

ResultsSect

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Table with demographic information

Table 1: Demographics

Group	CW	CM	TM	TW
Age	25.8 \pm 3.84	26.03 \pm 5.26	24.38 \pm 5.35	24.88 \pm 6.2
SES	2.3 \pm 0.47	2.23 \pm 0.57	2 \pm 0.6	1.98 \pm 0.7
Education	3.57 \pm 0.9	3.43 \pm 0.82	3.15 \pm 0.74	2.95 \pm 0.81
Handedness	1.13 \pm 0.35	1.07 \pm 0.25	1.07 \pm 0.27	1.05 \pm 0.22

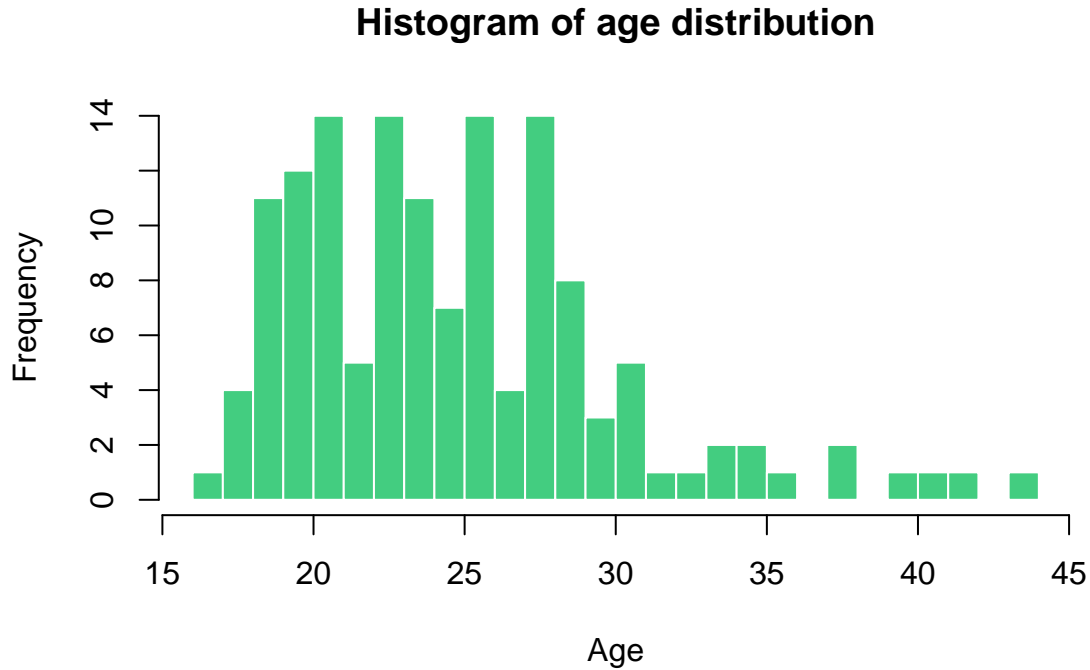
Code for demographics

The code can be found in markdown version of this file, it is not printed in the PDF

```
# Difference between groups for ICV
fit <- lm(formula = c(data.all[,108], data.all[,182]) ~ as.factor(c(data.all[,2],data.all[,2])))
anova(fit)

## Analysis of Variance Table
##
## Response: c(data.all[, 108], data.all[, 182])
##              Df      Sum Sq   Mean Sq
## as.factor(c(data.all[, 2], data.all[, 2]))    3 1.5165e+12  5.0550e+11
## Residuals                                276 3.5282e+12  1.2783e+10
##               F value    Pr(>F)
## as.factor(c(data.all[, 2], data.all[, 2])) 39.544 < 2.2e-16 ***
## Residuals
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

# Average (sd) of ICV for every group
print(paste("ICV in transgender women is ", mean(c(data.all[data.all[,2]==1,108], data.all[data.all[,2]==2,182])), "\n"))
## [1] "ICV in transgender women is 1518358.56348333 (90970.2244213793), "
print(paste("ICV in transgender women is ", mean(c(data.all[data.all[,2]==2,108], data.all[data.all[,2]==3,182])), "\n"))
## [1] "ICV in transgender women is 1648274.8288 (125281.566112056), "
print(paste("ICV in transgender women is ", mean(c(data.all[data.all[,2]==3,108], data.all[data.all[,2]==4,182])), "\n"))
## [1] "ICV in transgender women is 1472419.387075 (114092.749698607), "
print(paste("ICV in transgender women is ", mean(c(data.all[data.all[,2]==4,108], data.all[data.all[,2]==5,182])), "\n"))
## [1] "ICV in transgender women is 1624673.961825 (117220.821129745), "
```



Results

Repeated measures

Questions: do we want (to account for) a correlation between regions of the same participant?

First we look at the results for volume. All code used to compute this can be found in the markdown version of this document, but is not printed in the pdf.

