

Supplementary Materials:

When did you stop speaking to yourself? Age-related differences in adolescents' world knowledge-based audience design

Caroline Arvidsson¹, David Pagmar¹, and Julia Uddén^{1,2}

¹Dept. of Linguistics, Stockholm University

²Dept. of Psychology, Stockholm University

TABLE OF CORRELATIONS

Spearman's rank-based correlation for the study's continuous variables. As expected, the two EF scores (Perseverative and Non-perseverative errors) correlated significantly. A significant negative correlation was observed between Perseverative errors and KAS. This negative correlation is not further discussed, as it is not the focus of our study and because of an outlier (over 3 standard deviations from the mean) that may have affected the results (see the right bottom corner of the Perseverative errors/KAS scatter plot).

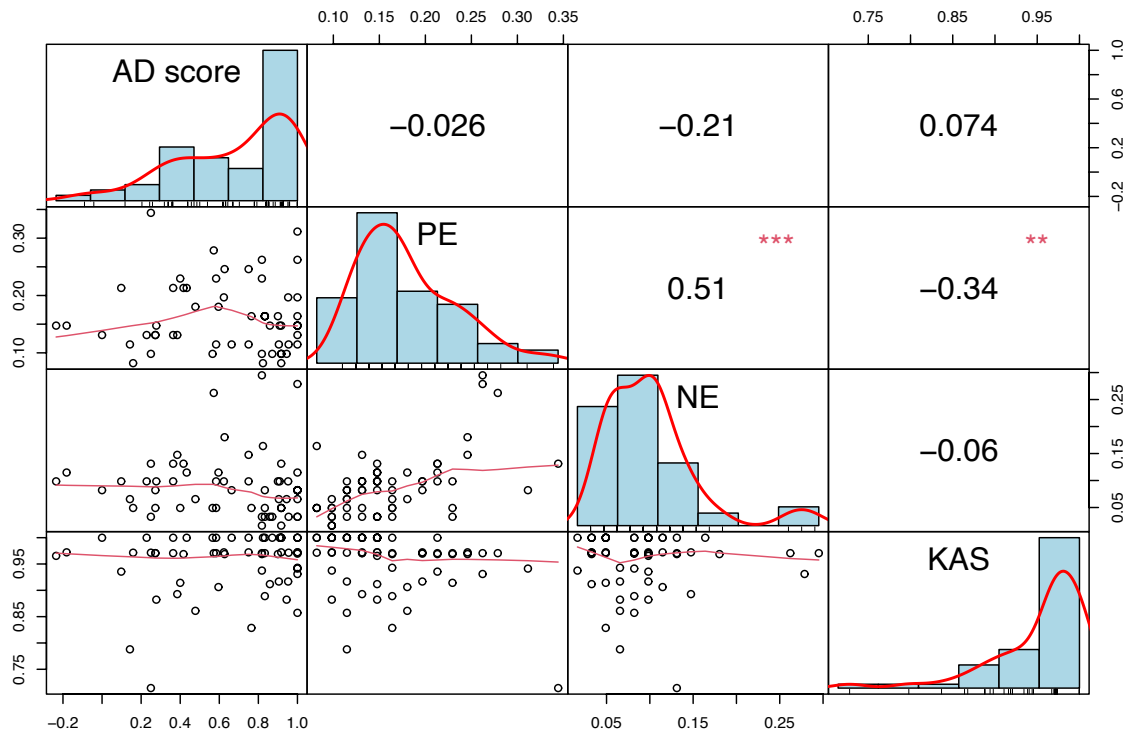


Figure S1. A correlation matrix, with measure histograms and scatter plots, including (1) AD score, representing ability to adapt utterances to suit one's addressee, (2) perseverative errors (PE), representing executive function and ability to flexibly switch matching rule after set-shift in the WCST, (3) non-perseverative errors (NE), representing executive function and ability to maintain a correct matching behavior during a set in the WCST, and (4) KAS (knowledge attribution score), representing how well the participant's assumptions about their addressee's knowledge states matched the conditions. No score was transformed or centered. The matrix was with the R package PerformanceAnalytics [1]).

TARGET AND COMPETITOR REFERENTS

Items used in the AD task. The selection of referents was based on a pre-test survey with six 11-year-olds (not participants in the main study), who answered questions whether they believed the name of the referent to be known or unknown to the addressee. We only included referents in which all participants agreed that the referent was known or unknown to the addressee. In the AD task, to provide referential expressions that successfully distinguished targets from competitors, no more than a noun phrase with a maximum of one modifier (an adjectival or prepositional phrase) was necessary.

