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**Limbic System Development in Children and Adolescents
with Attention Deficit/Hyperactivity Disorder:
A Longitudinal Multimodal MRI Analysis**

Volume 2 of 2

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Signed: Michael Connaughton

A rectangular box containing a handwritten signature in black ink. The signature is written in a cursive style and appears to read "Michael Connaughton".

Date: 12/02/24

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1 Appendices

1.1. Sensitivity Analysis 1: Script

```
# read in spss file
all_LMM_pure <- read_sav
("/Users/michaelconnaughton/Desktop/R_analysis/all_LMM_pure.sav")
# read in csv file - read.csv() or read.csv2() functions. The former function is used if the
separator is a ,, the latter if ; is used to separate the values in your data file.

# convert to r dataframe
all_LMM_pure <- as.data.frame(all_LMM_pure)

#convert variables into factors
all_LMM_pure <- all_LMM_pure%>%
  mutate(Diagnosis = factor(Diagnosis,levels = c(1,3),labels = c("Control", "ADHD")))

all_LMM_pure <- all_LMM_pure%>%
  mutate(sex = factor(sex,levels = c(0,1),labels = c("Female", "Male")))

# Initialize a list to store the results
results <- list()

# Initialize a list to store the data frames
data_frames <- list()

girls_control <- all_LMM_pure[all_LMM_pure$Diagnosis == "Control" &
all_LMM_pure$sex == "Female",]

# Loop 100 times
for (i in 1:100) {
  # Set the seed for reproducibility
  set.seed(i)
  # Randomly exclude 65 female scans from the control group
  girls_control_excluded <- girls_control[sample(1:nrow(girls_control), 65, replace =
FALSE),]
  data_frames[[i]] <- all_LMM_pure[!(all_LMM_pure$subject %in%
girls_control_excluded$subject),]

  # Run the regression on the remaining individuals
  fit <- lmer(ROI volume ~ Age_baseline_c + sex + ICV_c + mts_baseline*Diagnosis +
(1|subject),
  data = data_frames[[i]], REML = T,
  control = lmerControl(optimizer = "bobyqa"))

  # Store the results in the list
  results[[i]] <- fit
}

library(broom)
```

```

# Load the xlsx package
library(xlsx)

# Get the fixed effects from each model
fixed_effects <- lapply(results, function(x) coef(summary(x))[c("Estimate", "Std. Error",
"df", "t value", "Pr(>|t|)"])]

# Combine the fixed effects into a single data frame
fixed_effects_df <- do.call(rbind, fixed_effects)

# Write the data frame to an Excel file
write.xlsx(fixed_effects_df, "R_posterior_Hypo_fixed_effects.xlsx", row.names = TRUE)

```

1.2. Study 1: Results of Model Fit Statistics

Table 1 Fit indices of random effects: Limbic System Structures in ADHD and Controls

Region of Interest	Model	AICc	BICc	Log-likelihood	Test	LRT (p-value)
<u>Hippocampus (left)*</u>	1a	5145.48	5149.43	-2578.82		
	1b	5147.32	5151.27	-2584.38	1a vs 1b	0.398
<u>Hippocampus (right)*</u>	1a	5173.37	5177.32	-2597.72		
	1b	5174.81	5178.76	-2598.44	1a vs 1b	0.486
<u>Amygdala (left)</u>	1a	4727.76	4731.71	-2370.49		
	1b	4729.01	4732.96	-2370.98	1a vs 1b	0.534
<u>Amygdala (right)</u>	1a	4650.88	4654.84	-2331.48		
	1b	4665.3	4669.25	-2338.49	1a vs 1b	< 0.001
<u>Cingulate gyrus (left)</u>	1a	6119.58	6123.53	-3080.46		
	1b	6132.42	6136.37	-3086.61	1a vs 1b	0.001
<u>Cingulate gyrus (right)</u>	1a	6173.67	6177.63	-3107.92		
	1b	6182.24	6186.19	-3111.98	1a vs 1b	0.013
<u>Orbitofrontal cortex (left)*</u>	1a	6413.55	6417.50	-3229.06		
	1b	6414.27	6418.23	-3229.41	1a vs 1b	0.696
<u>Orbitofrontal cortex (right)</u>	1a	6446.70	6450.66	-3245.87		
	1b	6447.12	6451.07	-3246.03	1a vs 1b	0.813
<u>Anterior thalamic nuclei (left)</u>	1a	3030.19	3034.13	-1505.87		
	1b	3033.01	3036.95	-1507.21	1a vs 1b	0.244
<u>Anterior thalamic nuclei (right)</u>	1a	3005.53	3009.47	-1493.26		
	1b	3008.75	3012.69	-1494.78	1a vs 1b	0.200
<u>Mammillary bodies (left)</u>	1a	2789.37	2793.32	-1383.16		

	1b	2793.76	2797.71	-1385.19	1a vs 1b	0.111
<u>Mammillary bodies (right)</u>	1a	2801.06	2805.01	-1389.17		
	1b	2805.27	2809.21	-1391.26	1a vs 1b	0.121

Table 1: LRT = likelihood-ratio test. Bold indicates selected random effects model. AIC = Akaike Information Criterion. BIC = Bayesian Information Criterion. * = model is singular.

Table 2 Fit indices of fixed effects: Limbic System Structures in ADHD and Controls

<u>Region of Interest</u>	<u>Model</u>	<u>AICc</u>	<u>BICc</u>	<u>Log-likelihood</u>	<u>Test</u>	<u>LRT (p-value)</u>
<u>Hippocampus (left)</u>	0b	5164.35	5168.30			
	1b	5145.99	5149.94	-2582.57	0 vs 1	0.010
	2b	5137.98	5141.95	-2579.62	0 vs 2 1 vs 2	0.029 0.499
<u>Hippocampus (right)</u>	0b	5161.77	5165.73			
	1b	5147.7	5151.65	-2583.59	0 vs 1	0.027
	2b	5145.34	5149.30	-2583.48	0 vs 2 1 vs 2	0.073 0.566
<u>Amygdala (left)</u>	0b	4725.42	4729.38			
	1b	4710.27	4714.22	-2360.81	0 vs 1	0.006
	2b	4707.51	4711.46	-2360.03	0 vs 2 1 vs 2	0.009 0.162
<u>Amygdala (right)</u>	0a	4635.80	4639.76			
	1a	4621.3	4625.25	-2315.82	0 vs 1	0.010
	2a	4619.86	4623.82	-2315.68	0 vs 2 1 vs 2	0.029 0.499
<u>Cingulate gyrus (left)</u>	0a	6136.04	6139.99			
	1a	6116.07	6120.02	-3076.24	0 vs 1	0.027
	2a	6111.15	6115.10	-3076.16	0 vs 2 1 vs 2	0.073 0.566
<u>Cingulate gyrus (right)</u>	0a	6199.62	6203.58			
	1a	6182.25	6186.21	-3109.81	0 vs 1	0.006
	2a	6176.50	6180.46	-3109.28	0 vs 2 1 vs 2	0.009 0.162

<u>Orbitofrontal cortex (left)</u>	0b	6440.92	6444.87			
	1b	6423.51	6427.46	-3231.12	0 vs 1	0.030
	2b	6413.71	6417.67	-3229.13	0 vs 2	0.013
					1 vs 2	0.048
<u>Orbitofrontal cortex (right)</u>	0b	6477.4	6481.35			
	1b	6458.51	6462.47	-3248.76	0 vs 1	0.013
	2b	6450.30	6454.26	-3247.66	0 vs 2	0.014
					1 vs 2	0.124
<u>Anterior thalamic nuclei (left)</u>	0a	2993.57	2997.52			
	1a	2995.15	2999.09	-1489.6	0 vs 1	0.575
	2a	2997.06	3001.01	-1488.92	0 vs 2	0.443
					1 vs 2	0.251
<u>Anterior thalamic nuclei (right)</u>	0b	3000.52	3004.47			
	1b	2995.93	2999.87	-1489.81	0 vs 1	0.447
	2b	2998.23	3002.17	-1489.38	0 vs 2	0.477
					1 vs 2	0.341
<u>Mammillary bodies (left)</u>	0b	2791.43	2795.38			
	1b	2787.59	2791.53	-1383.96	0 vs 1	0.395
	2b	2791.32	2795.27	-1383.95	0 vs 2	0.696
					1 vs 2	0.979
<u>Mammillary bodies (right)</u>	0b	2817.43	2821.38			
	1b	2813.92	2817.87	-1397.61	0 vs 1	0.655
	2b	2816.61	2820.56	-1398.03	0 vs 2	0.517
					1 vs 2	0.290

Table 3 Linear mixed Models Tested: Limbic System Structures and Medication Use in ADHD

Random Effects Models	
<u>RX 1a</u>	ROI ~ ICV + age at baseline + sex + medication status*age + (1 + age subject)
<u>RX 1b</u>	ROI ~ ICV + age at baseline + sex + medication status*age + (1 subject)

Fixed Effects Models	
<u>Null 0a</u>	ROI ~ ICV + age + age at baseline + sex + (1 + age subject)
<u>Null 0b</u>	ROI ~ ICV + age + age at baseline + sex + (1 subject)
<u>FX 1a</u>	ROI ~ ICV + sex + age + age at baseline + medication status + (1 + age subject)
<u>FX 1b</u>	ROI ~ ICV + sex + age + age at baseline + medication status + (1 subject)
<u>FX 2a</u>	ROI ~ ICV + sex + age + age at baseline + medication status * age + (1 + age subject)
<u>FX 2a</u>	

$$\text{ROI} \sim \text{ICV} + \text{sex} + \text{age} + \text{age at baseline} + \text{medication status} * \text{age} + (1|\text{subject})$$

Table 3: RX = random effects, FX = fixed effects, ROI = regions of interest, ICV = intracranial volume, age = participant age from baseline (in months). To increase iterability, the variables ICV and age were centre meaned at baseline

Table 4 Fit indices of Random Effects: Limbic System Structures and Medication Use in ADHD

Region of Interest	Model	AICc	BICc	Log-likelihood	Test	LRT (p-value)
<u>Hippocampus (left)</u>	1a	1600.79	1603.63	-815.11		
	1b	1608.96	1611.78	-819.04	1a vs 1b	0.016
<u>Hippocampus (right)</u>	1a	1635.41	1638.24	-833.35		
	1b	1639.63	1642.46	-835.29	1a vs 1b	0.121
<u>Amygdala (left)</u>	1a	1464.67	1467.50	-747.47		
	1b	1467.17	1470.00	-743.62	1a vs 1b	0.286
<u>Amygdala (right)</u>	1a	1447.28	1450.11	-733.50		
	1b	1459.74	1462.57	-739.55	1a vs 1b	0.001
<u>Cingulate gyrus (left)</u>	1a	1991.83	1914.66	-980.42		
	1b	1919.54	1922.37	-984.04	1a vs 1b	0.021
<u>Cingulate gyrus (right)</u>	1a	1915.19	1918.01	-982.01		
	1b	1917.96	1920.79	-983.20	1a vs 1b	0.249
<u>Orbitofrontal cortex (left)</u>	1a	1989.61	1992.44	-1021.16		
	1b	1989.76	1992.59	-1021.22	1a vs 1b	0.929
<u>Orbitofrontal cortex (right)*</u>	1a	1989.82	1992.64	-1021.10		
	1b	1990.30	1993.13	-1021.32	1a vs 1b	0.783
<u>Anterior thalamic nuclei (left)*</u>	1a	983.23	986.06	-486.50		
	1b	983.25	986.07	-486.48	1a vs 1b	0.992
<u>Anterior thalamic nuclei (right)</u>	1a	969.94	972.77	-479.37		
	1b	970.19	973.01	-479.50	1a vs 1b	0.884
<u>Mammillary bodies (left)</u>	1a	883.94	886.77	-433.98		
	1b	885.75	888.57	-434.70	1a vs 1b	0.406
<u>Mammillary bodies (right)</u>	1a	892.22	895.16	-438.02		
	1b	896.54	899.37	-440.43	1a vs 1b	0.121

Table 5 Fit indices of fixed effects: Limbic System Structures and Medication Use in ADHD

Region of Interest	Model	AICc	BICc	Log-likelihood	Test	LRT (p-value)
<u>Hippocampus (left)</u>	0a	1617.35	1620.18			
	1a	1603.08	1505.91	-814.47	0 vs 1	0.034
	2a	1599.36	1602.18	-814.31	0 vs 2 1 vs 2	0.098 0.701
<u>Hippocampus (right)</u>	0b	1652.34	1655.17			
	1b	1640.43	1636.01	-833.73	0 vs 1	0.034
	2b	1636.01	1638.84	-833.37	0 vs 2 1 vs 2	0.098 0.701
<u>Amygdala (left)</u>	0b	1479.64	1482.47			
	1b	1469.21	1472.04	-743.47	0 vs 1	0.192
	2b	1466.83	1469.66	-743.44	0 vs 2 1 vs 2	0.417 0.827
<u>Amygdala (right)</u>	0a	1449.59	1452.42			
	1a	1440.02	1442.84	-728.28	0 vs 1	0.192
	2a	1436.81	1439.64	-727.92	0 vs 2 1 vs 2	0.417 0.827
<u>Cingulate gyrus (left)</u>	0a	1931.12	1933.94			
	1a	1918.13	1920.95	-980.47	0 vs 1	0.948
	2a	1911.83	1914.66	-980.42	0 vs 2 1 vs 2	0.981 0.857
<u>Cingulate gyrus (right)</u>	0b	1936.63	1939.45			
	1b	1923.99	1926.82	-983.30	0 vs 1	0.948
	2b	1918.11	1920.94	-983.28	0 vs 2 1 vs 2	0.981 0.857
<u>Orbitofrontal cortex (left)</u>	0b	2013.06	2015.88			
	1b	1997.04	1999.87	-1021.35	0 vs 1	0.098
	2b	1989.76	1992.59	-1021.22	0 vs 2 1 vs 2	0.225 0.617
<u>Orbitofrontal cortex (right)</u>	0b	2017.15	2019.97			
	1b	2001.36	2004.19	-1023.33	0 vs 1	0.131
	2b	1994.05	1996.88	-1023.32	0 vs 2 1 vs 2	0.321 0.994
<u>Anterior thalamic nuclei (left)</u>	0b	982.62	985.45			
	1b	978.14	980.97	-484.78	0 vs 1	0.896
	2b	979.07	981.90	-484.25	0 vs 2	0.618