We fitted two mixed models. In both models a random intercept for every subject was added, in the second model age and total intracranial volume are added as covariates. An ANOVA is conducted on the results of the mixed models and an FDR-correction is applied over regions. For the regions where a statistically significant difference was found between the groups post-hoc paired comparisons were conducted that are bonferroni-corrected. The results for both models are very similar. A summary of the results is displayed in the tables below. All code used to obtain these results can be found in the RmD file.

If no statistically significant difference is found for a regions “NA” is printed for that region.

Table 2: ANOVA for volume with FDR correction for model with and without covariates

region	No cov	With cov
L_fusiform_volume	0	0
L_inferiorparietal_volume	0	0
L_postcentral_volume	0.001	0.001
L_precentral_volume	0.012	0.012
L_frontalpole_volume	0.008	0.008
R_fusiform_volume	0	0
R_inferiorparietal_volume	0	0
R_postcentral_volume	0.01	0.008
R_precentral_volume	0.001	0.001
R_frontalpole_volume	0.002	0.002
LeftCerebellumWhiteMatter	0.001	0.001
LeftCerebellumCortex	0	0

RightCerebellumWhiteMatter	0.001	0.001
RightCerebellumCortex	0	0
LeftThalamusProper	0	0
LeftCaudate	0.003	0.002
LeftPutamen	0.006	0.006
LeftAccumbensarea	0.542	0.545
RightThalamusProper	0	0
RightCaudate	0.002	0.001
RightPutamen	0	0
RightAccumbensarea	0.121	0.123

Table 3: Group-wise comparison for volume in model with no covariates

	CW vs CM	CW vs TM	CW vs TW	CM vs TM	CM vs TW	TM vs TW
L_fusiform_volume	0.04	0.061	1	0	0.608	0
L_inferiorparietal_volume	0.108	0.076	1	0	1	0.006
L_postcentral_volume	0.007	1	0.357	0.001	1	0.067
L_precentral_volume	0.263	1	0.963	0.026	1	0.115
L_frontalpole_volume	1	1	0.023	1	0.814	0.005
R_fusiform_volume	0.015	0.02	1	0	0.891	0.004
R_inferiorparietal_volume	0.238	0.289	0.786	0	1	0.001
R_postcentral_volume	0.965	1	0.597	0.042	1	0.013
R_precentral_volume	0.017	1	0.013	0.019	1	0.022
R_frontalpole_volume	0.054	1	1	0.001	0.22	0.433
LeftCerebellumWhiteMatter	0.018	1	1	0.001	0.009	0.754
LeftCerebellumCortex	0.004	0.41	0.006	0	1	0
RightCerebellumWhiteMatter	0.018	1	1	0	0.056	0.258
RightCerebellumCortex	0.002	0.184	0.046	0	1	0
LeftThalamusProper	0.005	0.065	1	0	0.056	0.002
LeftCaudate	0.028	1	0.072	0.025	1	0.065
LeftPutamen	0.071	1	0.211	0.032	1	0.11
LeftAccumbensarea	NA	NA	NA	NA	NA	NA
RightThalamusProper	0.143	0.033	1	0	0.455	0.004
RightCaudate	0.004	1	0.162	0.005	1	0.149
RightPutamen	0	1	0.001	0.001	1	0.015
RightAccumbensarea	NA	NA	NA	NA	NA	NA

Table 4: Group-wise comparison for volume in model with covariates

	CW vs CM	CW vs TM	CW vs TW	CM vs TM	CM vs TW	TM vs TW
L_fusiform_volume	0.883	0.049	1	0	1	0.001
L_inferiorparietal_volume	1	0.054	1	0	1	0.015
L_postcentral_volume	1	1	1	0.01	1	0.233
L_precentral_volume	1	1	1	0.324	1	0.184
L_frontalpole_volume	1	1	0.156	1	0.269	0.019
R_fusiform_volume	0.533	0.02	1	0	0.718	0.008
R_inferiorparietal_volume	1	0.198	1	0.005	1	0.002
R_postcentral_volume	1	1	1	0.322	1	0.046
R_precentral_volume	1	1	0.047	0.221	1	0.024
R_frontalpole_volume	0.381	1	1	0.002	0.286	0.701
LeftCerebellumWhiteMatter	1	1	1	0.006	0.103	1

LeftCerebellumCortex	0.149	0.446	0.012	0	1	0
RightCerebellumWhiteMatter	1	0.879	1	0.006	0.365	0.484
RightCerebellumCortex	0.086	0.203	0.071	0	1	0
LeftThalamusProper	1	0.078	1	0	1	0.004
LeftCaudate	1	1	0.236	0.074	1	0.145
LeftPutamen	1	1	0.588	0.693	1	0.157
LeftAccumbensarea	NA	NA	NA	NA	NA	NA
RightThalamusProper	1	0.032	1	0.008	1	0.012
RightCaudate	0.87	1	0.474	0.029	1	0.277
RightPutamen	0.451	1	0.005	0.065	1	0.02
RightAccumbensarea	NA	NA	NA	NA	NA	NA

Then we do the same computations for thickness. However, for thickness we leave out intracranial volume as a covariate (cf. e-mail Meredith Braskie).