Table S1. Translated examples (from Swedish) of descriptions of items in the unknown condition.

Target	Competitors	Example of target description	Addressee
Minecraft character	Cartoon figures (none in t-shirt)	'The man in t-shirt'	Elderly
Ariana Grande	Short-haired women	'The woman with long hair'	Elderly
Black Xbox console	Colored boxes	'The black box/console'	Elderly
BTG (7 member band)	Bands of maximum 3 people	'Seven/many people'	Elderly
Charizard (pokémon)	Drawed dinosaurs	'The dinosaur with a fire tail'	Elderly
Jockiboi (influencer)	Brown-haired men	'The blond man'	Elderly
Jonna (influencer)	Brown-haired women	'The blond woman'	Elderly
Nintendo switch	Consoles with colored buttons	'The control with black buttons'	Elderly
Pokéball	Balls in various colors	'The white and red ball'	Elderly
Snapchat logo (ghost-shaped)	Other minimalistic logos	'The ghost'	Elderly
TikTok logo	Logos in various colors	'The note/The black logo'	Elderly
The red angry bird	Birds (none red)	'The red bird'	Elderly
Twitter logo	Birds (none blue)	'The blue bird'	Child
BankID logo (D-shaped)	Minimalistic logos (none D-shaped)	'The letter D'	Child
Einar (musician)	Men i colorful clothes	'The man in black clothes'	Child
Instagram logo	Various symbols	'The camera'	Child
Law book	Books (none blue)	'The blue book'	Child
Barrack Obama	Blond/grey-haired men	'The man with black hair'	Child
Swedish passport	Books and booklets (none red)	'The red booklet'	Child
Stefan Löfvén (politician)	Blond men	'The man with brown hair'	Child
Donald Trump	Dark-haired men	'The blond man'	Child
Facebook Messenger Logo	Logos (none were blue circles)	'The blue circle'	Child
The Facebook logo	Logos (none blue)	'The blue logo'	Child
Calculator	Devices (none with black buttons)	'The thing with blue buttons'	Child

Table S2. Translated examples (from Swedish) of descriptions of items in the known condition.

Target	Competitors	Example of target description	Addressee
Christmas tree	Generic trees	'The tree with a star'	Elderly
Lucia (religious figure)	Women (none holding candles)	'The woman with candles'	Elderly
Eiffel tower	Buildings (none in parks)	'The building in the park'	Elderly
Sun	Geometric symbols (none yellow)	'The yellow thing'	Elderly
Lussekatt (pastry)	Raisin-free pastries	'The pastry with raisins'	Elderly
Semla (pastry)	Cream-free pastries	'The pastry with cream'	Elderly
Santa Claus	Men without beards	'The bearded man'	Child
Ginger bread	Cookies (none were heart-shaped)	'The heart-shaped cookies'	Child
Bamse (Cartoon character)	Drawed bears (none in blue hat)	'The bear with a blue hat'	Child
Lilleskutt (Cartoon character)	White-tailed bunnies	'The bunny with a pink tail'	Child
Star	Geometric shapes (none yellow)	'The yellow symbol'	Child
Pippi Longstocking	Girls (none with braids)	'The girl with braids'	Child

MODEL 3 (WITH AGE * EF INTERACTION)

To account for the possibility that the role of EF in referential production varies across ages, as discussed in [2], we performed an additional test (Model 3) which included the interaction Age group * Perseverative errors. Note that the presence or absence of interaction terms in the models did not change the results in any notable way. The interaction term was not significant and the main effects remained intact.

Table S3. Output from Model 3, which included the interaction AGE GROUP * Perseverative errors.

	Estimate	Std. Error	t value	p value
Age group	1.00	0.26	3.81	.001
Perseverative errors	0.85	3.28	0.26	.796
Non-perseverative errors	1.61	2.63	0.61	.543
KAS	1.16	2.14	0.54	.588
Age group * Perseverative errors	4.13	4.39	0.94	.350

POWER ANALYSIS FOR MODEL 3

An additional power analysis for multiple linear regression was conducted with the `pwr.f2.test` function in the 'pwr' package [3]. The analysis shows that for a model including all four predictors (Age group, Perseverative errors, Non-perseverative errors, KAS), plus one additional interaction variable (Age group * Perseverative errors) with an $\alpha = 0.05$ and power = 0.8, the required sample size is approximately $N = 38$. The sample size of the current study ($N = 58$) is therefore determined sufficient, also for this model.

REFERENCES

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