					1 vs 2	0.331
<u>Anterior thalamic nuclei</u>	0b	958.15	960.98			
<u>(right)</u>	1b	953.75	956.58	-471.73	0 vs 1	0.749
	2b	954.56	957.39	-471.10	0 vs 2	0.555
					1 vs 2	0.300
<u>Mammillary bodies (left)</u>	0b	887.28	890.11			
	1b	883.08	885.90	-434.75	0 vs 1	0.448
	2b	883.08	885.91	-433.29	0 vs 2	0.209
					1 vs 2	0.110
<u>Mammillary bodies (right)</u>	0b	898.31	901.13			
	1b	893.99	896.81	-440.49	0 vs 1	0.434
	2b	896.54	899.37	-440.43	0 vs 2	0.694
					1 vs 2	0.729

1.3. Study 2: Results of Model Fit Statistics

1.3.1. Fractional Anisotropy (FA)

Table 6 Fit indices of random effects: Limbic System White Matter Tracts FA in ADHD and Controls

<u>Region of Interest</u>	<u>Model</u>	<u>AICc</u>	<u>BICc</u>	<u>Log-likelihood</u>	<u>Test</u>	<u>Log-likelihood Test (p-value)</u>
<u>Cingulum Bundle (left)</u>	1a	-1490.41	-1486.50	781.09		
	1b	-1463.21	-1459.30	767.61	1a vs 1b	< 0.000
<u>Cingulum Bundle (right)</u>	1a	-1580.88	-1576.98	826.85		
	1b	-1575.61	-1571.71	824.35	1a vs 1b	0.071
<u>Fornix (left)*</u>	1a	-1291.20	-1287.31	679.93		
	1b	-1290.56	-1286.67	679.59	1a vs 1b	0.716
<u>Fornix (right))*</u>	1a	-1362.95	-1359.05	716.74		
	1b	-1362.92	-1359.02	716.72	1a vs 1b	0.982
<u>Anterior Thalamic Projections (left)</u>	1a	-1601.35	-1597.44	837.53		
	1b	-1590.37	-1586.46	832.24	1a vs 1b	0.004
<u>Anterior Thalamic Projections (right)</u>	1a	-1617.85	-1613.95	845.93		
	1b	-1615.58	-1611.68	844.89	1a vs 1b	0.321
<u>Mammillothalamic tract (left)*</u>	1a	-1266.74	-1262.85	668.12		
	1b	-1266.35	-1262.45	667.91	1a vs 1b	0.820
<u>Mammillothalamic tract (right)*</u>	1a	-1238.84	-1234.95	654.11		
	1b	-1237.05	-1233.15	653.25	1a vs 1b	0.407
<u>Uncinate Fasciculus (left)</u>	1a	-1413.63	-1409.72	741.90		
	1b	-1410.55	-1406.64	740.50	1a vs 1b	0.213
<u>Uncinate Fasciculus (right)</u>	1a	-1310.03	-1306.16	689.84		
	1b	-1302.17	-1298.3	686.09	1a vs 1b	0.019

Table 7 Fit indices of fixed effects: Limbic System White Matter Tracts FA in ADHD and Controls

<u>Region of Interest</u>	<u>Model</u>	<u>AICc</u>	<u>BICc</u>	<u>Log-likelihood</u>	<u>Test</u>	<u>Log-likelihood Test (p-value)</u>
<u>Cingulum Bundle (left)</u>	0b	-1513.61	-1509.70			
	1b	-1504.67	-1500.76	780.76	0 vs 1	0.538
	2b	-1490.41	-1486.50	781.09	0 vs 2 1 vs 2	0.597 0.419
<u>Cingulum Bundle (right)</u>	0b	-1596.54	-1592.65			
	1b	-1589.59	-1585.69	823.41	0 vs 1	0.538
	2b	-1575.61	-1571.71	824.35	0 vs 2 1 vs 2	0.597 0.419
<u>Fornix (left)</u>	0b	-1311.88	-1307.98			
	1b	-1305.30	-1301.41	679.51	0 vs 1	0.157
	2b	-1290.56	-1286.67	679.59	0 vs 2 1 vs 2	0.338 0.685
<u>Fornix (right)</u>	0a	-1380.46	-1376.55			
	1a	-1376.79	-1372.89	716.18	0 vs 1	0.019
	2a	-1362.92	-1359.02	716.72	0 vs 2 1 vs 2	0.038 0.299
<u>Anterior Thalamic Projections (left)</u>	0a	-1624.36	-1620.46			
	1a	-1614.78	-1610.87	836.56	0 vs 1	0.157
	2a	-1601.35	-1597.44	837.53	0 vs 2 1 vs 2	0.338 0.685
<u>Anterior Thalamic Projections (right)</u>	0a	-1637.90	-1633.99			
	1a	-1630.08	-1626.17	844.25	0 vs 1	0.189
	2a	-1615.58	-1611.68	844.89	0 vs 2 1 vs 2	0.224 0.260
<u>Mammillothalamic tract (left)</u>	0b	-1288.53	-1284.63			
	1b	-1280.90	-1277.00	667.89	0 vs 1	0.250
	2b	-1266.35	-1262.45	667.91	0 vs 2 1 vs 2	0.511 0.878
<u>Mammillothalamic tract (right)</u>	0b	-1258.37	-1254.47			

	1b	-1250.59	-1246.70	652.82	0 vs 1	0.268
	2b	-1237.05	-1233.15	653.25	0 vs 2	0.352
					1 vs 2	0.353
<u>Uncinate Fasciculus (left)</u>	0a	-1434.09	-1430.19			
	1a	-1425.26	-1421.35	740.25	0 vs 1	0.956
	2a	-1410.55	-1406.64	740.50	0 vs 2	0.774
					1 vs 2	0.475
<u>Uncinate Fasciculus (right)</u>	0b	-1331.65	-1327.78			
	1b	-1324.39	-1320.51	689.71	0 vs 1	0.019
	2b	-1310.03	-1306.16	689.84	0 vs 2	0.038
					1 vs 2	0.299

1.3.2. Mean Diffusivity (MD)

Table 8 Fit indices of random effects: Limbic System White Matter Tracts MA in ADHD and Controls

<u>Region of Interest</u>	<u>Model</u>	<u>AICc</u>	<u>BICc</u>	<u>Log-likelihood</u>	<u>Test</u>	<u>Log-likelihood Test (p-value)</u>
<u>Cingulum Bundle (left)</u>	1a	-6165.42	-6165.51	3158.24		
	1b	-6143.05	-6139.14	3147.24	1a vs 1b	<0.000
<u>Cingulum Bundle (right)</u>	1a	-6158.74	-6154.84	3155.15		
	1b	-6158.43	-6154.53	3155.04	1a vs 1b	0.857
<u>Fornix (left)</u>	1a	-5324.19	-5320.30	2730.93		
	1b	-5323.35	-5319.45	2730.51	1a vs 1b	0.655
<u>Fornix (right))*</u>	1a	-5346.66	-5342.75	2742.70		
	1b	-5344.19	-5340.29	2741.48	1a vs 1b	0.291
<u>Anterior Thalamic Projections (left))*</u>	1a	-6200.80	-6198.89	3176.23		
	1b	-6179.06	-6175.15	3165.52	1a vs 1b	<0.000
<u>Anterior Thalamic Projections (right))*</u>	1a	-6207.24	-6203.34	3179.66		
	1b	-6201.00	-6197.10	3176.64	1a vs 1b	0.044
<u>Mammillothalamic tract (left)*</u>	1a	-5135.24	-5131.34	2635.68		
	1b	-5133.52	-5129.63	2634.85	1a vs 1b	0.423
<u>Mammillothalamic tract (right)</u>	1a	-4972.67	-4968.77	2552.66		

	1b	-4969.80	-4965.91	2551.39	1a vs 1b	0.238
<u>Uncinate Fasciculus (left)</u>	1a	-6075.00	-6071.09	3112.59		
	1b	-6061.57	-6057.66	3105.96	1a vs 1b	0.001
<u>Uncinate Fasciculus (right)</u>	1a	-5784.31	-5780.43	2966.64		
	1b	-5780.88	-5777.00	2965.03	1a vs 1b	0.179

Table 9 Fit indices of fixed effects: Limbic System White Matter Tracts MD in ADHD and Controls

<u>Region of Interest</u>	<u>Model</u>	<u>AICc</u>	<u>BICc</u>	<u>Log-likelihood</u>	<u>Test</u>	<u>Log-likelihood Test (p-value)</u>
<u>Cingulum Bundle (left)</u>	0b	-6213.93	-6210.02			
	1b	-6191.88	-6187.97	3157.39	0 vs 1	0.484
	2b	-6165.42	-6161.51	3158.24	0 vs 2	0.336
					1 vs 2	0.193
<u>Cingulum Bundle (right)</u>	0b	-6209.34	-6205.44			
	1b	-6187.19	-6183.29	3155.00	0 vs 1	0.671
	2b	-6158.43	-6154.53	3155.04	0 vs 2	0.886
					1 vs 2	0.807
<u>Fornix (left)</u>	0b	-5362.88	-5358.98			
	1b	-5346.78	-5342.88	2729.00	0 vs 1	0.045
	2b	-5323.35	-5319.45	2730.51	0 vs 2	0.030
					1 vs 2	0.082
<u>Fornix (right)</u>	0a	-5389.71	-5385.81			
	1a	-5370.27	-5366.37	2741.43	0 vs 1	0.317
	2a	-5344.19	-5340.29	2741.48	0 vs 2	0.578
					1 vs 2	0.761
<u>Anterior Thalamic Projections (left)</u>	0a	-6248.49	-6244.58			
	1a	-6226.85	-6222.95	3175.13	0 vs 1	0.484
	2a	-6200.80	-6196.89	3176.23	0 vs 2	0.336
					1 vs 2	0.193
<u>Anterior Thalamic Projections (right)</u>	0a	-6257.99	-6254.09			
	1a	-6235.87	-6231.87	3179.65	0 vs 1	0.521
	2a	-6207.24	-6203.34	3179.66	0 vs 2	0.805
					1 vs 2	0.881

<u>Mammillothalamic tract (left)</u>	0b	-5177.30	-5173.41			
	1b	-5158.02	-5154.13	2634.28	0 vs 1	0.375
	2b	-5133.52	-5129.63	22634.85	0 vs 2	0.383
					1 vs 2	0.287
<u>Mammillothalamic tract (right)</u>	0b	-4870.61	-4866.72			
	1b	-4852.26	-4848.36	2478.89	0 vs 1	0.291
	2b	-4829.43	-4825.53	2479.90	0 vs 2	0.283
					1 vs 2	0.235
<u>Uncinate Fasciculus (left)</u>	0a	-5858.39	-5854.48			
	1a	-5837.35	-5833.44	2977.86	0 vs 1	0.375
	2a	-5810.41	-5806.50	2977.94	0 vs 2	0.383
					1 vs 2	0.287
<u>Uncinate Fasciculus (right)</u>	0b	-5936.44	-5632.56			
	1b	-5616.20	-5612.33	28867.36	0 vs 1	0.777
	2b	-5589.76	-5585.89	2867.78	0 vs 2	0.690
					1 vs 2	0.416

1.3.3. Axial Diffusivity

Table 10 Fit indices of random effects: Limbic System White Matter Tracts AD in ADHD and Controls

<u>Region of Interest</u>	<u>Model</u>	<u>AICc</u>	<u>BICc</u>	<u>Log-likelihood</u>	<u>Test</u>	<u>Log-likelihood Test (p-value)</u>
<u>Cingulum Bundle (left)</u>	1a	-5954.14	-5950.24	3050.83		
	1b	-5938.85	-5934.94	3043.39	1a vs 1b	<0.000
<u>Cingulum Bundle (right)</u>	1a	-5937.91	-5934.01	3042.05		
	1b	-5937.48	-5933.58	3042.85	1a vs 1b	0.807
<u>Fornix (left)*</u>	1a	-4905.29	-4901.39	2518.00		
	1b	-4904.67	-4900.77	2517.67	1a vs 1b	0.733
<u>Fornix (right) *</u>	1a	-4953.06	-4949.16	2542.63		
	1b	-4952.38	-4948.48	2542.29	1a vs 1b	0.712
<u>Anterior Thalamic Projections (left)</u>	1a	-6056.46	-6052.55	3102.91		

	1b	-6037.19	-6033.28	3093.32	1a vs 1b	<0.000
<u>Anterior Thalamic Projections (right)</u>	1a	-5999.10	-5995.20	3074.09		
	1b	-5993.46	-5989.56	3071.28	1a vs 1b	0.059
<u>Mammillothalamic tract (left)*</u>	1a	-5005.74	-5001.84	2569.69		
	1b	-5002.51	-4998.62	2568.10	1a vs 1b	0.199
<u>Mammillothalamic tract (right)</u>	1a	-4830.96	-4827.06	2480.54		
	1b	-4829.43	-4825.53	2479.90	1a vs 1b	0.465
<u>Uncinate Fasciculus (left)</u>	1a	-5810.41	-5806.50	2977.94		
	1b	-5797.77	-5793.87	2971.80	1a vs 1b	0.001
<u>Uncinate Fasciculus (right) *</u>	1a	-5589.97	-5586.10	2867.87		
	1b	-5589.76	-5585.89	2867.78	1a vs 1b	0.898

Table 11 Fit indices of fixed effects: Limbic System White Matter Tracts AD in ADHD and Controls

