Passives in French-speaking children with Autism Spectrum Disorder

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Evidence has been presented that passives are difficult for young children not because A-movement per se is unavailable to them, but because straightforward A-movement in passives incurs a violation of Relativized Minimality (RM) (Rizzi, 2004) which is circumvented in adults via a complex syntactic operation (smuggling) unavailable to children under age 5 (Belletti 2009, Snyder & Hyams 2015). Snyder and Hyams argued that adultlike passives in children below age 4 reported in the literature arise when either the task or the language entails that features such as Focus or Topic are highly salient and thus when it is possible to distinguish the fronted logical object from the intervening logical subject in a passive, thereby avoiding a RM violation because the subject does not share this feature, and thus does not constitute an intervener.

It is thus possible that children's difficulty with passives could stem from difficulty with smuggling, but also from difficulty interpreting/tracking discourse features such as Topic. Investigation of passives in children with Autism Spectrum Disorder (ASD) holds the promise of looking at both of these options. First, significant pragmatic deficits, including discourse pragmatics (information structure), are universal in ASD. Second, it has been argued that a subgroup of children with ASD display (in addition) impairment on formal aspects of language, including constructions involving noncanonical word order (Durlemann et al., 2015; Zebib et al., 2013), and thus present syntactic profiles reminiscent of Specific Language Impairment (SLI), children for whom passives are a classical locus of difficulty. So far, studies on passives in ASD have yielded mixed results, with children displaying difficulties or not, and, if so, related or not to nonverbal levels (Gavarró & Heshmati, 2014, for Farsi; Perovic et al., 2007, for English; Terzi et al., 2014, for Greek).

We report on an initial study of comprehension of passives in French-speaking children, both typically developing (TD) children and children with ASD of varying nonverbal levels (Table 1). Various passive types were assessed via a classical sentence-picture matching task (adapted from Armon-Lotem et al., 2016) which did not render the topicality of the patient salient. This ruled out any informational structure advantage the TD children might have over the children with ASD, meaning that any difficulties should be syntactic rather than pragmatic.

Performance on long versus short actional passives was not different in any of the three groups tested, in keeping with the TD literature showing that in many languages all actional passives are mastered by age 5. The ASD group, however, performed lower than both TD groups on both actional and psychological passives, though the same pattern can be seen in the ASD results and by comparing the younger TD group with the older TD group (Figure 1): performance on passives was lower than on actives and performance on psychological passives was lower than on actional passives. This was particularly striking when above chance performance in the two TD groups was compared to that in the ASD group split into children who mastered actional passives (PASS+) and those who did not (PASS-) (Table 2). Moreover, difficulties with passives were unrelated to nonverbal abilities: the subgroup of children with normal nonverbal intelligence also displayed worse performance on these structures. Our study is thus in line with work suggesting that there are children with ASD having a linguistic phenotype reminiscent of that in SLI: impaired formal language, and in particular, difficulties with noncanonical word order, unrelated to low nonverbal cognition.

Finally, it is intriguing that even PASS+ children performed worse than their TD age peers (and like the young TD children) on psychological passives, suggesting that their pragmatic

deficit affects their ability to shift from a stative to an eventive interpretation on a stative verb ("semantic coercion"), an operation argued to be behind psychological passives (Grillo 2008). The next step for the line of enquiry engaged here will be to use comprehension and production tasks in which the patient has been established as a discourse topic in order to see whether young TD children have a clear advantage over children with ASD, or not.

Table 1. Participants ($N = 60$)

	ASD ($n = 20$)	TD-1 ($n = 20$)	TD-2 ($n = 20$)
Age range	7;8 - 10;11	5;1 - 6;7	7;9 - 10;8
Mean age (SD)	9;4 (1;0)	5;10 (0;5)	9;5 (0;11)
Raven's Progressive Matrices	9 below percentile 10 11 over percentile 15	--	--

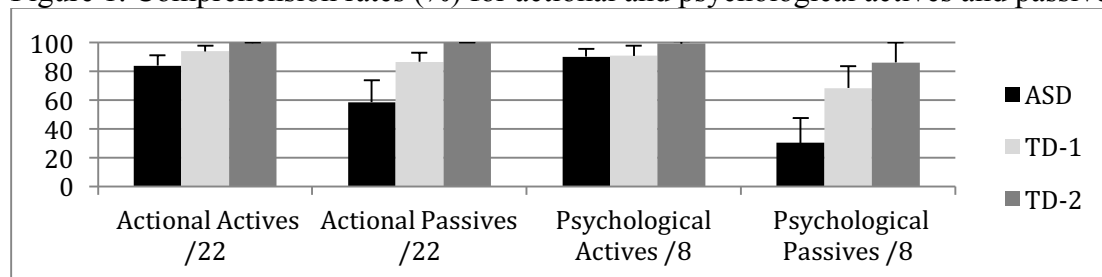Figure 1. Comprehension rates (%) for actional and psychological actives and passives

Table 2. Percentage of participants with above-chance performance*

Participants	Actional Actives (/22)	Actional Passives (/22)	Psychological Actives (/8)	Psychological Passives (/8)
PASS- ($n = 9$)	66.7*(6/9)*	0*(0/9)*	55.6*(5/9)*	0*(0/9)*
PASS+ ($n = 10$)	100 *(10/10)*	100 *(10/10)*	90*(8/10)*	40*(4/10)*
TD-1 ($n = 19$)	100 *(19/19)*	94.7*(18/19)*	84.2*(16/19)*	42.1*(10/19)*
TD-2 ($n = 19$)	100 *(19/19)*	100 *(19/19)*	100 *(19/19)*	78.9 *(15/19)*

*One child in the ASD group had chance performance on all sentence types, and was thus excluded, along with his TD counterparts.

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