

Online Supplementary Material
Reaction Time Variability and Brain White Matter Integrity

Booth et al.

Table S1: Bivariate correlations of age with RT and white matter variables.

	<i>r</i> (2.dp)
<i>Reaction Time Measures</i>	
CRT Mean	0.15
CRT Standard Deviation	0.11
<i>Quantitative Imaging</i>	
Intracranial Volume (cm ³)	-0.06
WM Hyperintensity Vol resid. (cm ³)	0.15
WMT gFA	0.09
WMT gMD	0.13
<i>Wahlund Rating</i>	
Frontal	0.05
Parieto-Occipital	0.05
Temporal	-0.01
Infratentorial	-0.01
Basal Ganglia	-0.02
<i>Tract Averages FA</i>	
Genu Corpus Callosum	-0.02
Splenium Corpus Callosum	0.04
Arcuate Fasciculus	-0.05
Anterior Thalamic Radiation	-0.08
Rostral Cingulum	-0.10
Uncinate Fasciculus	-0.07
Inferior Longitudinal Thalamic Radiation	-0.12
<i>Tract Averages MD</i>	
Genu Corpus Callosum	0.11
Splenium Corpus Callosum	-0.07
Arcuate Fasciculus	0.07
Anterior Thalamic Radiation	0.14
Rostral Cingulum	0.13
Uncinate Fasciculus	0.05
Inferior Longitudinal Thalamic Radiation	0.11

Individual linear model results

**Note: There is a degree of redundancy in the assumption tests. Included for completeness*
CRT SD

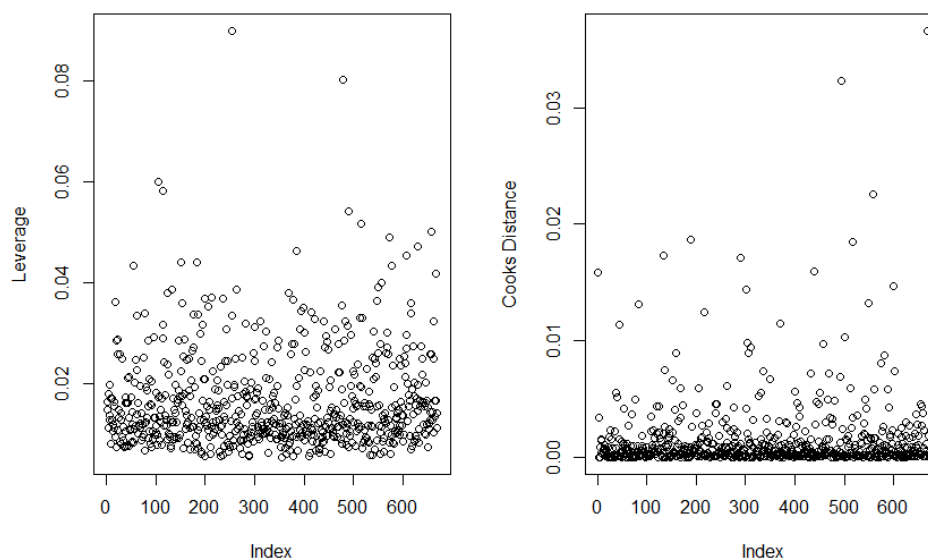
Table S2: Regression Model Results for Four-Choice Reaction Time SD and WMH Volume (n=670)

