

Supplementary materials for the manuscript
***Identifying bilingual reference profiles: A cluster-analysis approach to
reference production among Greek-Italian bilingual children***

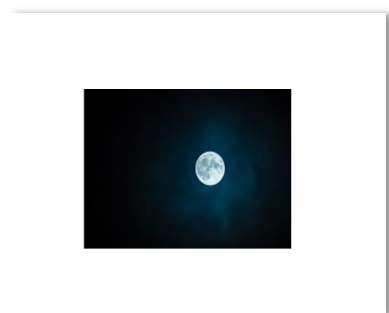
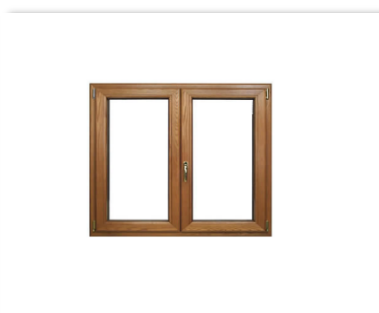
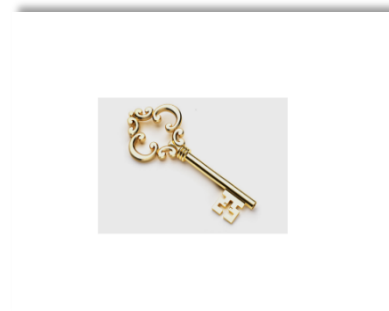
Supplementary materials 1: Examples of the materials used in each task

Narrative retelling task

The *Edmonton Narrative Norms Instrument* (ENNI; Schneider et al., 2005) was used for both Greek and Italian. Stories 'A3 – airplane' and 'B3 – balloon' can be found at <http://www.rehabresearch.ualberta.ca/enni/pictures>.

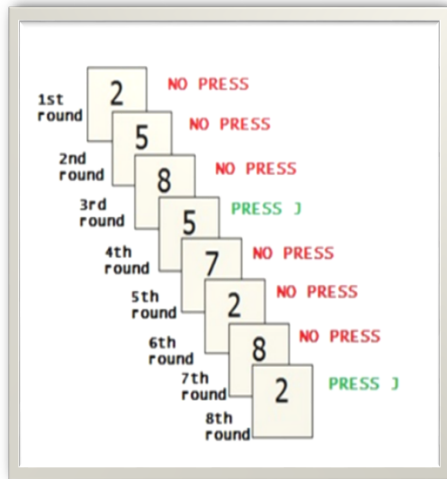
Vocabulary task

In order to measure expressive vocabulary in both Greek and Italian, we used the items from the Word Finding Vocabulary Test (4th Ed., Renfrew, 1995). We created the task with images from the internet (as shown in the series of slides below, corresponding to four items in the test).



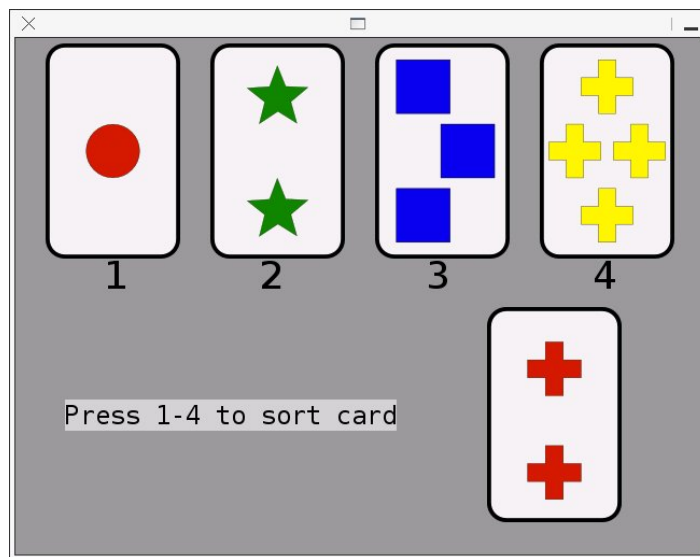
2-back task

The 2-back task was implemented in E-prime. It appeared as a sequence of slides, each featuring a digit, as shown in the example screen below.



Wisconsin Card Sorting test

We used a free implementation of the Wisconsin Card Sorting Test which can be downloaded from <http://pebl.sf.net>. An example screen can be seen below (image taken from <https://pebl.sourceforge.net/screens/cardsort.jpg>).



