

Good-enough language processing in adolescents and adults: the effect of audial noise



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1. Introduction

Adolescents still acquire language competence between 13–19 years. Their language processing differs from that in adults on morphological, lexical, syntactic, and discourse levels (Nippold, 2000; 2006; Dawson et al., 2017). Furthermore, adolescents are still learning to use linguistic strategies: e.g. contextual abstraction.

Good-enough language processing: people do not always engage in detailed algorithmic processing of linguistic input, but rather, form shallow representations when confronted with some difficulty such as complex syntactic structure, or noisy input.

- (1) To what extent adolescents rely on the good-enough language processing strategy as compared to adults?
- (2) How noisy input influences processing in both adolescents and adults?

2. Experiments

20 adolescents: 9 females, mean age is 15
20 adults: 12 females, mean age is 28

Two self-paced reading experiments in silent laboratory conditions + two experiments in the presence of three-talker babble of voices
28 stimuli, 56 fillers in each experiment

Each person participated in one silent and one noisy experiment. Their order was randomized.

4. Predictions

→ Noise will increase cognitive load and trigger good-enough processing in both adolescents and adults.

→ Adolescents will read sentences slower than adults.

→ If adolescents make fewer mistakes in sentences (3) and (4) than adults, it could mean that they have less experience with the good-enough processing strategy.

→ If adolescents make more mistakes in sentences (3) and (4) than adults, it could mean that they have acquired the good-enough strategy but still have problems with processing of complex syntactic structures.

7. Conclusions

1. Both adolescents and adults rely on the good-enough processing strategy: they make significantly more mistakes in conditions (3) and (4) than in conditions (1) and (2). However, we did not find the difference between the two age groups.

2. In noisy conditions adults tend to be more accurate than adolescents. Probably their cognitive control works better.

3. In noisy conditions adolescents read significantly slower than adults and significantly slower than in silence. Background noise is more harmful for language processing in adolescents than in adults.

We plan to collect more data: 60 adolescents and 80 adults.

3. Stimuli

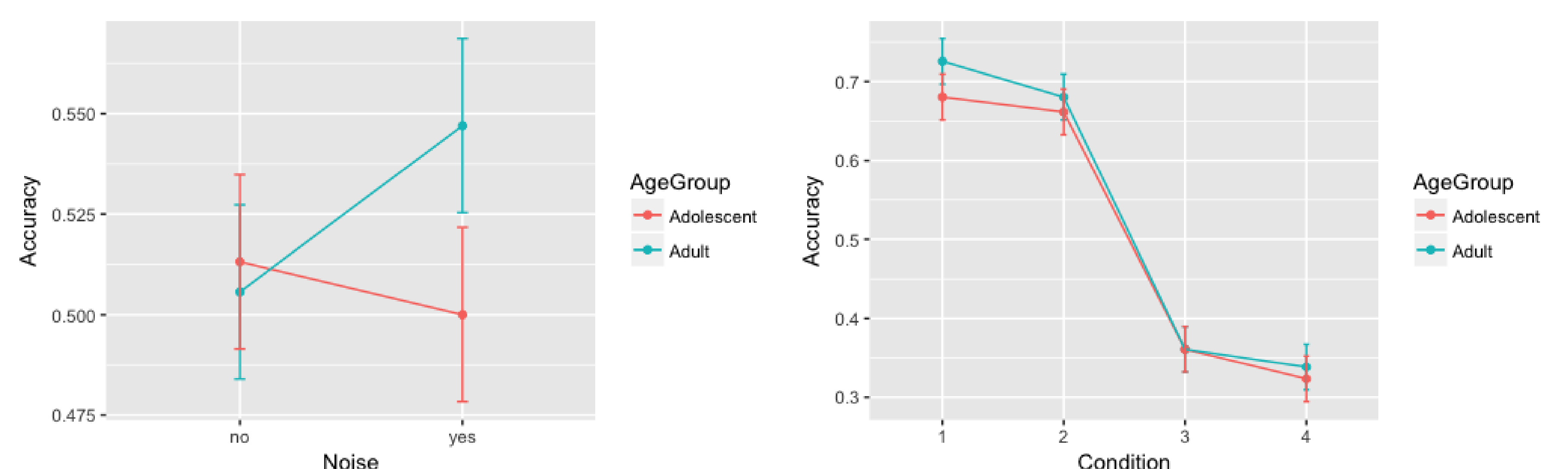
- (1) Rimma dressed the **child** of the writer, who was **babbling** incomprehensible words.
- (2) Rimma dressed the child of the **writer**, who **published** an interesting novel.
- (3) Rimma dressed the **child** of the **writer**, who **published** an interesting novel.
- (4) Rimma dressed the **child** of the **writer**, who was **babbling** incomprehensible words.