<u>Region of Interest</u>	<u>Model</u>	<u>AICc</u>	<u>BICc</u>	<u>Log-likelihood</u>	<u>Test</u>	<u>Log-likelihood Test (p-value)</u>
<u>Cingulum Bundle (left)</u>	0b	-6001.73	-5997.83			
	1b	-5980.73	-5976.82	3050.33	0 vs 1	0.334
	2b	-5954.14	-5950.24	3050.83	0 vs 2 1 vs 2	0.379 0.315
<u>Cingulum Bundle (right)</u>	0b	-5985.84	-5981.94			
	1b	-5964.74	-5960.85	3042.43	0 vs 1	0.363
	2b	-5937.48	-5933	3042.85	0 vs 2 1 vs 2	0.384 0.453
<u>Fornix (left)</u>	0b	-4946.45	-4942.55			
	1b	-4928.48	-4924.58	2516.97	0 vs 1	0.333
	2b	-4904.67	-4900.77	2517.67	0 vs 2 1 vs 2	0.311 0.237
<u>Fornix (right)</u>	0a	-4991.98	-4988.08			
	1a	-4977.26	-4973.35	2542.21	0 vs 1	0.029
	2a	-4952.38	-4948.48	2542.29	0 vs 2 1 vs 2	0.087 0.689
<u>Anterior Thalamic Projections (left)</u>	0a	-6102.79	-6098.88			

	1a	-6083.58	-6079.67	3102.50	0 vs 1	0.333
	2a	-6056.46	-6052.55	3102.91	0 vs 2	0.311
					1 vs 2	0.237
<u>Anterior Thalamic Projections (right)</u>	0a	-6041.64	-6037.73			
	1a	-6021.18	-6017.28	3071.06	0 vs 1	0.206
	2a	-5993.46	-5989.56	3071.28	0 vs 2	0.360
					1 vs 2	0.507
<u>Mammillothalamic tract (left)</u>	0b	-5046.27	-5042.38			
	1b	-5026.87	-5022.97	2567.62	0 vs 1	0.661
	2b	-5002.51	-4998.62	2568.10	0 vs 2	0.566
					1 vs 2	0.330
<u>Mammillothalamic tract (right)</u>	0b	-4870.61	-4866.72			
	1b	-4852.26	-4848.36	2478.89	0 vs 1	0.419
	2b	-4829.43	-4825.53	2479.90	0 vs 2	0.263
					1 vs 2	0.155
<u>Uncinate Fasciculus (left)</u>	0a	-5858.39	-5854.48			
	1a	-5837.35	-5833.44	2977.86	0 vs 1	0.029
	2a	-5810.41	-5806.50	2977.94	0 vs 2	0.087
					1 vs 2	0.689
<u>Uncinate Fasciculus (right)</u>	0b	-5936.44	-5632.56			
	1b	-5616.20	-5612.33	28867.36	0 vs 1	0.206
	2b	-5589.76	-5585.89	2867.78	0 vs 2	0.360
					1 vs 2	0.507

1.3.4. Radial Diffusivity (RD)

Table 12 Fit indices of random effects: Limbic System White Matter Tracts RD in ADHD and Controls

<u>Region of Interest</u>	<u>Model</u>	<u>AICc</u>	<u>BICc</u>	<u>Log-likelihood</u>	<u>Test</u>	<u>Log-likelihood Test (p-value)</u>
<u>Cingulum Bundle (left)</u>	1a	-6127.48	-6123.57	3138.94		
	1b	-6103.04	-6099.14	3126.85	1a vs 1b	<0.000
<u>Cingulum Bundle (right)</u>	1a	-6166.34	-6162.44	3158.79		
	1b	-6165.57	-6161.67	3158.44	1a vs 1b	0.679
<u>Fornix (left) *</u>	1a	-5551.83	-5547.93	2846.73		
	1b	-5548.92	-5545.02	2845.25	1a vs 1b	0.233
<u>Fornix (right) *</u>	1a	-5559.48	-5555.58	2850.88		
	1b	-5557.32	-5553.42	2849.81	1a vs 1b	0.340
<u>Anterior Thalamic Projections (left) *</u>	1a	-6193.86	-6189.95	3176.63		
	1b	-6173.37	-6169.46	3152.61	1a vs 1b	<0.000
<u>Anterior Thalamic Projections (right)</u>	1a	-6193.28	-6189.34	3172.51		
	1b	-6188.28	-6184.37	3170.11	1a vs 1b	0.081
<u>Mammillothalamic tract (left)</u>	1a	-5197.56	-5193.67	2667.45		
	1b	-5196.08	-5192.18	2666.76	1a vs 1b	0.475
<u>Mammillothalamic tract (right)</u>	1a	-5039.29	-5035.39	2586.68		
	1b	-5036.12	-5036.12	2585.26	1a vs 1b	0.205
<u>Uncinate Fasciculus (left)</u>	1a	-6041.40	-6037.50	3095.39		
	1b	-6033.01	-6029.10	3091.26	1a vs 1b	0.015
<u>Uncinate Fasciculus (right)</u>	1a	-5748.35	-5744.47	2948.10		
	1b	-5740.11	-5736.24	2944.12	1a vs 1b	0.016

Table 13 Fit indices of fixed effects: Limbic System White Matter Tracts RD in ADHD and Controls

Region of Interest	Model	AICc	BICc	Log-likelihood	Test	Log-likelihood Test (p-value)
<u>Cingulum Bundle (left)</u>	0b	-6176.07	-6172.17			
	1b	-6153.97	-6150.06	3138.17	0 vs 1	0.568
	2b	-6127.48	-6123.57	3138.94	0 vs 2 1 vs 2	0.394 0.215
<u>Cingulum Bundle (right)</u>	0b	-6215.43	-6211.53			
	1b	-6194.30	-6190.40	3158.32	0 vs 1	0.302
	2b	-6165.57	-6161.67	3158.44	0 vs 2 1 vs 2	0.522 0.629
<u>Fornix (left)</u>	0b	-5587.17	-5583.27			
	1b	-5571.88	-5567.99	2843.20	0 vs 1	0.018
	2b	-5548.92	-5545.02	2845.25	0 vs 2 1 vs 2	0.008 0.042
<u>Fornix (right)</u>	0a	-5605.11	-5601.21			
	1a	-5584.11	-5580.21	2849.81	0 vs 1	0.974
	2a	-5557.32	-5553.42	2849.82	0 vs 2 1 vs 2	0.998 0.964
<u>Anterior Thalamic Projections (left)</u>	0a	-6241.81	-6237.90			
	1a	-6219.91	-6216.00	3171.53	0 vs 1	0.412
	2a	-6193.86	-6189.95	3172.63	0 vs 2 1 vs 2	0.237 0.138
<u>Anterior Thalamic Projections (right)</u>	0a	-6239.15	-6235.25			
	1a	-6216.76	-6212.86	3169.93	0 vs 1	0.996
	2a	-6188.28	-6184.37	3170.11	0 vs 2 1 vs 2	0.838 0.552
<u>Mammillothalamic tract (left)</u>	0b	-5239.74	-5235.84			
	1b	-5220.89	-5217.00	2666.27	0 vs 1	0.225
	2b	-5196.08	-5192.18	2666.76	0 vs 2 1 vs 2	0.295 0.325
<u>Mammillothalamic tract (right)</u>	0b	-5078.43	-5074.54			

	1b	-5060.18	-5056.28	2584.61	0 vs 1	0.216
	2b	-5036.12	-5032.23	2585.26	0 vs 2	0.244
					1 vs 2	0.255
<u>Uncinate Fasciculus (left)</u>	0a	-6090.05	-6086.15			
	1a	-6068.52	-6064.62	3094.98	0 vs 1	0.405
	2a	-6041.40	-6037.50	3095.39	0 vs 2	0.470
					1 vs 2	0.366
<u>Uncinate Fasciculus (right)</u>	0b	-5797.47	-5793.59			
	1b	-5775.87	-5771.99	2948.08	0 vs 1	0.996
	2b	-5748.35	-5744.47	2948.10	0 vs 2	0.838
					1 vs 2	0.552

1.3.5. Kurtosis Anisotropy (KA)

Table 14 Fit indices of random effects: Limbic System White Matter Tracts KA in ADHD and Controls

<u>Region of Interest</u>	<u>Model</u>	<u>AICc</u>	<u>BICc</u>	<u>Log-likelihood</u>	<u>Test</u>	<u>Log-likelihood Test (p-value)</u>
<u>Cingulum Bundle (left)</u>	1a	-1679.62	-1683.51	879.03		
	1b	-1663.39	-1659.50	869.23	1a vs 1b	< 0.000
<u>Cingulum Bundle (right)</u>	1a	-1637.89	-1634.02	856.26		
	1b	-1630.70	-1626.83	852.82	1a vs 1b	0.027
<u>Fornix (left)</u>	1a	-1558.71	-1554.88	817.04		
	1b	-1557.64	-1553.81	816.508	1a vs 1b	0.585
<u>Fornix (right))*</u>	1a	-1521.14	-1517.27	797.14		
	1b	-1519.08	-1515.20	796.10	1a vs 1b	0.355
<u>Anterior Thalamic Projections (left))*</u>	1a	-1795.96	-1792.07	936.85		
	1b	-1789.62	-1785.74	933.74	1a vs 1b	0.042
<u>Anterior Thalamic Projections (right))*</u>	1a	-1830.32	-1826.44	954.26		
	1b	-1827.98	-1827.10	953.16	1a vs 1b	0.309
<u>Mammillothalamic tract (left)*</u>	1a	-1351.82	-1347.95	711.90		
	1b	-1350.98	1347.10	711.47	1a vs 1b	0.654
<u>Mammillothalamic tract (right)</u>	1a	-1294.30	-1290.42	682.53		
	1b	-1293.84	-1289.96	682.18	1a vs 1b	0.793
<u>Uncinate Fasciculus (left)</u>	1a	-1640.51	-1636.64	858.13		

	1b	-1639.02	-1635.15	857.46	1a vs 1b	0.474
<u>Uncinate Fasciculus (right)</u>	1a	-1628.04	-1624.20	851.79		
	1b	-1625.90	-1622.06	850.80	1a vs 1b	0.343

Table 15 Fit indices of fixed effects: Limbic System White Matter Tracts MD in ADHD and Controls

<u>Region of Interest</u>	<u>Model</u>	<u>AICc</u>	<u>BICc</u>	<u>Log-likelihood</u>	<u>Test</u>	<u>Log-likelihood Test (p-value)</u>
<u>Cingulum Bundle (left)</u>	0b	-1701.90	-1698.01			
	1b	-1699.16	-1695.27	878.95	0 vs 1	0.008
	2b	-1683.51	-1679.62	879.03	0 vs 2 1 vs 2	0.028 0.701
<u>Cingulum Bundle (right)</u>	0b	-1653.83	-1649.95			
	1b	-1651.74	-1647.87	855.27	0 vs 1	0.005
	2b	-1637.89	-1634.02	856.26	0 vs 2 1 vs 2	0.007 0.158
<u>Fornix (left)</u>	0b	-1575.59	-1571.76			
	1b	-1571.86	-1568.03	815.72	0 vs 1	0.034
	2b	-1557.64	-1553.81	816.50	0 vs 2 1 vs 2	0.015 0.049
<u>Fornix (right)</u>	0a	-1540.27	-1536.40			
	1a	-1532.52	-1528.65	794.99	0 vs 1	0.002
	2a	-1519.08	-1515.20	796.10	0 vs 2 1 vs 2	0.002 0.083
<u>Anterior Thalamic Projections (left)</u>	0a	-1817.35	-1813.46			
	1a	-1812.04	-1808.15	936.79	0 vs 1	0.026
	2a	-1795.96	-1792.07	936.85	0 vs 2 1 vs 2	0.079 0.723
<u>Anterior Thalamic Projections (right)</u>	0a	-1846.45	-1842.56			
	1a	-1840.68	-1836.79	951.23	0 vs 1	0.378
	2a	-1827.98	-1824.10	953.16	0 vs 2 1 vs 2	0.550 0.519
<u>Mammillothalamic tract (left)</u>	0b	-1371.87	-1367.99			
	1b	-1364.72	-1360.84	710.95	0 vs 1	0.684

	2b	-1350.98	-1347.10	711.47	0 vs 2	0.858
					1 vs 2	0.707
<u>Mammillothalamic tract (right)</u>	0b	-1314.18	-1310.30			
	1b	-1307.16	-1303.28	681.63	0 vs 1	0.024
	2b	-1293.84	-1289.96	682.28	0 vs 2	0.065
					1 vs 2	0.543
<u>Uncinate Fasciculus (left)</u>	0a	-1663.61	-1659.74			
	1a	-1654.53	-1650.67	857.25	0 vs 1	0.013
	2a	-1639.02	-1635.15	857.46	0 vs 2	0.020
					1 vs 2	0.211
<u>Uncinate Fasciculus (right)</u>	0b	-1651.39	-1647.55			
	1b	-1641.86	-1638.01	850.73	0 vs 1	0.212
	2b	-1625.90	-1622.06	850.80	0 vs 2	0.151
					1 vs 2	0.135

1.3.6. Axial Kurtosis

Table 16 Fit indices of random effects: Limbic System White Matter Tracts AK in ADHD and Controls

<u>Region of Interest</u>	<u>Model</u>	<u>AICc</u>	<u>BICc</u>	<u>Log-likelihood</u>	<u>Test</u>	<u>Log-likelihood Test (p-value)</u>
<u>Cingulum Bundle (left)*</u>	1a	-1398.53	-1394.64	735.13		
	1b	-1392.46	-1388.57	732.12	1a vs 1b	0.048
<u>Cingulum Bundle (right)*</u>	1a	-1394.37	-1390.49	733.14		
	1b	-1389.62	-1385.74	730.81	1a vs 1b	0.092
<u>Fornix (left)*</u>	1a	-1179.72	-1175.89	624.40		
	1b	-1179.18	-1175.35	624.14	1a vs 1b	0.763
<u>Fornix (right)*)*</u>	1a	-936.87	-933.00	499.93		
	1b	-935.43	-931.55	499.21	1a vs 1b	0.485

<u>Anterior Thalamic Projections (left)*</u>	1a	-1402.77	-1398.88	737.41		
	1b	-1395.17	-1391.29	733.66	1a vs 1b	0.022
<u>Anterior Thalamic Projections (right)*</u>	1a	-1377.75	-1373.87	724.77		
	1b	-1372.88	-1368.99	722.40	1a vs 1b	0.087
<u>Mammillothalamic tract (left)*</u>	1a	-1351.82	-1347.95	711.90		
	1b	-1350.98	1347.10	711.47	1a vs 1b	0.815
<u>Mammillothalamic tract (right)</u>	1a	-1294.30	-1290.42	682.53		
	1b	-1293.84	-1289.96	682.18	1a vs 1b	0.452
<u>Uncinate Fasciculus (left)*</u>	1a	-1232.60	-1228.89	650.81		
	1b	-1230.89	-1227.03	649.97	1a vs 1b	0.426
<u>Uncinate Fasciculus (right)*</u>	1a	-1190.70	-1186.87	629.93		
	1b	-1178.66	-1174.82	623.89	1a vs 1b	0.002

