Adults process Number and Gender head-subject mismatches differently during the online comprehension of object-relative clauses (as children do, offline).

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Children selectively struggle with the comprehension of embedded relative clauses, cross-linguistically. Children comprehend subject-relative clauses (SRC) as in (1) more accurately than object-relative clauses (ORC) as in (2) **[1]**. Moreover, in Italian **[2]**, ORC comprehension improves when the two NPs (the head of the RC *the waiter* and the subject of the RC *the boy*) mismatch in Number features, as in (3), while there is no improvement when the two NPs mismatch in Gender features, as in (4). Number and Gender behave differently because of their different morphosyntactic status in Italian: Number plays an active role (i.e., triggers movement) while Gender does not, as theorized in the featural Relativized Minimality approach **[3-5,1]**.

(1) Il cameriere che saluta il ragazzo lavora qui. (The waiter that is greeting the boy works here.)
(2) Il cameriere che il ragazzo saluta lavora qui. (The waiter that the boy is greeting works here)
(3) Il cameriere che i ragazzi salutano lavora qui. (The waiter that the boys are greeting …)
(4) Il cameriere che la ragazza saluta lavora qui. (The waiter that the girl is greeting ...)

Adults are not expected to show low accuracy in the comprehension of these sentences since they are all grammatical in Italian. In this self-paced reading study, we investigate whether Italian speaking adults show a selective facilitation effect for Number (compared to Gender) mismatches during online sentence comprehension (as children do "offline").

Several studies show that SRC are easier to process than ORC, and that the dissimilarity between the head (e.g., NP *the waiter*) and the subject of the RC (e.g., pronoun *he*) can make ORC easier to process (e.g., **[6]**). Still, there is limited evidence of the SRC/ORC asymmetry in Italian adults **[7,8]**, and no study has directly compared SRC and ORC with different instances of head-subject (Gender, Number) morphosyntactic mis/match, as we do in this study (see Table 1). ORCs should trigger longer reading times (RTs) compared to SRC (2 vs 1); ORC Number mismatches are expected to show a facilitation effect (faster RTs) compared to ORC All-match (2.c vs 2.a), while ORC Gender mismatches are not expected to show a similar facilitation effect (2.b vs 2.a).

Forty-six Italian native speakers accessed Ibex Farm to read 102 experimental sentences plus 60 fillers, constituent-by-constituent, and to answer comprehension questions. RTs data of the two critical words (RC verb, main clause verb) were analyzed through a 2-stage analysis **[9,10]**. RTs were log-transformed and regressed against word length and trial position. The residual log RTs then entered a parsimonious **[11]** linear mixed-effect model analysis. The fixed-effect factors were coded as repeated contrasts: *Clause* (SRC -0.5; ORC 0.5), *Gender* and *Number* (match -0.5; mismatch 0.5). Figure 1 shows average RTs; Table 2 shows the output of the analysis.

Both the RC verb and the main verb showed longer RTs in the ORC compared to the SRC condition, in line with previous studies. We also found a Number mismatch facilitation effect on the ORC verb while the same effect did not reach significance for Gender **[1-5]**. Our findings show that children and adults appear to be subject to the same syntactic constraints, offline and online respectively, with morphological information analyzed during syntactic processing in a selective way depending on the nature of the morphosyntactic feature involved.

We also found that the main verb of both SRCs and ORCs showed smaller RTs for Number and Gender compared to All-match. This non-selective mismatch effect may mirror both a late (spill-over) processing of the RC verb and the processing of the long-distance subject-verb relation (*The waiter… works*) **[12]**. To disentangle these processes, we are designing a follow-up study testing sentences where the head of the RC is the object, so that the word following the RC verb is not the main verb of the sentence (e.g., *John is watching the waiter that the boy is greeting during the lunch-break at the restaurant*).