E.g. question: Who was babbling incomprehensible words? — The child / The writer

Plausibility: (1) and (2) are **plausible**; (3) and (4) are **implausible**

Syntactic closure: (1) and (3) have **early closure**; (2) and (4) have **late closure**

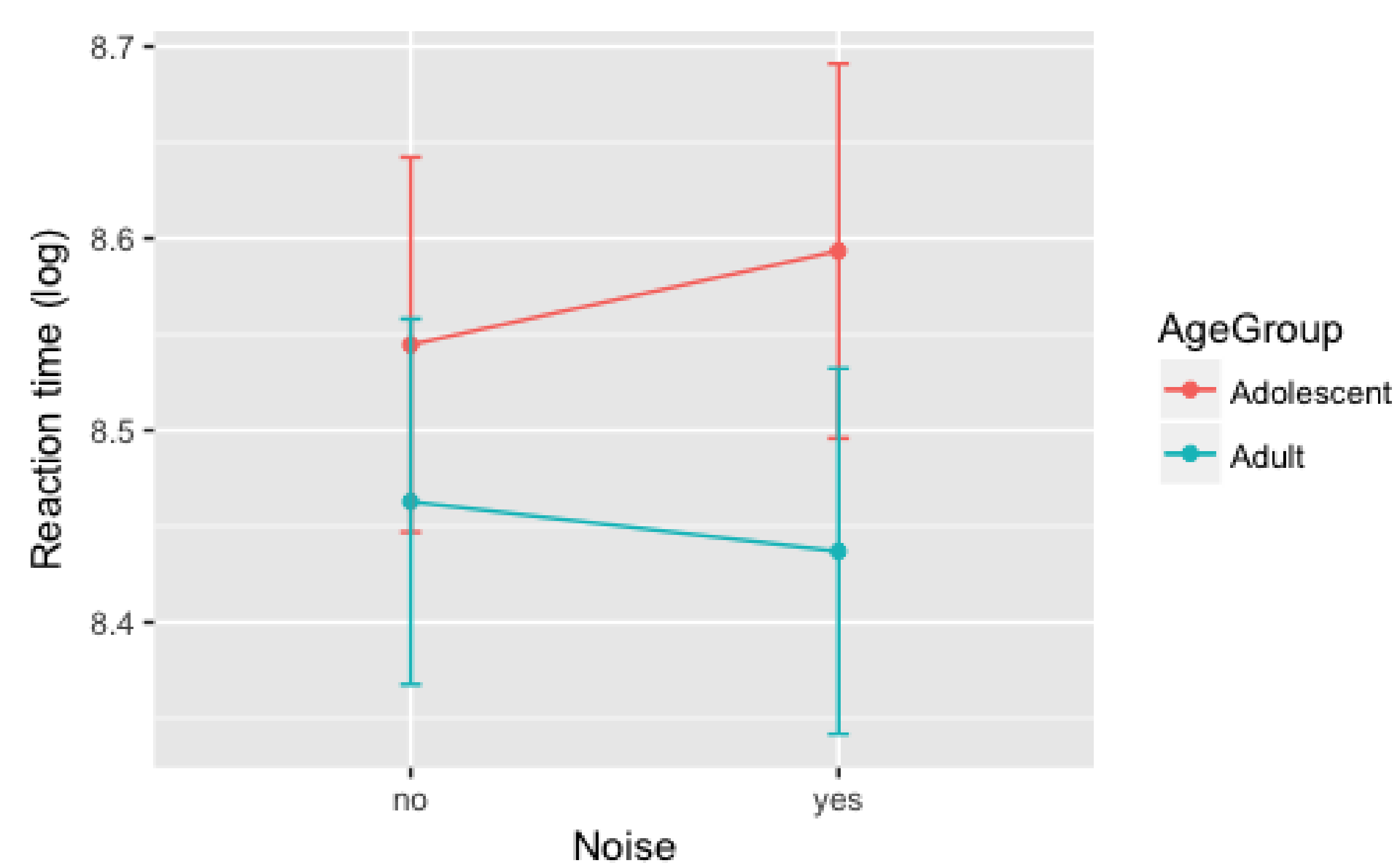
5. Results. Accuracy



(1) Noise, age group and their interaction are fixed effects. All effects are not significant: the effect of noise (Est.=0.04, SE=0.03, t=1.35); the effect of age (Est.=0.008, SE=0.03, t=0.25); the effect of noise for adolescents as compared to adults (Est.=-0.05, SE=0.04, t=-1.26).

(2) Condition, age group and their interaction are fixed effects. Both adolescents and adults make more mistakes in conditions 3 (Est.=-0.36, SE=0.04, t=-8.95) and 4 (Est.=-0.39, SE=0.04, t=-9.5), as compared to condition 1.

6. Results. Reaction time



Noise, age group and their interaction are fixed effects. Adolescents read slower in the presence of noise than in silence (Est.=0.05, SE=0.02, t=2.34). In the presence of noise adults read faster than adolescents (Est.=-0.07, SE=0.03, t=-2.5).