Table 17 Fit indices of fixed effects: Limbic System White Matter Tracts AK in ADHD and Controls

Region of Interest	Model	AICc	BICc	Log-likelihood	Test	Log-likelihood Test (p-value)
<u>Cingulum Bundle (left)</u>	0b	-1415.11	-1411.22			
	1b	-1406.15	-1402.26	731.47	0 vs 1	0.568
	2b	-1392.46	-1388.57	732.12	0 vs 2 1 vs 2	0.446 0.256
<u>Cingulum Bundle (right)</u>	0b	-1413.16	-1409.28			
	1b	-1404.03	-1400.15	730.54	0 vs 1	0.641
	2b	-1389.62	-1385.74	730.81	0 vs 2 1 vs 2	0.682 0.459
<u>Fornix (left)</u>	0b	-1200.77	-1196.94			
	1b	-1192.23	-1188.40	623.41	0 vs 1	0.568
	2b	-1179.18	-1175.35	624.14	0 vs 2	0.409

					1 vs 2	0.226
<u>Fornix (right)</u>	0a	-953.32	-949.44			
	1a	-946.27	-942.40	497.66	0 vs 1	0.447
	2a	-935.43	-931.55	499.21	0 vs 2	0.159
					1 vs 2	0.078
<u>Anterior Thalamic Projections (left)</u>	0a	-1419.11	-1415.22			
	1a	-1409.96	-1406.07	733.57	0 vs 1	0.620
	2a	-1395.17	-1391.29	733.66	0 vs 2	0.815
					1 vs 2	0.685
<u>Anterior Thalamic Projections (right)</u>	0a	-11396.81	-1392.92			
	1a	-1387.73	-1383.85	722.39	0 vs 1	0.580
	2a	-1372.88	-1368.99	722.40	0 vs 2	0.858
					1 vs 2	0.981
<u>Mammillothalamic tract (left)</u>	0b	-925.56	-921.69			
	1b	-918.24	-914.37	484.18	0 vs 1	0.418
	2b	-907.29	-903.42	485.49	0 vs 2	0.195
					1 vs 2	0.105
<u>Mammillothalamic tract (right)</u>	0b	-835.06	-859.18			
	1b	-860.86	-856.98	455.22	0 vs 1	0.015
	2b	-847.60	-843.79	455.26	0 vs 2	0.052
					1 vs 2	0.793
<u>Uncinate Fasciculus (left)</u>	0a	-1253.48	-1249.62			
	1a	-1245.50	-1241.64	649.96	0 vs 1	0.370
	2a	-1230.89	-1227.03	649.91	0 vs 2	0.664
					1 vs 2	0.904
<u>Uncinate Fasciculus (right)</u>	0b	-1201.30	-1197.47			
	1b	-1192.81	-1188.97	623.74	0 vs 1	0.538
	2b	-1178.66	-1174.82	623.89	0 vs 2	0.716
					1 vs 2	0.591

1.3.7. Mean Kurtosis

Table 18 Fit indices of random effects: Limbic System White Matter Tracts MK in ADHD and Controls

Region of Interest	Model	AICc	BICc	Log-likelihood	Test	Log-likelihood Test (p-value)
<u>Cingulum Bundle (left)</u>	1a	-1086.27	-1082.38	576.15		
	1b	-1083.04	-1079.15	574.49	1a vs 1b	0.198
<u>Cingulum Bundle (right)*</u>	1a	-1079.91	-1076.03	572.99		
	1b	-1079.65	-1075.78	572.85	1a vs 1b	0.880
<u>Fornix (left)*</u>	1a	-967.31	-963.48	516.03		
	1b	-966.34	-962.51	515.55	1a vs 1b	0.615
<u>Fornix (right))*</u>	1a	-783.81	-779.94	422.04		
	1b	-783.33	-779.46	421.81	1a vs 1b	0.785
<u>Anterior Thalamic Projections (left)*</u>	1a	-1124.08	-1120.2	595.40		
	1b	-1123.60	-1119.72	595.17	1a vs 1b	0.787
<u>Anterior Thalamic Projections (right)*</u>	1a	-1082.27	-1078.39	574.13		
	1b	-1082.27	-1078.39	574.13	1a vs 1b	0.999
<u>Mammillothalamic tract (left)*</u>	1a	-889.98	-886.10	476.58		
	1b	-889.41	-885.53	476.27	1a vs 1b	0.753
<u>Mammillothalamic tract (right)</u>	1a	-819.45	-815.57	440.78		
	1b	-818.71	-814.84	440.43	1a vs 1b	0.692
<u>Uncinate Fasciculus (left)*</u>	1a	-903.48	-899.61	483.19		
	1b	-902.04	-898.18	482.45	1a vs 1b	0.487
<u>Uncinate Fasciculus (right)*</u>	1a	-915.84	-912.00	489.86		
	1b	-915.11	-911.28	489.51	1a vs 1b	0.695

Table 19 Fit indices of fixed effects: Limbic System White Matter Tracts MK in ADHD and Controls

Region of Interest	Model	AICc	BICc	Log-likelihood	Test	Log-likelihood Test (p-value)
<u>Cingulum Bundle (left)</u>	0b	-1102.38	-1098.49			
	1b	-1096.86	-1092.97	574.30	0 vs 1	0.568
	2b	-1083.04	-1079.15	575.49	0 vs 2 1 vs 2	0.446 0.256
<u>Cingulum Bundle (right)</u>	0b	-1099.59	-1095.71			
	1b	-1093.83	-1089.96	572.84	0 vs 1	0.641
	2b	-1079.65	-1075.78	572.85	0 vs 2 1 vs 2	0.682 0.459
<u>Fornix (left)</u>	0b	-987.33	-983.50			
	1b	-979.46	-975.63	515.14	0 vs 1	0.568
	2b	-966.34	-962.51	515.55	0 vs 2 1 vs 2	0.409 0.226
<u>Fornix (right)</u>	0a	-799.80	-795.92			
	1a	-793.31	-789.43	420.03	0 vs 1	0.447
	2a	-793.33	-779.46	421.81	0 vs 2 1 vs 2	0.159 0.078
<u>Anterior Thalamic Projections (left)</u>	0a	-1142.73	-1138.85			
	1a	-1136.79	-1132.90	594.61	0 vs 1	0.620
	2a	-1123.60	-1119.72	595.17	0 vs 2 1 vs 2	0.815 0.685
<u>Anterior Thalamic Projections (right)</u>	0a	-1101.49	-1097.61			
	1a	-1096.32	-1092.44	574.05	0 vs 1	0.580
	2a	-1082.27	-1078.39	574.13	0 vs 2 1 vs 2	0.858 0.981
<u>Mammillothalamic tract (left)</u>	0b	-907.02	-903.14			
	1b	-899.24	-895.37	474.41	0 vs 1	0.418
	2b	-889.41	-885.53	476.27	0 vs 2 1 vs 2	0.195 0.105
<u>Mammillothalamic tract (right)</u>	0b	-833.26	-829.38			

	1b	-831.92	-828.04	440.38	0 vs 1	0.015
	2b	-818.71	-814.84	440.43	0 vs 2	0.052
					1 vs 2	0.793
<u>Uncinate Fasciculus (left)</u>	0a	-922.41	-918.55			
	1a	-915.68	-911.81	482.40	0 vs 1	0.370
	2a	-902.04	-898.18	482.45	0 vs 2	0.664
					1 vs 2	0.904
<u>Uncinate Fasciculus (right)</u>	0b	-935.69	-931.86			
	1b	-928.23	-924.39	489.20	0 vs 1	0.538
	2b	-915.11	-911.28	489.51	0 vs 2	0.716
					1 vs 2	0.591

1.3.8. Radial Kurtosis

Table 20 Fit indices of random effects: Limbic System White Matter Tracts RK in ADHD and Controls

<u>Region of Interest</u>	<u>Model</u>	<u>AICc</u>	<u>BICc</u>	<u>Log-likelihood</u>	<u>Test</u>	<u>Log-likelihood Test (p-value)</u>
<u>Cingulum Bundle (left)</u>	1a	-641.34	-637.45	349.52		
	1b	-624.18	-620.29	341.18	1a vs 1b	<0.000
<u>Cingulum Bundle (right)</u>	1a	-639.58	-635.70	348.66		
	1b	-631.98	-628.10	345.04	1a vs 1b	0.022
<u>Fornix (left)*</u>	1a	-582.25	-578.42	319.70		
	1b	-581.70	-577.88	319.44	1a vs 1b	0.762
<u>Fornix (right)*</u>	1a	-570.31	-566.44	313.49		
	1b	-570.31	-566.43	313.49	1a vs 1b	0.996
<u>Anterior Thalamic Projections (left)*</u>	1a	-745.51	-741.63	402.74		
	1b	-744.15	-740.27	402.14	1a vs 1b	0.506

<u>Anterior Thalamic Projections (right)*</u>	1a	-716.63	-712.74	387.79		
	1b	-707.28	-703.40	383.30	1a vs 1b	0.009
<u>Mammillothalamic tract (left)*</u>	1a	-713.24	-709.36	386.70		
	1b	-713.02	-709.14	386.60	1a vs 1b	0.896
<u>Mammillothalamic tract (right)</u>	1a	-685.22	-681.34	372.32		
	1b	-682.26	-678.38	370.86	1a vs 1b	0.227
<u>Uncinate Fasciculus (left)*</u>	1a	-520.30	-516.44	288.28		
	1b	-518.81	-514.94	287.55	1a vs 1b	0.474
<u>Uncinate Fasciculus (right)*</u>	1a	-535.37	-531.53	296.07		
	1b	-535.03	-531.18	295.91	1a vs 1b	0.840

Table 21 Fit indices of fixed effects: Limbic System White Matter Tracts RK in ADHD and Controls

Region of Interest	Model	AICc	BICc	Log-likelihood	Test	Log-likelihood Test (p-value)
<u>Cingulum Bundle (left)</u>	0b	-656.39	-652.50			
	1b	-650.06	-646.17	347.58	0 vs 1	0.418
	2b	-641.34	-637.45	349.52	0 vs 2 1 vs 2	0.103 0.049
<u>Cingulum Bundle (right)</u>	0b	-655.91	-652.03			
	1b	-650.95	-647.07	347.98	0 vs 1	0.158
	2b	-639.58	-635.70	348.66	0 vs 2 1 vs 2	0.188 0.245
<u>Fornix (left)</u>	0b	-601.09	-597.26			
	1b	-594.39	-590.56	319.35	0 vs 1	0.986
	2b	-581.70	-577.88	319.44	0 vs 2 1 vs 2	0.913 0.671
<u>Fornix (right)</u>	0a	-584.14	-580.26			
	1a	-578.02	-574.15	310.91	0 vs 1	0.496
	2a	-570.31	-566.43	313.49	0 vs 2	0.060

					1 vs 2	0.023
<u>Anterior Thalamic Projections (left)</u>	0a	-754.88	-751.00			
	1a	-748.86	-744.98	397.86	0 vs 1	0.263
	2a	-744.15	-740.27	402.14	0 vs 2	0.007
					1 vs 2	0.003
<u>Anterior Thalamic Projections (right)</u>	0a	-733.44	-729.56			
	1a	-728.49	-724.60	387.27	0 vs 1	0.136
	2a	-716.63	-712.74	387.79	0 vs 2	0.195
					1 vs 2	0.306
<u>Mammillothalamic tract (left)</u>	0b	-730.51	-726.63			
	1b	-723.26	-719.38	385.21	0 vs 1	0.736
	2b	-713.02	-709.14	386.60	0 vs 2	0.235
					1 vs 2	0.095
<u>Mammillothalamic tract (right)</u>	0b	-699.95	-696.07			
	1b	-694.94	-691.06	370.73	0 vs 1	0.132
	2b	-692.26	-678.38	370.86	0 vs 2	0.283
					1 vs 2	0.611
<u>Uncinate Fasciculus (left)</u>	0a	-535.77	-531.90			
	1a	-529.65	-525.78	286.68	0 vs 1	0.479
	2a	-518.81	-514.94	287.55	0 vs 2	0.328
					1 vs 2	0.188
<u>Uncinate Fasciculus (right)</u>	0b	-554.12	-550.28			
	1b	-547.57	-543.73	295.88	0 vs 1	0.684
	2b	-535.03	-531.18	295.91	0 vs 2	0.898
					1 vs 2	0.826

1.4. Study 3: Results of Model Fit Statistics

Table 22 Fit indices of random effects: Limbic System Network Metrics in ADHD and Controls

Region of Interest	Model	AICc	BICc	Log-likelihood	Test	Log-likelihood Test (p-value)
<u>Network Efficiency*</u>	1a	N/A	N/A	N/A		
	1b	-8180.92	-8177.13	4192.09	1a vs 1b	N/A
<u>Characteristic Path Length</u>	1a	-8687.46	-8683.64	4447.96		
	1b	-8686.01	-8682.19	4447.31	1a vs 1b	0.393
<u>Network Density</u>	1a	-519.43	-515.62	304.626		
	1b	-518.81	-514.99	304.301	1a vs 1b	0.730
<u>Routing Efficiency*</u>	1a	-2784.51	-2780.69	1441.87		
	1b	-2784.50	-2780.69	1441.88	1a vs 1b	0.999
<u>Clustering Coefficient</u>	1a	-8532.92	-8529.10	4397.94		
	1b	-8531.70	-8527.87	4397.41	1a vs 1b	0.542
<u>Network Strength</u>	1a	-6797.77	-6793.94	3511.38		
	1b	-6795.76	-6791.94	3510.47	1a vs 1b	0.367
<u>Local Efficiency</u>	1a	-8429.59	-8425.76	4344.17		
	1b	-8428.93	-8425.10	4343.87	1a vs 1b	0.718

Table 23 Fit indices of fixed effects: Limbic System Network Metrics in ADHD and Controls

