured by means of Cohen's *d* were **over the upper limit** →→*

***Differences** were **systematic in strength and directionality**, in favour of the **French-speaking group**.*

Table 5. Comparisons French-speaking and Italian-speaking Monolinguals (t-test for independent samples).

Scales	French-speaking (N = 27)		Italian-speaking (N = 27)		Statistics		
	Means	SD	Means	SD	t	p	Cohen's d
PM47	17.89	3.88	16.00	4.01	1.75	n.s.	---
SS	2.89	3.22	2.67	3.38	.24	n.s.	---
W.O.	6.78	3.78	6.48	5.20	.20	n.s.	---
L.S.	3.41	2.34	1.67	1.81	3.05	.004	.83
W.L.E	9.67	2.86	6.93	3.14	3.24	.002	.91
R.T	14.00	3.13	9.89	5.14	3.54	.001	.96
P.W.L.N.I.	9.00	4.64	3.26	3.56	5.08	<.001	1.38
M.F.W.S.	7.33	2.16	4.56	2.50	4.36	<.001	1.18
Total Test	53.07	12.61	35.44	16.21	4.45	<.001	1.21

As a further point:

How distant were the MLA performances at the **lowest end of the bilingual** sample - in this case represented by the consecutive bilinguals - from the MLA performances at the **highest end of the monolingual sample**, in this case, represented by the French-speaking monolinguals? →→

In other words,

*How deep was the **MLA gap "at the borders"** of the two main samples? (Table 6)?*

Table 6. Comparisons between Consecutive Bilinguals and French-speaking Monolinguals (t-test for independent samples).

Scales	Consecutive Bilinguals (N = 16)		French-speaking Monolinguals (N = 27)		Statistics		
	Means	SD	Means	SD	t	p	Cohen's d
PM47	18.13	4.11	17.89	3.88	.18	n.s.	...
SS	3.50	3.34	2.89	3.22	.59	n.s.	...
W.O.	10.69	2.91	6.78	3.78	3.54	.001	1.15
L.S.	5.81	2.10	3.41	2.34	3.37	.002	1.07
W.L.E	9.94	2.29	9.67	2.86	.32	n.s.	...
R.T	12.81	3.44	14.00	3.13	1.15	n.s.	...
P.W.L.N.I.	8.75	5.37	9.00	4.64	.16	n.s.	...
M.F.W.S.	8.13	1.66	7.33	2.16	1.25	n.s.	...
Total Test	59.63	12.48	53.07	12.61	1.65	n.s.	...

Bilingual's superiority was confirmed at a significant level in two tasks,

Word order (10.69 vs. 6.78; $t_{(41)} = 3.54, p = .001$),

and **Lexical segmentation** (5.81 vs. 3.41; $t_{(41)} = 3.37, p = .002$)

with an effect size over the upper limit,

whereas in all the other measures **differences were no more significant.**

DISCUSSION

The results highlighted the **importance of the bilingual experience** in relation to metalinguistic development in **different ways**.

-1) *When comparing the **two total samples of bilingual and monolingual children**:*

profound gaps in metalinguistic abilities in favour of bilingual children were found.

supporting the position that **bilingualism is an accelerating factor of metalinguistic development**.

2) When exploring **variations within the bilingual sample**:

- **2a)** as a function of the **age of acquisition** of the two languages
- **2b)** or of the **linguistic version** of the metalinguistic test →→
- performances appeared **very homogeneous**:

By contrast, within the monolingual sample, **discrepancies** appeared between **the two monolingual controls**,

with the French kindergartners outperforming their Italian counterparts .

A **possible explanation** of the metalinguistic differences between the two monolingual controls:

pedagogical differences in the particular kindergartens chosen for this study in the respective countries.

Among the major points to pursue in possible replications:

- a) **Increasing the numerosity** of each group, for giving more consistence to intergroup comparisons,
- b) Assessing MLA with **tests validated in each language**
- c) analyzing more accurately the **curricular characteristics** of all the kindergartens involved, especially the activities which are most likely to promote language awareness in children.
- d) exploring the **predictive power of metalinguistic abilities**, as measured at this early stage, towards later **metalinguistic development and academic achievement**, as measured at the **end of primary level**.

THANK YOU!

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