

### Supplementary File 5: Data set for Figure 7. Summary of clinical studies

This appendix includes data sources for Figure 7 in the main text, ordered alphabetically by population and then by language, and chronologically by study. In the following table, each row represents a single experiment/task unless the study reports only combined results.

For studies that investigated different factors affecting subject/object asymmetry (e.g. animacy, matrix position, pronominality), we collapsed the results to indicate only the overall difference between subject and object relative clauses. We also interpreted the results maximally: if a subject/object preference was shown in even one of multiple measures (e.g. accuracy and reading times for self-paced reading) or one condition, we indicated the preference in the “Results” column. We indicate conflicting results from different conditions or measurements with “not clear.” Most of the results presented in the table are supported by the statistical tests used in the original study; for studies that did not report statistical results, we show the reported numerical preference, marked with \*. When the original study claims marginal significance, ~ is used for notation.

Results of healthy/typically developing controls are not included in the following table but can be found in Supplementary Files 1, 2, and 6, unless they performed at ceiling.

Abbreviations: ASD: autism spectrum disorder, C: comprehension, O > S: object preference, P: production, S > O: subject preference, S = O: no preference (no significant difference), SLI: specific language impairment, WS: Williams syndrome

Population	Language	Study	Domain	Method	Results
aphasic adults	Cantonese	Law & Leung 1998	C	picture selection	O > S
		Law & Leung 2000	C	picture selection	O > S
	English	Caplan & Futter 1986	C	act out	*S > O
		Grodzinsky 1989	C	picture selection	S > O
		Cho-Reyes & Thompson 2012	C	picture selection	S > O
			P	production priming	S ~> O
	German	Burchert et al. 2001	C	picture selection	S > O
	Greek	Terzi & Nanousi 2018	C	picture selection	S > O
	Hebrew	Friedmann & Gvion 2003	C	picture selection	S > O
		Friedmann & Shapiro 2003	C	picture selection	S > O
		Friedmann 2008	C	picture selection	S > O
	Italian	Carminati et al. 2006	C	picture selection	S > O
		Garraffa & Grillo 2008	C	picture selection	S > O
	Mandarin	Su et al. 2007	C	picture selection	O > S
	Russian	Friedmann, Reznick et al. 2010	C	picture selection	S > O
			P	repetition	S = O

Population	Language	Study	Domain	Method	Results
aphasic adults	Serbo-Croatian	Lukatela et al. 1995	C	picture selection	S > O
	Spanish	Beretta et al. 1996	C	picture selection	S > O
	Tagalog	Bondoc et al. 2018	C	character selection	S > O
			P	repetition	S > O
	Turkish	Aydin 2007	C	character selection	S = O
		Yarbay Duman et al. 2008	P	picture selection	S = O
		Yarbay Duman et al. 2011	C	picture selection	S > O
ASD adults	French	Durrleman et al. 2015	C	character selection	S > O
ASD children (5;5–16)	French	Durrleman et al. 2016	C	picture selection	S > O
ASD children (Ms = 3;7, 4;5, 5;11, 9;4)	Portuguese-European	Martins et al. 2018	C	act out	S > O
			C	reference judgment	S > O
hearing-impaired children (9;6–21;0)	Arabic-Palestinian	Friedmann, Szterman et al. 2010	C	picture selection	S > O
hearing-impaired children, adolescents (10–18)	English	Quigley et al. 1976	C	written comprehension	S > O
			P	written samples	S > O
hearing-impaired children (7;8–9;9)	Hebrew	Friedmann & Szterman 2006	C	picture selection	S > O
hearing-impaired children (7;7–11;3)	Hebrew	Friedmann & Szterman 2006	P	preference	S > O
			P	picture description	S > O
hearing-impaired children (7;7–11;3)	Hebrew	Friedmann 2008	C	picture selection	S > O
			P	preference	S > O
			P	elicited production	S > O
hearing impaired children (9;1–12;3)	Hebrew	Friedmann, Szterman et al. 2010	C	picture selection	S > O
hearing impaired children with cochlear implants (6;9– 9;3)	Italian	Volpato & Adani 2009	C	character selection	S > O
hearing impaired children with cochlear implants (7;9– 10;8)	Italian	Volpato & Vernice 2014	P	preference	S > O
hearing impaired children with cochlear implants (7;9– 10;8)	Italian	Volpato 2020	C	character selection	S > O
hearing-impaired children (6;11–12;8), Cantonese- speaking	Written Chinese	Lam 2017	C	picture selection	O > S
			C	dot connecting	S = O
			P	elicited production	S = O
poor readers (M = 9.21)	English	Mann et al. 1984	C	act out	S > O
			P	sentence repetition	S = O

Population	Language	Study	Domain	Method	Results
poor readers ( $M = 9.15$ )	English	Smith et al. 1989	C	act out	*S > O
			C	picture selection	*S > O
poor readers (age not reported)	English	Crain et al. 1990	C	act out	not clear
poor readers ( $M = 7.67$ )	English	Bar-Shalom et al. 1993	C	act out	S > O
			P	elicited production	S > O
poor readers (8;7–13;3)	Hebrew	Arosio et al. 2017	C	picture selection	S > O
SLI children (5;0–8;4)	Danish	de López et al. 2014	C	picture selection	S > O
			P	preference	S > O
SLI children (6;0–11;11)	English	Hesketh 2006	P	narrative	S > O
SLI children, adolescents (9;5–16;00)	English	Adani et al. 2014	C	picture selection	S > O
SLI children (9;2–13;7)	German	Adani et al. 2016	P	elicited production	S > O
SLI children (5;4–9;4)	Greek	Stavrakaki 2001	C	act out	*S = O
SLI children (5;6–8;1)	Greek	Stavrakaki et al. 2015	C	character selection	S > O
SLI children (7;3–11;2)	Hebrew	Friedmann & Novogrodsky 2004	C	picture selection	S > O
SLI children, adolescents (9;3–14;6)	Hebrew	Novogrodsky & Friedmann 2006	P	preference	S > O
			P	picture description	S > O
SLI children, adolescents (7;4–16;6)	Hebrew	Friedmann et al. 2015	P	preference	S > O
SLI children (6;1–10;2)	Hebrew	Arosio et al. 2017	C	picture selection	S > O
SLI children (4;5–5;9)	Italian	Contemori & Garraffa 2010	C	picture selection	S > O
			P	picture description, preference	*S > O
			P	repetition	*S = O (flooring)
SLI children (8–11)	Portuguese-European	Martins et al. 2018	C	act out	S > O
			C	reference judgment	S > O
SLI children, adolescents (5;08–15;83)	Russian	Rakhlin et al. 2016	C	picture selection	S > O
WS children, adults (8;1–30;9)	English	Grant et al. 2002	P	imitation	*S > O
WS children, adolescents (10;3–16;3)	English	Zukowski 2009	C	Test for reception of grammar (TROG)	S > O
			P	elicited production	S > O

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