Region of Interest	Model	AICc	BICc	Log-likelihood	Test	Log-likelihood Test (p-value)
<u>Network Efficiency</u>	0b	-8193.16	-8189.36			
	1b	-8162.77	-8158.97	4192.97	0 vs 1	0.210
	2b			4193.42	0 vs 2	0.259
					1 vs 2	0.341
<u>Characteristic Path Length</u>	0b	-8699.91	-8696.09			

	1b	-8668.98	-8665.16	4448.80	0 vs 1	0.104
	2b	-8631.86	-8628.04	4449.15	0 vs 2	0.157
					1 vs 2	0.410
<u>Network Density</u>	0b	-538.21	-534.40			
	1b	-531.41	-527.59	304.28	0 vs 1	0.951
	2b	-518.81	-514.99	304.30	0 vs 2	0.854
					1 vs 2	0.862
<u>Routing Efficiency</u>	0b	-2781.06	-2777.25			
	1b	-2767.60	-2763.79	1443.36	0 vs 1	0.334
	2b	-2748.02	-2744.21	1443.37	0 vs 2	0.184
					1 vs 2	0.905
<u>Clustering Coefficient</u>	0b	-8599.11	-8595.29			
	1b	-8567.78	-8563.95	4396.79	0 vs 1	0.251
	2b	-8531.70	-8527.87	4397.42	0 vs 2	0.260
					1 vs 2	0.264
<u>Network Strength</u>	0b	-6852.26	-6848.43			
	1b	-6827.26	-6823.43		0 vs 1	0.099
	2b	-6795.76	-6791.94		0 vs 2	0.167
					1 vs 2	0.510
<u>Local Efficiency</u>	0b	-8496.20	-8492.36			
	1b	-8465.17	-8461.33	4343.65	0 vs 1	0.434
	2b	-8428.93	-8425.10	4343.87	0 vs 2	0.550
					1 vs 2	0.506

1.5. Additional Analyses: ADHD-Associated Brain Regions

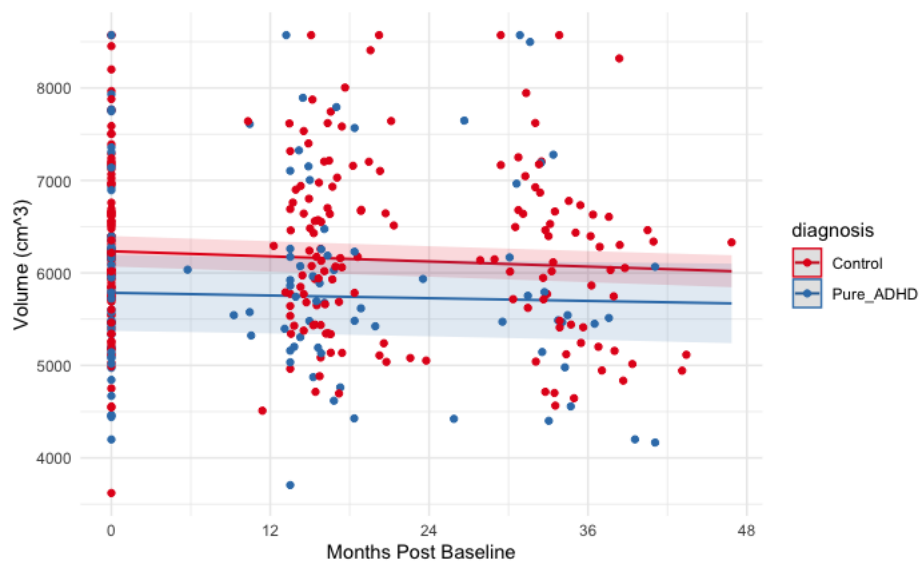
Additional analyses were performed to examine the between-group differences in brain regions outside the limbic system that have been associated with abnormalities in ADHD, specifically components of the basal ganglia, inferior prefrontal cortex and dorsolateral prefrontal cortex. To measure between-group differences in volume, LMM was used via the lme4 package in R (version 1.1-27.1)(Bates et al. 2014). The chosen LMM model is illustrated as model FX2b in Table 1.

Secondary analyses were also conducted to investigate the relationship between these brain volumes and ADHD symptoms (CAI and ARI) in children and adolescents with ADHD. These relationships were investigated using LMM via the lme4 package in R (version 1.1-27.1)(Bates et al. 2014). The selected LMM model, depicted as model FX3b in Table 1, assessed whether age-related volume changes in these structures varied based on ADHD symptom severity, by including an age-by-ADHD symptoms interaction term. To minimize the impact of multiple comparisons, a two-stage FDR correction was conducted using the MuToss package(Team et al. 2017) in R (v.4.1.1).

1.5.1. Inferior Prefrontal Cortex

Left Parsopercularis

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	1.679e-04	9.877e-05	1.700	0.090
sex1	1.452e+02	1.281e+02	1.134	0.257
Age_baseline_c	-2.387e+02	1.558e+02	-1.532	0.127
mts_baseline	-3.521e+00	7.557e-01	-4.660	<0.000
diagnosis1	-4.488e+02	1.650e+02	-2.721	0.007
mts_baselinediagnosis1	2.156e+00	1.433e+00	1.504	0.134

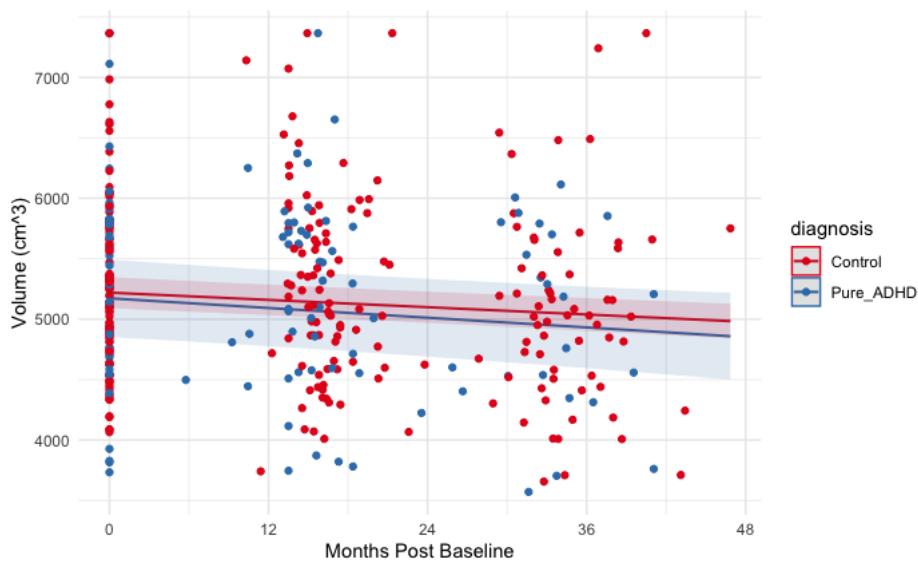


Fixed effects:	Estimate	Std. Error	t	p
ICV	-9.664e-05	1.585e-04	-0.610	0.544
sex	-2.405e+02	3.278e+02	-0.734	0.466
CAI	3.836e+00	5.993e+00	0.640	0.524
mts_baseline	-5.107e+00	2.979e+00	-1.714	0.092
CAI:mts_baseline	2.193e-01	2.115e-01	1.037	0.304

Fixed effects:	Estimate	Std. Error	t	p
ICV	-1.815e-04	3.131e-04	-0.580	0.565
Sex	-1.773e+02	3.359e+02	-0.528	0.600
ARI	-1.299e+01	1.245e+01	-1.043	0.303
mts_baseline	-9.989e-01	3.036e+00	-0.329	0.744
ARI:mts_baseline	3.348e-01	5.281e-01	0.634	0.530

Right Parsopercularis

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	6.401e-04	1.253e-04	5.109	<0.000
sex1	9.052e+01	1.138e+02	0.796	0.427
Age_baseline_c	-7.135e+01	1.246e+02	-0.573	0.568
mts_baseline	-5.862e+00	9.789e-01	-5.989	<0.000
diagnosis1	-4.701e+01	1.278e+02	-0.368	0.714
mts_baselinediagnosis1	-1.663e+00	1.861e+00	-0.894	0.373

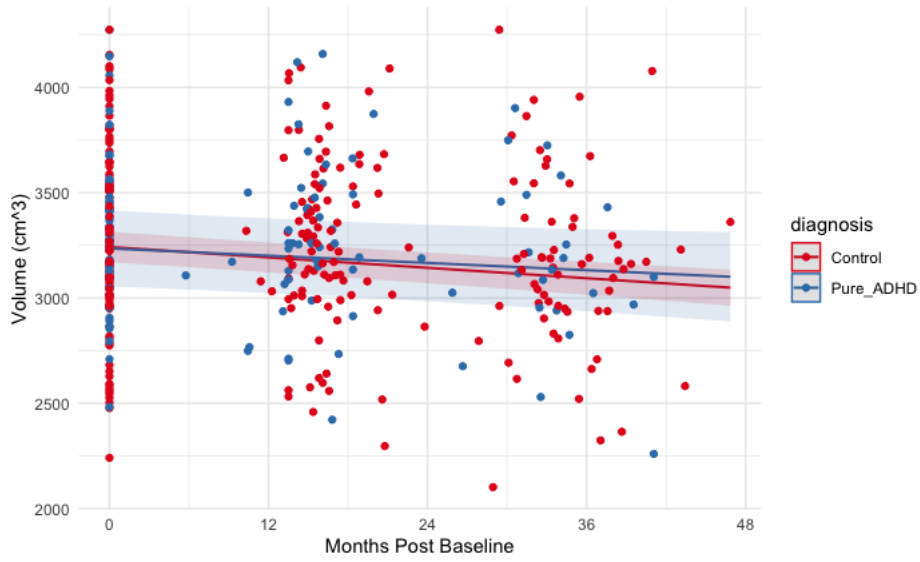


Fixed effects:	Estimate	Std. Error	t	p
ICV	9.924e-04	2.671e-04	3.716	<0.000
sex	7.194e+01	2.522e+02	0.285	0.776
CAI	2.107e+00	1.008e+01	0.209	0.835
mts_baseline	5.294e-01	5.335e+00	0.099	0.921
CAI:mts_baseline	-5.477e-01	3.799e-01	-1.442	0.154

Fixed effects:	Estimate	Std. Error	t	p
ICV	2.415e-03	4.162e-04	5.803	<0.000
Sex	-1.102e+02	2.562e+02	-0.430	0.668
ARI	1.488e+01	1.721e+01	0.865	0.391
mts_baseline	2.279e+00	4.543e+00	0.502	0.619
ARI:mts_baseline	-1.666e+00	7.771e-01	-2.144	0.038

Left Parsorbitalis

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	1.790e-04	8.469e-05	2.113	0.035
sex1	9.671e+01	6.584e+01	1.469	0.143
Age_baseline_c	-1.205e+01	7.027e+01	-0.172	0.864
mts_baseline	-3.497e+00	6.725e-01	-5.201	<0.000
diagnosis1	-6.704e+00	7.210e+01	-0.093	0.926
mts_baselinediagnosis1	1.245e+00	1.281e+00	0.972	0.332

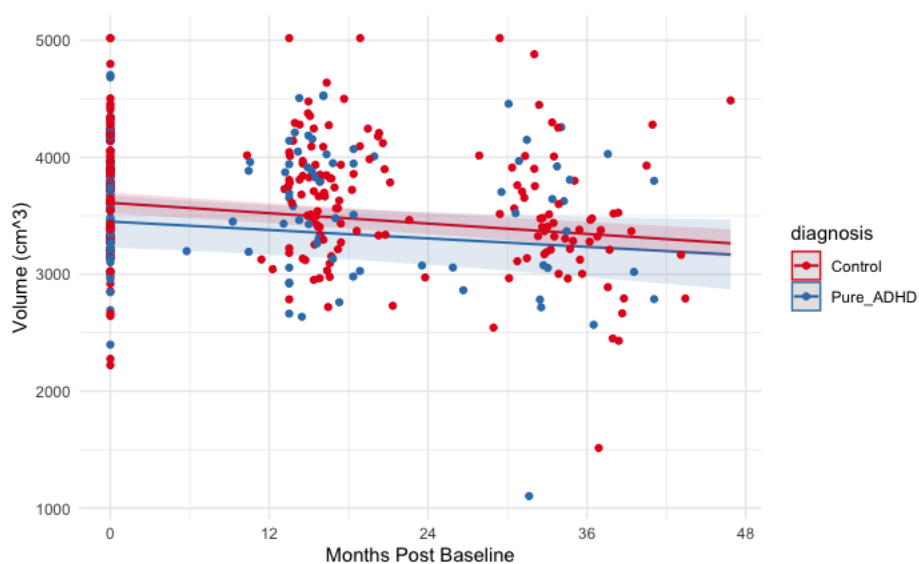


Fixed effects:	Estimate	Std. Error	t	p
ICV	6.617e-05	1.195e-04	0.554	0.582
sex	9.070e+01	1.259e+02	0.720	0.475
CAI	-1.484e+00	4.514e+00	-0.329	0.743
mts_baseline	-5.202e+00	2.349e+00	-2.214	0.031
CAI:mts_baseline	1.247e-01	1.672e-01	0.746	0.459

Fixed effects:	Estimate	Std. Error	t	p
ICV	3.788e-04	1.724e-04	2.197	0.032
Sex	5.258e+01	1.167e+02	0.451	0.654
ARI	-8.908e+00	7.051e+00	-1.263	0.212
mts_baseline	-1.516e+00	1.818e+00	-0.834	0.410
ARI:mts_baseline	-1.201e-01	3.125e-01	-0.384	0.703

Right Parsorbitalis

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	4.544e-04	1.426e-04	3.187	0.001
sex1	2.196e+02	8.226e+01	2.670	0.008
Age_baseline_c	-1.862e+01	8.479e+01	-0.220	0.826
mts_baseline	-6.699e+00	1.197e+00	-5.599	<0.000
diagnosis1	-1.599e+02	8.860e+01	-1.804	0.072
mts_baselinediagnosis1	1.367e+00	2.292e+00	0.596	0.551

