



TIDAL Data Exploration

For more information, see the TIDAL GitHub page

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Descriptive Statistics

Descriptive statistics of the variable “score” for each time point in your data.

time_point	N	mean	SD	median	IQR
age_t1	12637	1.415	1.554	1	2
age_t2	12682	1.372	1.595	1	2
age_t3	10855	1.520	1.774	1	2
age_t4	10296	1.890	2.029	1	3
age_t5	9070	2.041	2.141	1	3

time_point: Time point of data collection.

N: Number of measurements (e.g. people) at each time point.

mean: Mean score.

SD: standard deviation of score.

median: Median of score.

IQR: Interquartile range of score

Model Results

\$ The following lme4 function is used to run the model:

```
lmer(formula = score ~ age + (1 + age|subject),
      REML = FALSE ,
      data = newModelData,
      control = lmerControl(optimizer="bobyqa",
                             optCtrl=list(maxfun=2e5)))
```

Please see more information about the “bobyqa” optimiser [here](#). The use of alternative optimisers is not currently supported.

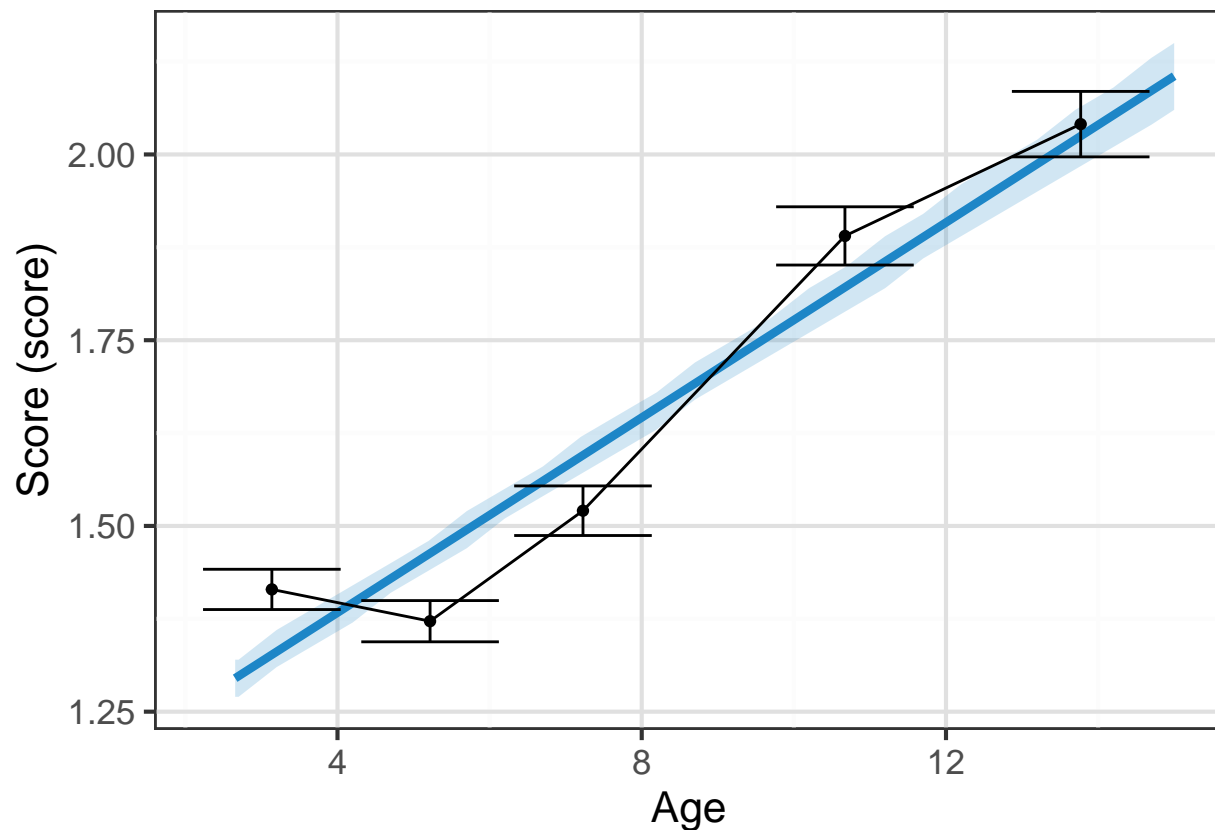
The argument `REML = FALSE` indicates the model was fitted by maximum likelihood.