Theory of Mind task

This task used silent videos of characters performing actions in a social situation (Devine & Hughes, 2013). Below we provide some screenshots from the films (reproduced from Devine & Hughes, 2013, with permission). From *Safety Last* (Copyright of the Harold Lloyd Trust, 1923).



Supplementary Materials 2: Characteristics of the narrative retellings

Table S2. Characteristics of the narrative retellings, considering the number of clauses and the clause length in words.

	Greek	Italian
Number of clauses	Mean = 30.3 SD = 8.7 Range = [11-48]	Mean = 30.6 SD = 7.7 Range = [14-47]
Clause length in words	Mean = 4.8 SD = 2.3 Range = [1-17]	Mean = 5.5 SD = 2.9 Range = [1-21]

Supplementary Materials 3: Coding of referring expressions

The coding of introduction, maintenance, and reintroduction followed Serratrice (2007). Introduction was used for a referent that was not mentioned before in the narrative. Maintenance was used for a referent that was mentioned before in the immediately preceding clause. This is thus a local definition of maintenance, whereby all mentions in the preceding clause were included except those which involved a subject argument whose immediate antecedent was in object position. This latter case was coded as a reintroduction, as were all remaining referring expressions. Direct speech and comments made by the researcher (if any) were excluded from the analysis. We coded all REs referring to animate referents (the giraffe girl, the elephant boy, the lifeguard and the elephant lady in story A3 and the rabbit boy, the dog girl, the balloon-seller and the rabbit mother in story B3) or the main inanimate referent (the little airplane in story A3 and the balloon in story B3). We decided to code the main inanimate referent because of its prominent role in the story (see Torregrossa & Bongartz, 2018 for the same methodology).

Table S3. Example coding of the narrative production data. Coded referring expressions on each line are underlined. Note that after coding, the possessive adjective was excluded from the dataset.

	Morphosyntactic form	Discourse function
Ehm un giorno <u>una giraffa</u> aveva un giocattolo	INDEF full noun	intro
Ehm un giorno una giraffa aveva <u>un giocattolo</u>	INDEF full noun	intro
e la <u>sua</u> amica era gelosa	Possessive adjective	maintain
e <u>la sua amica</u> era gelosa	DEF full noun	intro
perché <u>lei</u> non ce l'aveva.	Full pronoun	maintain
perché lei non ce <u>l'</u> aveva.	Clitic pronoun	reintro
Poi <u>∅</u> l'ha rubato	Null pronoun	maintain
Poi <u>∅</u> <u>l'</u> ha rubato	Clitic pronoun	maintain

Supplementary Materials 4: Correlations between linguistic and cognitive measures

Table S4. Correlation coefficients for the relation between the additional language-related and cognitive measures.

	Greek vocabulary	Italian vocabulary	2-back (Aprime)	ToM	Wisconsin (Perseverative errors)	Wisconsin (Failure to maintain set)
Greek vocabulary	-					
Italian vocabulary	-0.20	-				
2-back (Aprime)	0.19	0.34 *	-			
ToM	-0.25	0.44 **	0.13	-		
Wisconsin (Perseverative errors)	-0.17	0.18	0.07	0.29	-	
Wisconsin (Failure to maintain set)	0.14	-0.17	-0.07	-0.07	-0.14	-

* = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

The correlational analyses show that neither the vocabulary measures nor the cognitive measures were related to each other. However, positive correlations were found between vocabulary score in Italian on the one hand and performance on the 2-back and ToM tasks on the other.

Supplementary Materials 5: the three-cluster output obtained for the datasets of morphosyntactic forms in Greek and Italian

Table S5. The three-cluster output obtained for the datasets of morphosyntactic forms in Greek (left) and Italian (right).

	Greek			Italian		
	Cluster 1	Cluster 2	Cluster 3	Cluster 1	Cluster 2	Cluster 3
INDEF full nouns	3.4	0.7	72.9	3.9	0.2	78.3
DEF full nouns	56.2	15.4	25.5	57.0	13.2	20.6
Full pronoun	2.4	1.5	0.0	4.1	3.4	0.5
Clitic pronoun	18.4	23.4	1.5	15.8	27.0	0.6
Null pronoun	19.6	59.0	0.0	16.8	41.0	0.0
Nonfinite	-	-	-	2.5	15.2	0.0
Categorisation	reintro	maintain	intro	reintro	maintain	intro