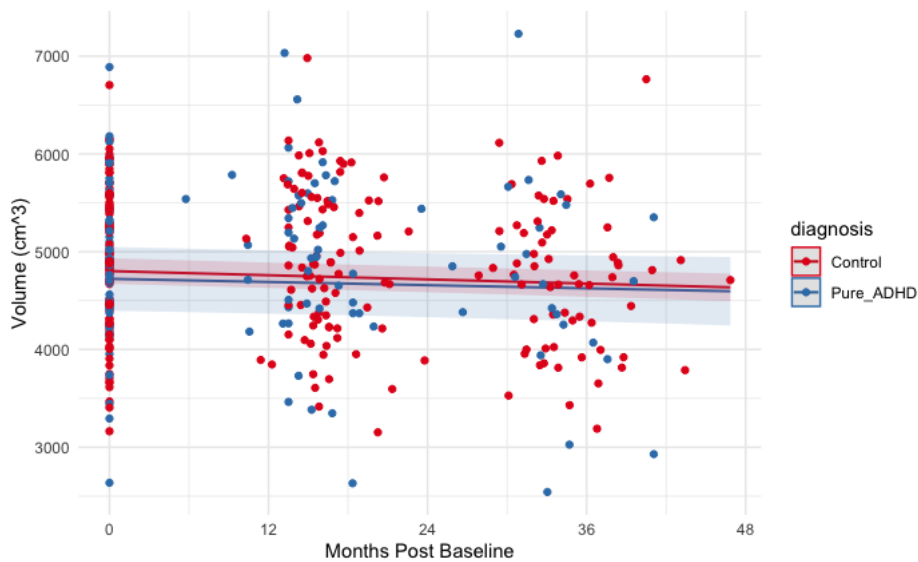


Fixed effects:	Estimate	Std. Error	t	p
ICV	5.089e-04	2.280e-04	2.233	0.028
sex	2.185e+02	1.658e+02	1.318	0.193
CAI	-1.448e+01	8.621e+00	-1.679	0.096
mts_baseline	-1.115e+01	4.855e+00	-2.297	0.025
CAI:mts_baseline	3.030e-01	3.465e-01	0.875	0.385

Fixed effects:	Estimate	Std. Error	t	p
ICV	1.623e-03	2.997e-04	5.415	<0.000
Sex	3.592e+00	1.470e+02	0.024	0.981
ARI	-1.578e+01	1.293e+01	-1.220	0.227
mts_baseline	-1.757e+00	3.756e+00	-0.468	0.643
ARI:mts_baseline	-6.236e-01	6.312e-01	-0.988	0.329

Left Parstriangularis

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	2.629e-04	9.900e-05	2.656	0.008
sex1	2.213e+02	1.097e+02	2.018	0.044
Age_baseline_c	3.286e+01	1.259e+02	0.261	0.794
mts_baseline	-3.133e+00	7.630e-01	-4.106	<0.000
diagnosis1	-7.908e+01	1.305e+02	-0.606	0.545
mts_baselinediagnosis1	8.370e-01	1.448e+00	0.578	0.563

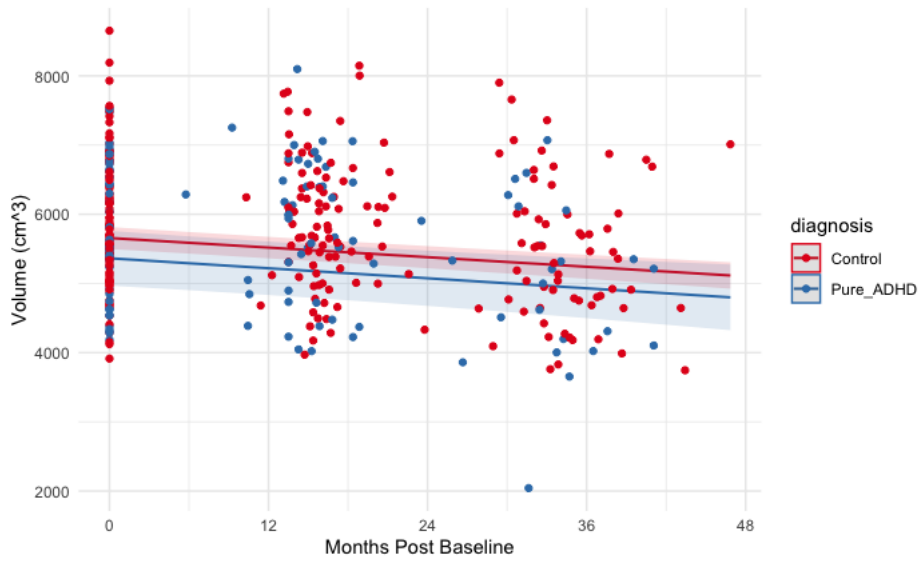


Fixed effects:	Estimate	Std. Error	t	p
ICV	1.371e-05	1.471e-04	0.093	0.926
sex	5.104e+02	2.658e+02	1.920	0.060
CAI	-3.459e-01	5.560e+00	-0.062	0.950
mts_baseline	-6.152e+00	2.777e+00	-2.215	0.031
CAI:mts_baseline	2.359e-01	1.972e-01	1.196	0.237

Fixed effects:	Estimate	Std. Error	t	p
ICV	1.831e-04	2.220e-04	0.824	0.414
Sex	5.005e+02	2.656e+02	1.884	0.065
ARI	-1.335e+01	8.799e+00	-1.517	0.137
mts_baseline	-1.047e+00	2.132e+00	-0.491	0.626
ARI:mts_baseline	5.683e-01	3.714e-01	1.530	0.135

Right Parstriangularis

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	7.871e-04	1.976e-04	3.983	<0.000
sex1	5.401e+02	1.451e+02	3.722	<0.000
Age_baseline_c	-1.133e+02	1.537e+02	-0.737	0.461
mts_baseline	-1.181e+01	1.581e+00	-7.469	<0.000
diagnosis1	-2.930e+02	1.579e+02	-1.855	0.0652
mts_baselinediagnosis1	-4.966e-01	3.014e+00	-0.165	0.869



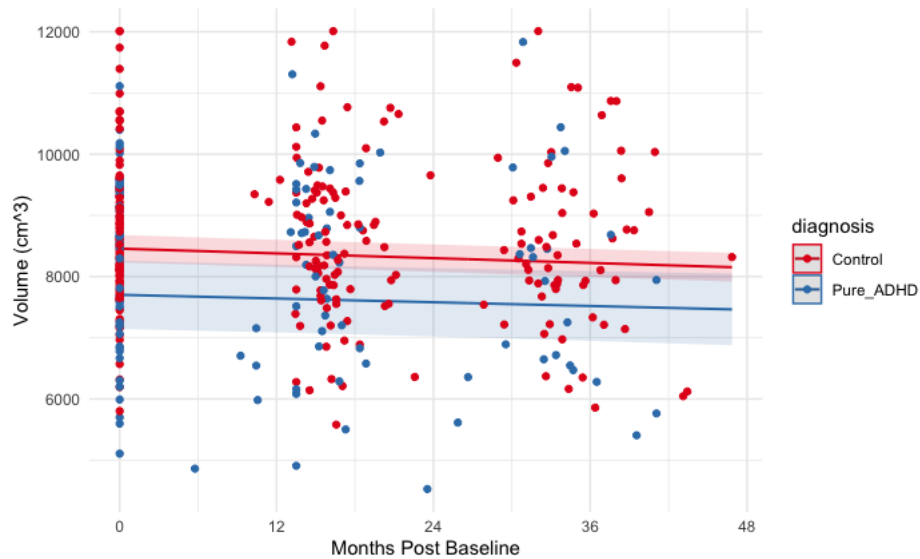
Fixed effects:	Estimate	Std. Error	t	p
ICV	1.138e-03	3.930e-04	2.895	0.004
sex	9.268e+02	2.937e+02	3.155	0.002
CAI	-2.027e+01	1.486e+01	-1.365	0.175
mts_baseline	-7.566e+00	8.293e+00	-0.912	0.365
CAI:mts_baseline	-4.330e-01	5.917e-01	-0.732	0.467

Fixed effects:	Estimate	Std. Error	t	p
ICV	3.025e-03	5.925e-04	5.105	<0.000
Sex	5.857e+02	3.073e+02	1.906	0.062
ARI	1.141e+01	2.523e+01	0.452	0.652
mts_baseline	7.799e+00	7.101e+00	1.098	0.279
ARI:mts_baseline	-3.097e+00	1.200e+00	-2.581	0.013

1.5.2. Dorsolateral Prefrontal Cortex

Left Caudal Middle Frontal

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	2.382e-04	1.422e-04	1.675	0.095
sex1	4.319e+02	1.775e+02	2.433	0.015
Age_baseline_c	-3.353e+02	2.124e+02	-1.578	0.116
mts_baseline	-5.784e+00	1.089e+00	-5.310	<0.000
diagnosis1	-7.539e+02	2.235e+02	-3.374	<0.000
mts_baselinediagnosis1	1.388e+00	2.067e+00	0.671	0.502

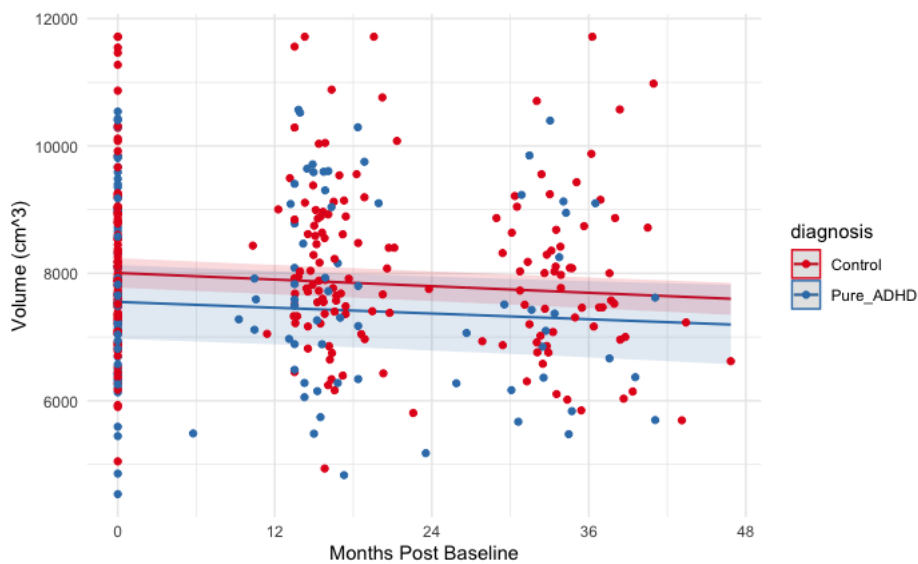


Fixed effects:	Estimate	Std. Error	t	p
ICV	6.489e+02	4.778e+02	1.358	0.181
sex	-6.259e+00	9.752e+00	-0.642	0.524
CAI	-7.531e+00	4.866e+00	-1.548	0.128
mts_baseline	3.300e-02	3.456e-01	0.095	0.924
CAI:mts_baseline	6.489e+02	4.778e+02	1.358	0.181

Fixed effects:	Estimate	Std. Error	t	p
ICV	1.111e-03	3.540e-04	3.138	0.003
Sex	5.699e+02	4.426e+02	1.287	0.204
ARI	-2.342e+01	1.401e+01	-1.672	0.102
mts_baseline	-4.345e+00	3.388e+00	-1.283	0.208
ARI:mts_baseline	-1.258e-01	5.904e-01	-0.213	0.832

Right Caudal Middle Frontal

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	7.197e-04	1.801e-04	3.996	<0.000
sex1	2.751e+02	1.960e+02	1.403	0.161
Age_baseline_c	-1.806e+02	2.239e+02	-0.807	0.420
mts_baseline	-8.114e+00	1.389e+00	-5.840	<0.000
diagnosis1	-4.553e+02	2.318e+02	-1.964	0.051
mts_baselinediagnosis1	1.094e+00	2.638e+00	0.415	0.678

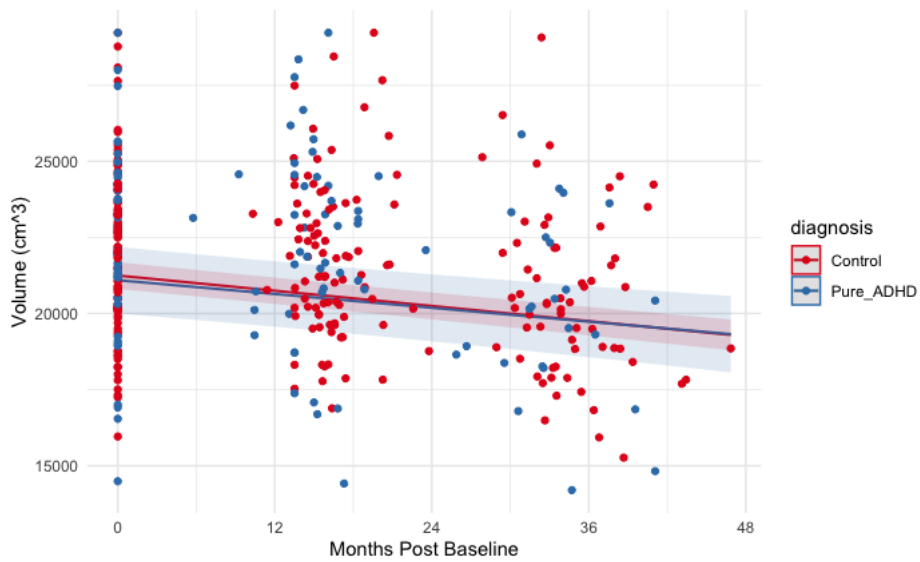


Fixed effects:	Estimate	Std. Error	t	p
ICV	8.044e-04	3.413e-04	2.357	0.021
sex	-3.914e+01	4.942e+02	-0.079	0.937
CAI	-8.209e+00	1.289e+01	-0.637	0.526
mts_baseline	-1.870e+00	6.514e+00	-0.287	0.775
CAI:mts_baseline	-5.716e-01	4.629e-01	-1.235	0.222

Fixed effects:	Estimate	Std. Error	t	p
ICV	2.805e-03	5.271e-04	5.32	<0.000
Sex	-2.477e+02	4.831e+02	-0.513	0.611
ARI	2.398e+00	2.109e+01	0.114	0.910
mts_baseline	-1.188e+00	5.209e+00	-0.228	0.821
ARI:mts_baseline	-1.340e+00	9.035e-01	-1.483	0.147

