

No evidence for a link between childhood (6-10y) cellular aging and brain morphology (12y) in a preregistered longitudinal study

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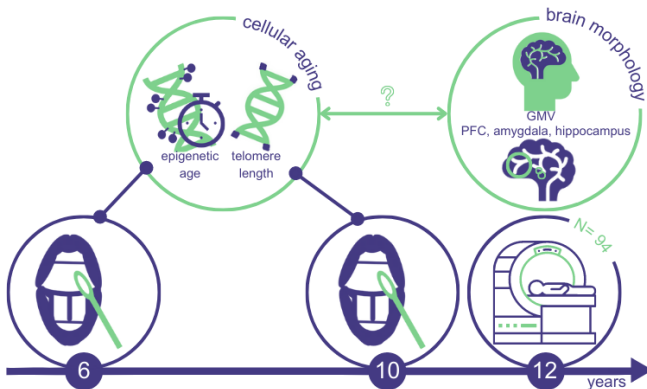
INTRODUCTION

- Early life environmental factors, such as stress and trauma, can have a significant impact on a variety of bodily processes, including cellular aging and brain development.
- Whether cellular wear-and-tear effects are also associated with individual differences in brain structures, remains unknown.

OBJECTIVE

Investigate potential associations between two biomarkers of cellular aging (i.e. telomere length and epigenetic age), and brain structure at age 12.

METHODS



Population:
 94 Dutch community children from the BIBO cohort

Analyses:
 Whole-brain multiple regression analysis in SPM12

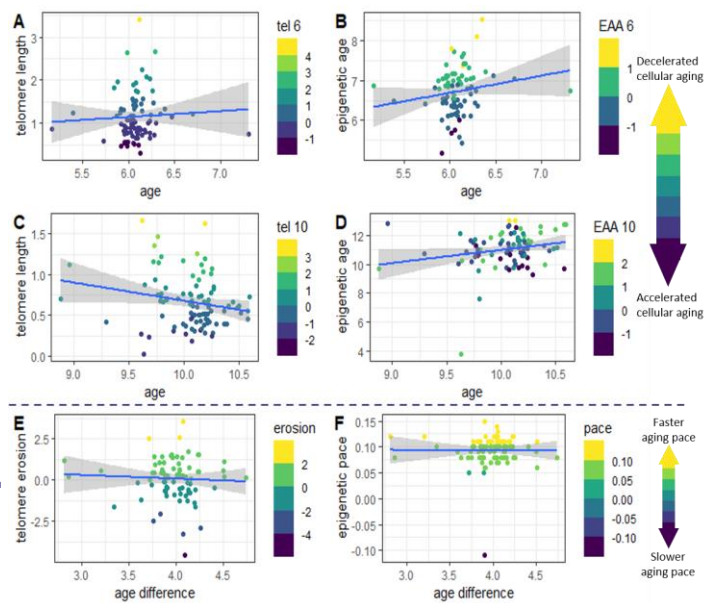
DISCUSSION

Potential explanations for these null-results are:

- The associations between cellular aging and brain morphometry might be only short-lived.
- Potential effects of cellular aging on brain maturation may be masked by inter-individual variability
- The associations in a low-risk sample might be weak and only detectable with more participants

RESULTS

Distribution of telomere length and epigenetic age



Bayes Factors indicated moderate evidence for the null hypothesis

Telomere length and epigenetic age at age 6		BF
<i>Full model</i>		5.888e+31
Telomere length + epigenetic age		.172
Telomere length		.361
Epigenetic age		.373
TIV, age, gender		4.111e+33
Telomere length and epigenetic age at age 10		BF
<i>Full model</i>		7.017e+31
Telomere length + epigenetic age		.070
Telomere length		.217
Epigenetic age		.217
TIV, age, gender		4.111e+33
Telomere erosion and epigenetic pace between 6 and 10		BF
<i>Full model</i>		6.0239e+31
Telomere erosion + epigenetic pace		.120
Telomere erosion		.284
Epigenetic pace		.270
TIV, age, gender		4.111e+33

CONCLUSION

No significant associations between childhood cellular aging and adolescent brain morphology. Exploratory Bayesian analyses indicated moderate to strong evidence for the null-findings.