Table 5: ANOVA for thickness with FDR correction for model with and without covariates

region	No cov	With cov
L_fusiform_thickavg	0.683	0.68
R_fusiform_thickavg	0.661	0.612
L_inferiorparietal_thickavg	0.661	0.612
R_inferiorparietal_thickavg	0.661	0.612
L_postcentral_thickavg	0.683	0.68
R_postcentral_thickavg	0.753	0.74
L_precentral_thickavg	0.661	0.612
R_precentral_thickavg	0.661	0.612
L_frontalpole_thickavg	0.661	0.612
R_frontalpole_thickavg	0.661	0.612

Table 6: Group-wise comparison for thickness in model with no covariates

	CW vs CM	CW vs TM	CW vs TW	CM vs TM	CM vs TW	TM vs TW
L_fusiform_thickavg	NA	NA	NA	NA	NA	NA
R_fusiform_thickavg	NA	NA	NA	NA	NA	NA
L_inferiorparietal_thickavg	NA	NA	NA	NA	NA	NA
R_inferiorparietal_thickavg	NA	NA	NA	NA	NA	NA
L_postcentral_thickavg	NA	NA	NA	NA	NA	NA
R_postcentral_thickavg	NA	NA	NA	NA	NA	NA
L_precentral_thickavg	NA	NA	NA	NA	NA	NA
R_precentral_thickavg	NA	NA	NA	NA	NA	NA
L_frontalpole_thickavg	NA	NA	NA	NA	NA	NA
R_frontalpole_thickavg	NA	NA	NA	NA	NA	NA

Table 7: Group-wise comparison for thickness in model with covariates

	CW vs CM	CW vs TM	CW vs TW	CM vs TM	CM vs TW	TM vs TW
L_fusiform_thickavg	NA	NA	NA	NA	NA	NA
R_fusiform_thickavg	NA	NA	NA	NA	NA	NA

L_inferiorparietal_thickavg	NA	NA	NA	NA	NA	NA
R_inferiorparietal_thickavg	NA	NA	NA	NA	NA	NA
L_postcentral_thickavg	NA	NA	NA	NA	NA	NA
R_postcentral_thickavg	NA	NA	NA	NA	NA	NA
L_precentral_thickavg	NA	NA	NA	NA	NA	NA
R_precentral_thickavg	NA	NA	NA	NA	NA	NA
L_frontalpole_thickavg	NA	NA	NA	NA	NA	NA
R_frontalpole_thickavg	NA	NA	NA	NA	NA	NA

And surface area:

Table 8: ANOVA for surface area with FDR correction for model with and without covariates

region	No cov	With cov
L_fusiform_surfavg	0.004	0.004
R_fusiform_surfavg	0.014	0.014
L_inferiorparietal_surfavg	0.001	0.001
R_inferiorparietal_surfavg	0.003	0.003
L_postcentral_surfavg	0.019	0.018
R_postcentral_surfavg	0.082	0.081
L_precentral_surfavg	0.012	0.012
R_precentral_surfavg	0.002	0.003
L_frontalpole_surfavg	0.612	0.613
R_frontalpole_surfavg	0.001	0.001

Table 9: Group-wise comparison for surface area in model with no covariates

	CW vs CM	CW vs TM	CW vs TW	CM vs TM	CM vs TW	TM vs TW
L_fusiform_surfavg	0.034	1	1	0.001	0.08	1
R_fusiform_surfavg	0.065	1	1	0.003	0.543	0.896
L_inferiorparietal_surfavg	0.009	1	1	0	0.174	0.175
R_inferiorparietal_surfavg	0.009	1	1	0.001	0.227	0.545
L_postcentral_surfavg	0.004	1	1	0.203	0.159	1
R_postcentral_surfavg	NA	NA	NA	NA	NA	NA
L_precentral_surfavg	0.016	1	0.365	0.02	1	0.444
R_precentral_surfavg	0	0.418	0.128	0.05	0.314	1
L_frontalpole_surfavg	NA	NA	NA	NA	NA	NA
R_frontalpole_surfavg	0.004	1	1	0.001	0.003	1

Table 10: Group-wise comparison for surface area in model with covariates

	CW vs CM	CW vs TM	CW vs TW	CM vs TM	CM vs TW	TM vs TW
L_fusiform_surfavg	1	0.68	1	0.154	0.876	1
R_fusiform_surfavg	1	0.205	1	0.254	1	1
L_inferiorparietal_surfavg	1	0.513	1	0.016	1	0.218
R_inferiorparietal_surfavg	1	1	1	0.044	1	0.842
L_postcentral_surfavg	1	1	1	1	1	1
R_postcentral_surfavg	NA	NA	NA	NA	NA	NA

L_precentral_surfav	1	1	1	0.666	1	0.87
R_precentral_surfav	0.541	0.447	0.466	1	1	1
L_frontalpole_surfav	NA	NA	NA	NA	NA	NA
R_frontalpole_surfav	0.417	1	1	0.051	0.037	1