Left Rostral Middle Frontal

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	2.389e-03	4.729e-04	5.052	<0.000
sex1	1.567e+03	3.943e+02	3.973	<0.000
Age_baseline_c	-4.865e+02	4.254e+02	-1.144	0.254
mts_baseline	-3.971e+01	3.725e+00	-10.662	<0.000
diagnosis1	-1.524e+02	4.362e+02	-0.349	0.727
mts_baselinediagnosis1	3.772e+00	7.088e+00	0.532	0.595

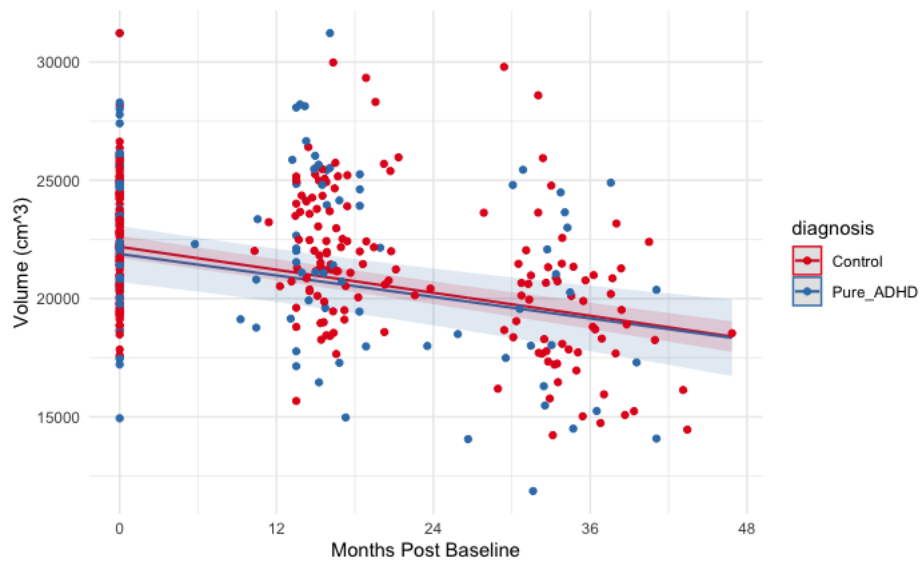


Fixed effects:	Estimate	Std. Error	t	p
ICV	1.785e-03	8.232e-04	2.169	0.033
sex	1.578e+03	9.595e+02	1.645	0.106
CAI	-8.133e+00	3.109e+01	-0.262	0.794
mts_baseline	-4.499e+01	1.599e+01	-2.813	0.006
CAI:mts_baseline	2.627e-01	1.137e+00	0.231	0.818

Fixed effects:	Estimate	Std. Error	t	p
ICV	1.195e-02	1.465e-03	8.157	<0.000
Sex	4.788e+02	8.084e+02	0.592	0.556
ARI	-1.033e+02	6.159e+01	-1.678	0.098
mts_baseline	-5.619e+00	1.686e+01	-0.333	0.740
ARI:mts_baseline	-6.061e+00	2.864e+00	-2.116	0.040

Right Rostral Middle Frontal

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	4.614e-03	7.828e-04	5.894	<0.000
sex1	1.311e+03	4.382e+02	2.992	0.003
Age_baseline_c	-7.212e+02	4.503e+02	-1.601	0.111
mts_baseline	-7.835e+01	6.625e+00	-11.825	<0.000
diagnosis1	-3.033e+02	4.723e+02	-0.642	0.521
mts_baselinediagnosis1	5.367e+00	1.270e+01	0.423	0.673



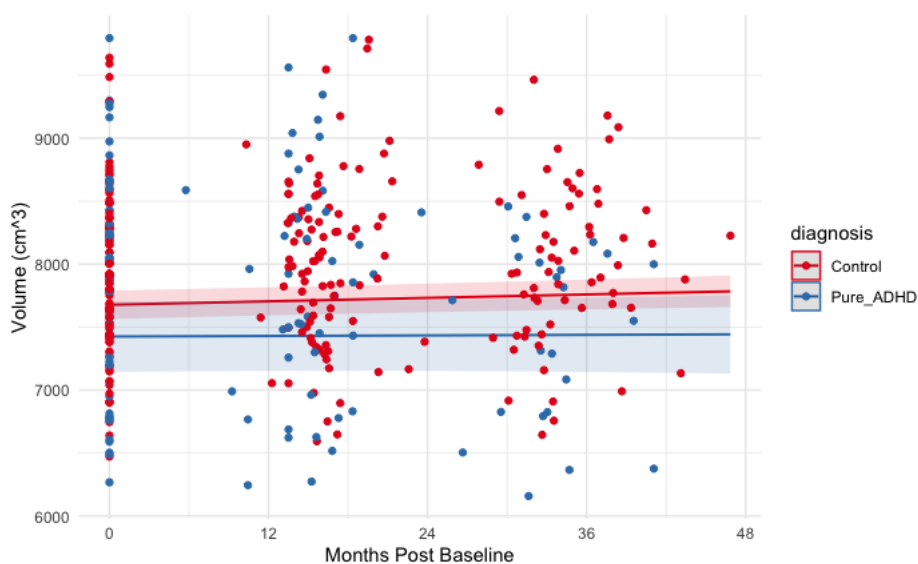
Fixed effects:	Estimate	Std. Error	t	p
ICV	5.150e-03	1.355e-03	3.802	<0.000
sex	1.702e+03	1.004e+03	1.696	0.095
CAI	-7.182e+01	5.121e+01	-1.402	0.164
mts_baseline	-7.483e+01	2.866e+01	-2.611	0.011
CAI:mts_baseline	-4.049e-01	2.045e+00	-0.198	0.843

Fixed effects:	Estimate	Std. Error	t	p
ICV	3.886e-03	1.007e-03	3.860	<0.000
Sex	1.363e+03	9.068e+02	1.503	0.139
ARI	-3.781e+01	4.033e+01	-0.937	0.354
mts_baseline	-7.606e+00	9.977e+00	-0.762	0.451
ARI:mts_baseline	-4.859e-01	1.730e+00	-0.281	0.780

1.5.3. Thalamus

Left Thalamus

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	4.755e-04	1.036e-04	4.589	<0.000
sex1	4.596e+02	9.883e+01	4.650	<0.000
Age_baseline_c	-2.673e+01	1.093e+02	-0.245	0.807
mts_baseline	1.325e+00	8.064e-01	1.643	0.101
diagnosis1	-2.520e+02	1.123e+02	-2.244	0.026
mts_baselinediagnosis1	-1.911e+00	1.533e+00	-1.247	0.213

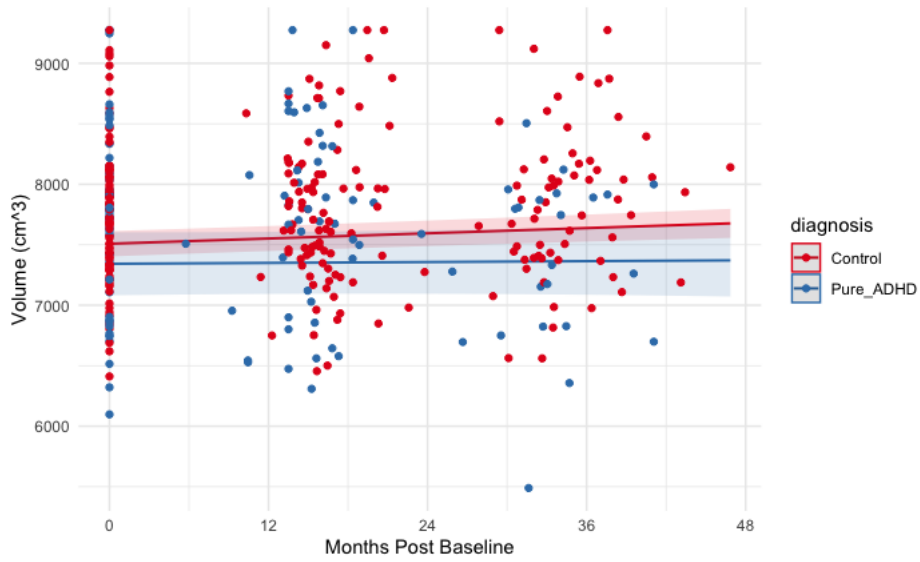


Fixed effects:	Estimate	Std. Error	t	p
ICV	5.674e-04	2.354e-04	2.411	0.018
sex	8.944e+02	2.481e+02	3.605	<0.000
CAI	-1.799e+01	8.888e+00	-2.024	0.046
mts_baseline	5.117e-01	4.625e+00	0.111	0.912
CAI:mts_baseline	-2.028e-02	3.291e-01	-0.062	0.951

Fixed effects:	Estimate	Std. Error	t	p
ICV	1.887e-03	3.993e-04	4.725	<0.000
Sex	6.627e+02	2.274e+02	2.914	0.005
ARI	-1.031e+01	1.670e+01	-0.617	0.539
mts_baseline	4.631e+00	4.518e+00	1.025	0.312
ARI:mts_baseline	-1.024e+00	7.692e-01	-1.331	0.191

Right Thalamus

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	5.281e-04	1.119e-04	4.720	<0.000
sex1	3.802e+02	9.395e+01	4.047	<0.000
Age_baseline_c	6.315e+00	1.015e+02	0.062	0.950
mts_baseline	2.098e+00	8.807e-01	2.382	0.018
diagnosis1	-1.656e+02	1.040e+02	-1.592	0.113
mts_baselinediagnosis1	-2.995e+00	1.676e+00	-1.787	0.075



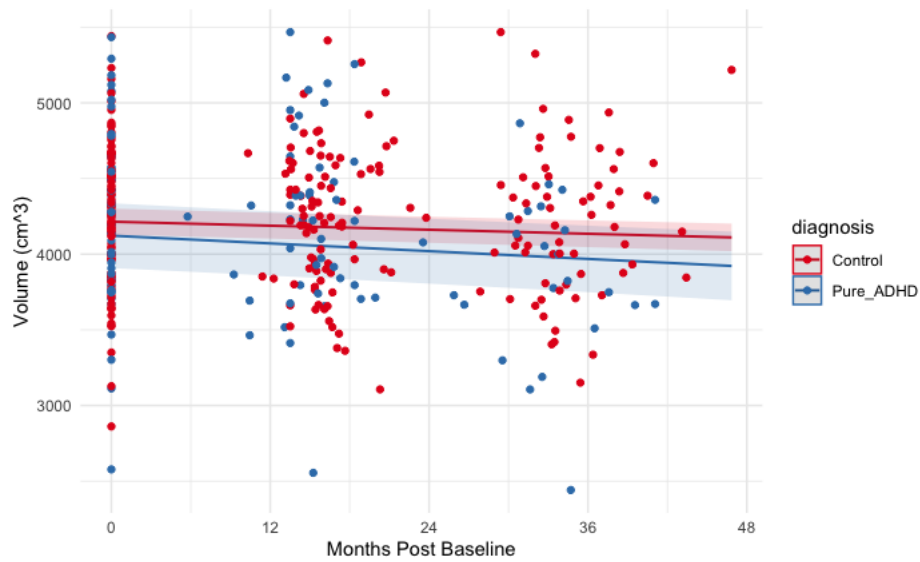
Fixed effects:	Estimate	Std. Error	t	p
ICV	8.550e-04	2.786e-04	3.069	0.002
sex	6.528e+02	2.153e+02	3.032	0.003
cp_index	-1.948e+01	1.053e+01	-1.851	0.067
mts_baseline	3.548e+00	5.820e+00	0.610	0.544
cp_index:mts_baseline	-2.796e-01	4.152e-01	-0.674	0.503

Fixed effects:	Estimate	Std. Error	t	p
ICV	2.666e-03	4.184e-04	6.372	<0.000
Sex	3.622e+02	1.836e+02	1.973	0.054
ARI	-1.855e+01	1.874e+01	-0.990	0.325
mts_baseline	2.094e+00	5.974e+00	0.351	0.727
ARI:mts_baseline	-7.587e-01	9.884e-01	-0.768	0.446

1.5.4. Basal Ganglia

Left Caudate Nucleus

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	2.625e-04	5.918e-05	4.436	<0.000
sex1	1.047e+02	6.999e+01	1.495	0.136
Age_baseline_c	-1.092e+02	8.206e+01	-1.330	0.185
mts_baseline	-3.248e+00	4.546e-01	-7.144	<0.000
diagnosis1	-9.252e+01	8.567e+01	-1.080	0.281
mts_baselinediagnosis1	-2.050e+00	8.627e-01	-2.376	0.018

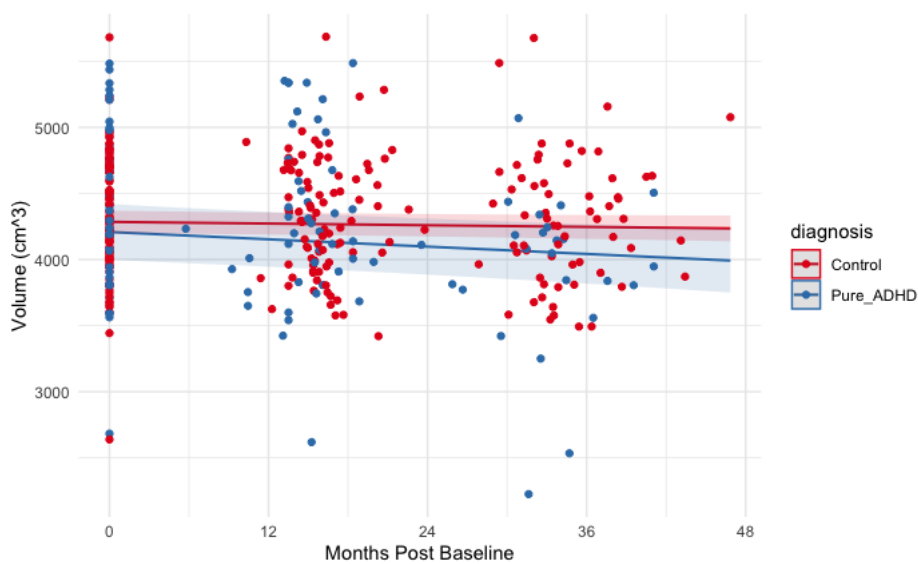


Fixed effects:	Estimate	Std. Error	t	p
ICV	3.636e-04	1.458e-04	2.494	0.015
sex	4.371e+02	1.763e+02	2.480	0.016
CAI	-1.130e+01	5.507e+00	-2.052	0.044
mts_baseline	-3.013e+00	2.822e+00	-1.068	0.290
CAI:mts_baseline	-1.237e-01	2.007e-01	-0.616	0.540