Number of observations and groups

The time variable “age” has been mean centred to 7.58, which is the mean value across all time assessments. This aids model convergence.

The number of observations (measurements) is 55,537 and the number of groups (people) is 12,720.

Plot



Linear Model Formula: $\text{score} \sim \text{age} + (1 + \text{age} \mid \text{subject})$. “Phenotype” on the y-axis is score. Note that any categorical covariates/confounders are set to level zero.

Fixed Effects

Fixed effects can be interpreted as the effects of time/age (and any additional covariates/confounders) on score.

	estimate	std.error	statistic	2.5 %	97.5 %	p.z
(Intercept)	1.618	0.012	135.279	1.595	1.642	p < 0.001
age	0.066	0.002	31.950	0.062	0.070	p < 0.001

The score at the intercept is 1.62. The intercept here has been shifted to the mean age of all the assessments which is 7.58. You could interpret this as the score at the intercept of age 7.58 is 1.62.

Every unit increase in age is associated with an increase of score by 0.07.

The model fit (deviance) is 208455.06, you can compare this value to other similar models to determine which model has a better fit.

Random Effects

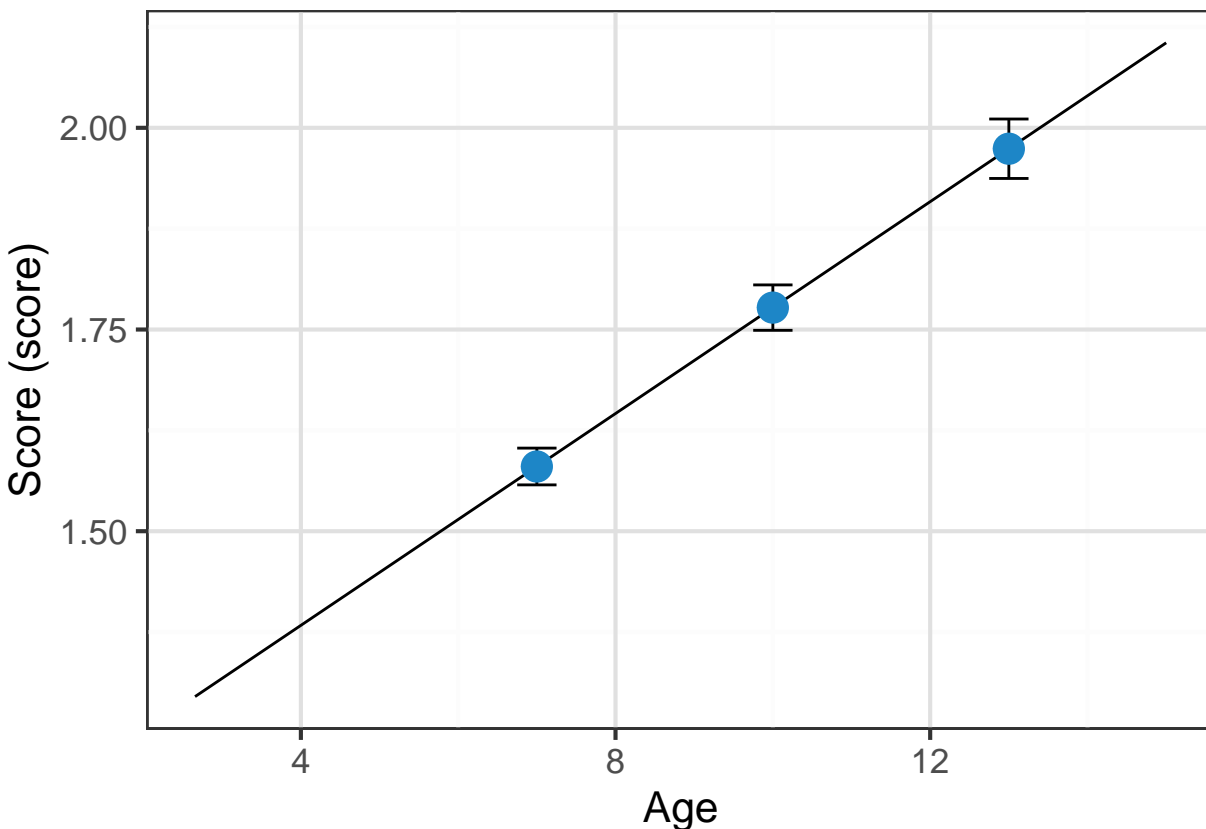
Random effects can be interpreted as the effects on score due to variation between subjects.