References: **[1]** Friedmann et al. (2009), *Lingua, 119*(1), 67–88. **[2]** Adani et al. (2010), *Lingua, 120*(9), 2148–2166. **[3]** Rizzi (1990). MIT Press. **[4]** Rizzi (2004). In A. Belletti (Ed.), *Structures and Beyond: the Cartography of Syntactic Structures, Vol. 3* (pp. 223-251). Oxford University Press. **[5]** Belletti et al. (2012). *Lingua, 122*(10), 1053–1069. **[6]** Gordon et al. (2001), *Journal of experimental psychology: learning, memory, and cognition, 27*(6), 1411. **[7]** Di Domenico & Di Matteo (2009). *The Journal of General Psychology: Experimental, Psychological, and Comparative Psychology, 136*(4), 387-406. **[8]** Guasti, Vernice & Frank (2018). *Languages, 3*(3), 24. **[9]** Hofmeister (2011), *Language and cognitive processes, 26*(3), 376-405. **[10]** Villata et al. (2018), *Frontiers in psychology, 9,* 2. **[11]** Bates et al. (2015). *arXiv preprint arXiv:1506.04967.* **[12]** Staub et al. (2017), *Cognitive Science, 41*, 1353-1376.

Table 1. Experimental conditions

SRC	***All-match***	**(1.a)** *Il professore che chiama lo studente apre la porta dell'aula.* (The professor$_{(sg,m)}$ that calls the student$_{(sg,m)}$ opens the door of the class)
	Gender (mismatch)	**(1.b)** *Il professore che chiama la studentessa apre la porta dell'aula.* (The professor$_{(sg,m)}$ that calls the student$_{(sg,f)}$ opens the door of the class)
	Number (mismatch)	**(1.c)** *Il professore che chiama gli studenti apre la porta dell'aula.* (The professor$_{(sg,m)}$ that calls the students$_{(pl,m)}$opens the door of the class)
ORC	***All-match***	**(2.a)** *Il professore che lo studente chiama apre la porta dell'aula.* (The professor$_{(sg,m)}$ that the student$_{(sg,m)}$ calls opens the door of the class)
	Gender (mismatch)	**(2.b)** *Il professore che la studentessa chiama apre la porta dell'aula.* (The professor$_{(sg,m)}$ that the student$_{(sg,f)}$ calls opens the door of the class)
	Number (mismatch)	**(2.c)** *Il professore che gli studenti chiamano apre la porta dell'aula.* (The professor$_{(sg,m)}$ that the students$_{(pl,m)}$ call opens the door of the class)

Figure 1. Average RTs and standard errors.

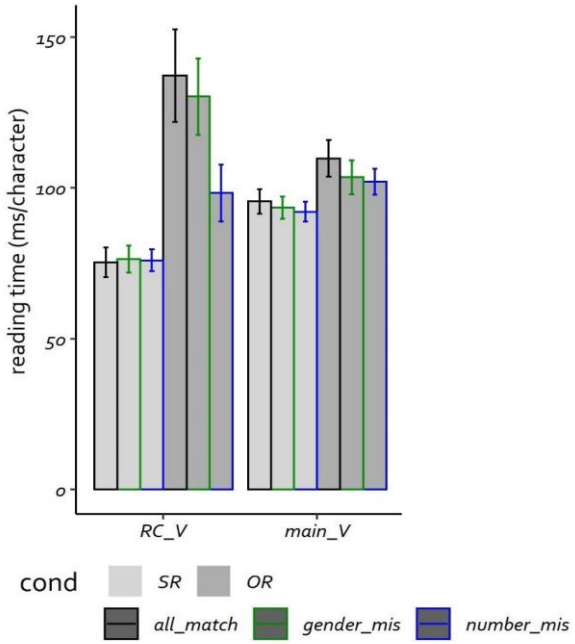

Table 2. Output of the statistical data analysis.

	Estimate	*SE*	*t*
Verb of the relative clause (RC_V)			
Clause	0.36	0.05	**7.48**
Gender	-0.02	0.02	-1.17
Number	-0.04	0.02	**-2.75**
Clause:Gender	-0.03	0.03	-1.04
Clause:Number	-0.11	0.04	**-2.99**
▪ ***Interaction model (SR clause)***			
Number	0.01	0.02	0.78
▪ ***Interaction model (OR clause)***			
Number	-0.08	0.03	**-2.91**
Verb of the main clause (main_V)			
Clause	0.06	0.02	**4.04**
Gender	-0.04	0.01	**-2.49**
Number	-0.03	0.02	**-2.16**
Clause:Gender	-0.02	0.03	-0.51
Clause:Number	-0.02	0.03	-0.47