Fixed effects:	Estimate	Std. Error	t	p
ICV	1.438e-03	2.342e-04	6.142	<0.000
Sex	2.884e+02	1.554e+02	1.857	0.069
ARI	-8.277e+00	9.598e+00	-0.862	0.392
mts_baseline	-1.028e+00	2.486e+00	-0.414	0.681
ARI:mts_baseline	-4.501e-01	4.269e-01	-1.054	0.298

Right Caudate Nucleus

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	5.090e-04	9.014e-05	5.646	<0.000
sex1	1.205e+02	7.595e+01	1.587	0.114
Age_baseline_c	-4.851e+01	8.206e+01	-0.591	0.555
mts_baseline	-2.834e+00	7.093e-01	-3.996	<0.000
diagnosis1	-7.644e+01	8.415e+01	-0.908	0.364
mts_baselinediagnosis1	-3.558e+00	1.350e+00	-2.636	<0.000

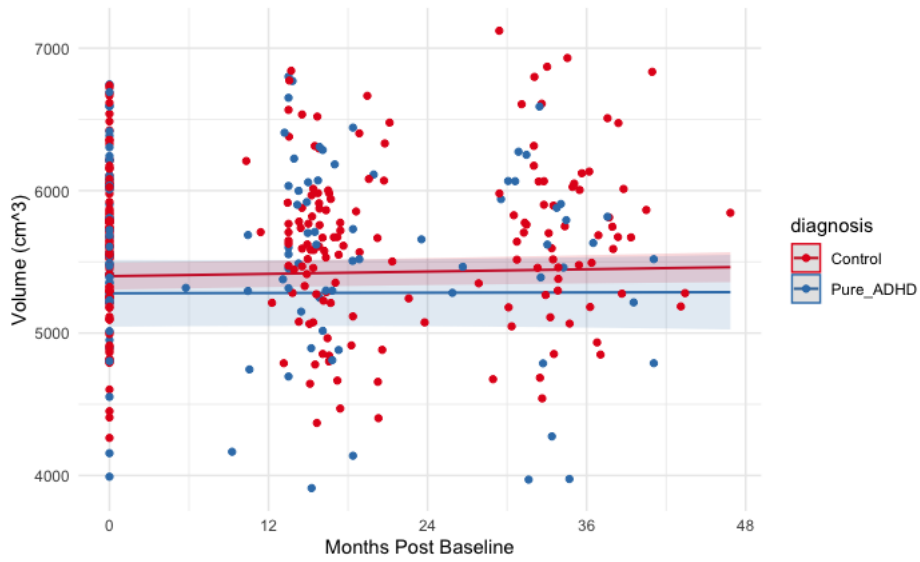


Fixed effects:	Estimate	Std. Error	t	p
ICV	9.247e-04	2.391e-04	3.867	<0.000
sex	3.977e+02	1.776e+02	2.239	0.029
CAI	-1.704e+01	9.040e+00	-1.885	0.062
mts_baseline	-7.663e-01	5.056e+00	-0.152	0.880
CAI:mts_baseline	-3.664e-01	3.608e-01	-1.016	0.314

Fixed effects:	Estimate	Std. Error	t	p
ICV	2.485e-03	3.391e-04	7.329	<0.000
Sex	1.464e+02	1.490e+02	0.983	0.330
ARI	-1.534e+01	1.518e+01	-1.010	0.316
mts_baseline	-1.167e+00	4.833e+00	-0.241	0.810
ARI:mts_baseline	-1.069e+00	7.998e-01	-1.337	0.188

Left Putamen

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	1.911e-04	8.966e-05	2.132	0.034
sex1	3.752e+02	8.307e+01	4.516	<0.000
Age_baseline_c	-9.530e+01	9.131e+01	-1.044	0.298
mts_baseline	7.536e-01	6.994e-01	1.078	0.282
diagnosis1	-1.200e+02	9.375e+01	-1.280	0.202
mts_baselinediagnosis1	-1.187e+00	1.329e+00	-0.893	0.372

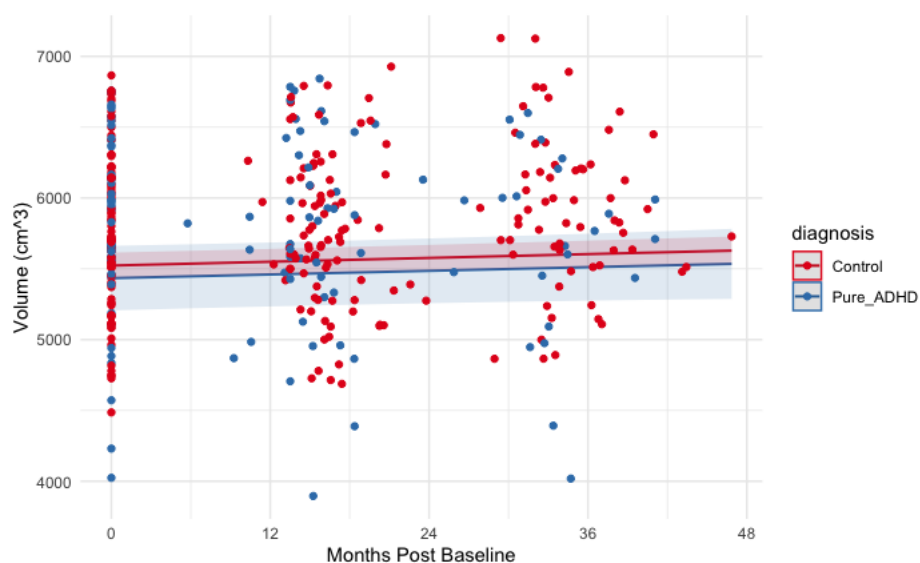


Fixed effects:	Estimate	Std. Error	t	p
ICV	4.405e-04	1.953e-04	2.255	0.027
sex	5.346e+02	1.899e+02	2.816	0.006
CAI	-1.452e+01	7.375e+00	-1.969	0.052
mts_baseline	4.928e-02	3.883e+00	0.013	0.989
CAI:mts_baseline	-1.622e-02	2.765e-01	-0.059	0.953

Fixed effects:	Estimate	Std. Error	t	p
ICV	1.602e-03	3.399e-04	4.713	<0.000
Sex	3.282e+02	1.722e+02	1.906	0.062
ARI	-1.662e+01	1.455e+01	-1.143	0.257
mts_baseline	-5.525e+00	4.146e+00	-1.333	0.191
ARI:mts_baseline	2.732e-01	6.991e-01	0.391	0.698

Right Putamen

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	4.371e-05	7.523e-05	0.581	0.561
sex1	4.036e+02	7.818e+01	5.162	<0.000
Age_baseline_c	-7.113e+01	8.819e+01	-0.807	0.421
mts_baseline	2.200e+00	5.820e-01	3.780	<0.000
diagnosis1	-8.884e+01	9.100e+01	-0.976	0.330
mts_baselinediagnosis1	-9.466e-02	1.105e+00	-0.086	0.931

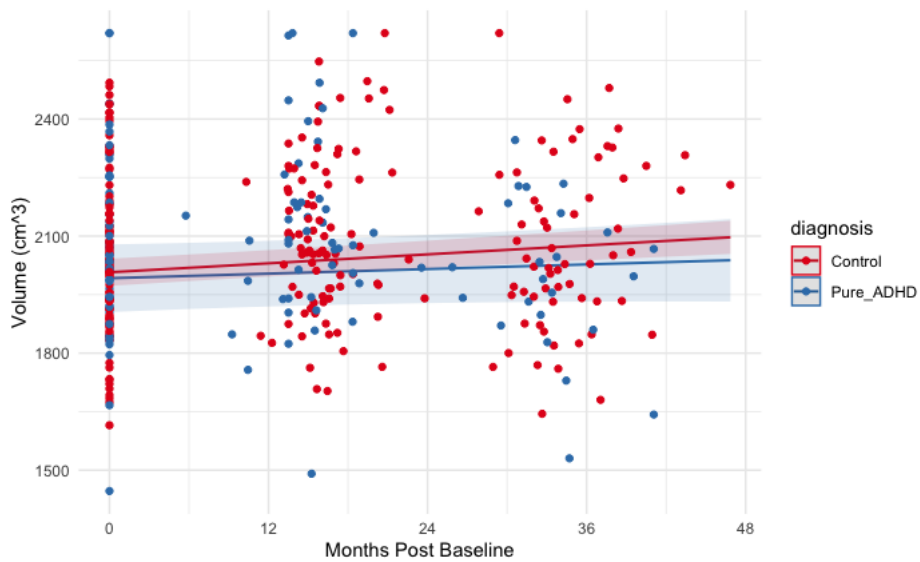


Fixed effects:	Estimate	Std. Error	t	p
ICV	6.259e-05	1.539e-04	0.407	0.685
sex	6.098e+02	1.924e+02	3.169	0.002
CAI	-7.415e+00	5.813e+00	-1.276	0.206
mts_baseline	9.978e-01	2.970e+00	0.336	0.738
CAI:mts_baseline	7.926e-02	2.111e-01	0.375	0.708

Fixed effects:	Estimate	Std. Error	t	p
ICV	7.772e-04	2.764e-04	2.812	0.006
Sex	4.944e+02	1.796e+02	2.752	0.008
ARI	-1.124e+01	1.136e+01	-0.990	0.327
mts_baseline	-2.729e+00	2.956e+00	-0.923	0.363
ARI:mts_baseline	2.120e-01	5.071e-01	0.418	0.678

Left Globus Pallidus

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	2.303e-04	4.547e-05	5.064	<0.000
sex1	8.431e+01	3.187e+01	2.645	0.008
Age_baseline_c	1.674e+01	3.356e+01	0.499	0.618
mts_baseline	1.449e+00	3.664e-01	3.954	<0.000
diagnosis1	-1.525e+01	3.454e+01	-0.442	0.659
mts_baselinediagnosis1	-9.317e-01	6.989e-01	-1.333	0.184

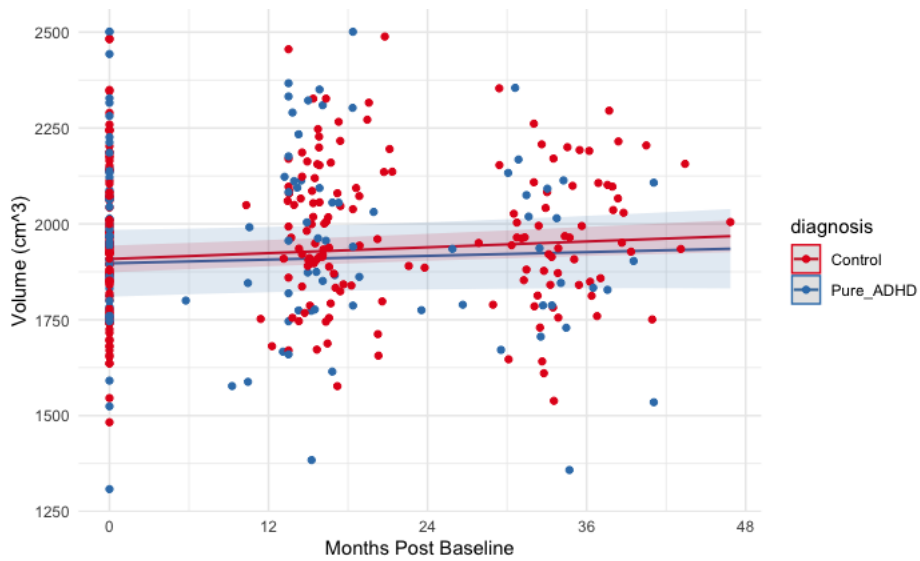


Fixed effects:	Estimate	Std. Error	t	p
ICV	4.405e-04	1.953e-04	2.255	0.027
sex	5.346e+02	1.899e+02	2.816	0.006
CAI	-1.452e+01	7.375e+00	-1.969	0.052
mts_baseline	4.928e-02	3.883e+00	0.013	0.989
CAI:mts_baseline	-1.622e-02	2.765e-01	-0.059	0.953

Fixed effects:	Estimate	Std. Error	t	p
ICV	1.602e-03	3.399e-04	4.713	<0.000
Sex	3.282e+02	1.722e+02	1.906	0.062
ARI	-1.662e+01	1.455e+01	-1.143	0.257
mts_baseline	-5.525e+00	4.146e+00	-1.333	0.191
ARI:mts_baseline	2.732e-01	6.991e-01	0.391	0.698

Right Globus Pallidus

Fixed effects:	Estimate	Std. Error	t	p
ICV_c	1.548e-04	4.241e-05	3.650	<0.000
sex1	6.947e+01	3.184e+01	2.182	0.030
Age_baseline_c	2.485e+00	3.382e+01	0.073	0.941
mts_baseline	1.039e+00	3.383e-01	3.072	0.002
diagnosis1	-1.127e+01	3.473e+01	-0.325	0.745
mts_baselinediagnosis1	-4.589e-01	6.447e-01	-0.712	0.477



Fixed effects:	Estimate	Std. Error	t	p
ICV	6.259e-05	1.539e-04	0.407	0.685
sex	6.098e+02	1.924e+02	3.169	0.002
CAI	-7.415e+00	5.813e+00	-1.276	0.206
mts_baseline	9.978e-01	2.970e+00	0.336	0.738
CAI:mts_baseline	7.926e-02	2.111e-01	0.375	0.708

Fixed effects:	Estimate	Std. Error	t	p
ICV	7.772e-04	2.764e-04	2.812	0.006
Sex	4.944e+02	1.796e+02	2.752	0.008
ARI	-1.124e+01	1.136e+01	-0.990	0.327
mts_baseline	-2.729e+00	2.956e+00	-0.923	0.363
ARI:mts_baseline	2.120e-01	5.071e-01	0.418	0.678

1.6. References

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