Level	Variable1	Variable2	Variance/Covariance	SD Variance/Covariance
subject	(Intercept)	NA	1.404	1.185
subject	(Intercept)	age	0.083	0.468
subject	age	NA	0.022	0.149
Residual	NA	NA	1.563	1.250

The intercept variance how much variability there is between individuals for their intercepts) for your model is 1.404. The covariance between the intercept and age is 0.083. The age variance (how much variability there is between individuals for their age) is 0.022.

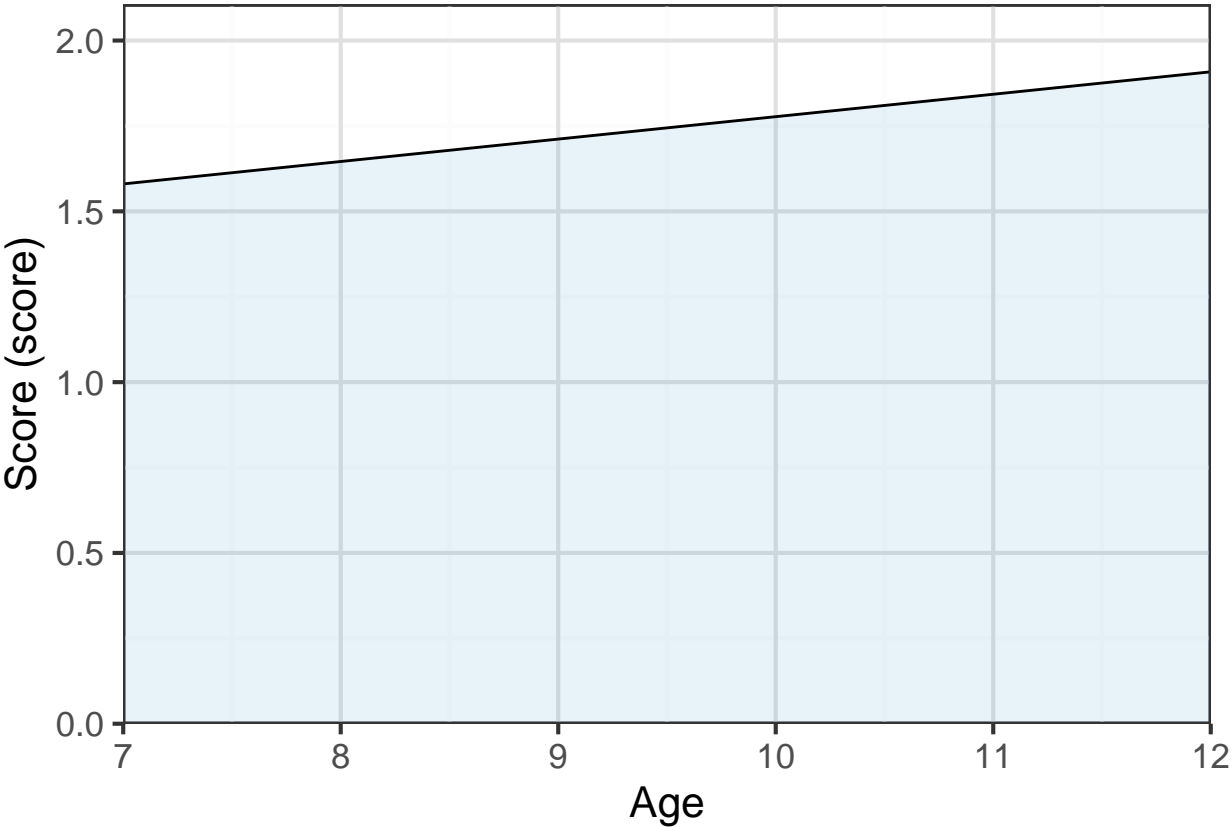
The residual variance (how much variability there is within individuals) from your model is 1.563.

Scores at Ages



	Score (score) (95% CIs)
7	1.58 (1.557 - 1.603)
10	1.777 (1.749 - 1.805)
13	1.974 (1.937 - 2.011)

Area Under the Curve



Age Range	7 - 12
AUC (score) (95% CIs)	8.72 (8.59 - 8.86)