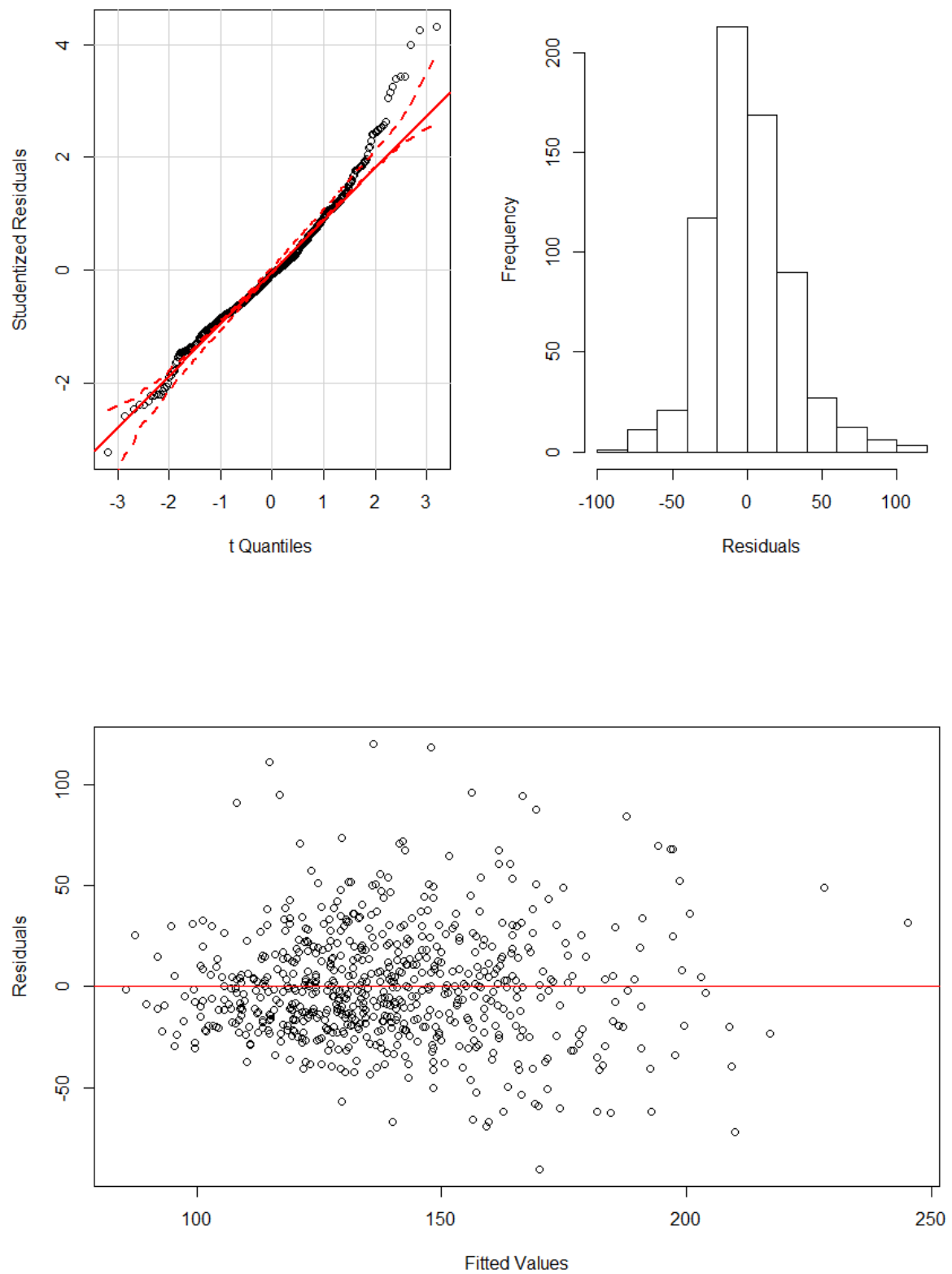
	Model 1			Model 2		
	b	se	p-value	b	se	p-value
Age	3.952	1.998	0.048	-0.061	1.582	0.969
Sex	-8.607	2.861	0.003	-10.580	2.250	<.001
Hypertension	-0.792	2.975	0.790	0.019	2.338	0.994
Diabetes	3.813	4.742	0.422	-1.817	3.736	0.627
Cholesterol	2.634	3.078	0.392	-0.062	2.422	0.979
CVD	6.539	3.279	0.047	5.104	2.577	0.048
Blood Circulation	7.534	3.739	0.044	5.083	2.940	0.084
Stroke	7.944	5.650	0.160	6.705	4.440	0.131
WMH Volume	3.895	1.426	0.006	0.700	1.131	0.536
CRT Mean	-	-	-	0.265	0.013	<.001
F	4.48	(9,660)	<.001	47.56	(10,659)	<.001
R-square	0.058			0.419		
Adjusted R-square	0.045			0.410		

Notes: WMH = white matter hyperintensity; CVD = cardiovascular disease; CRT = choice reaction time.

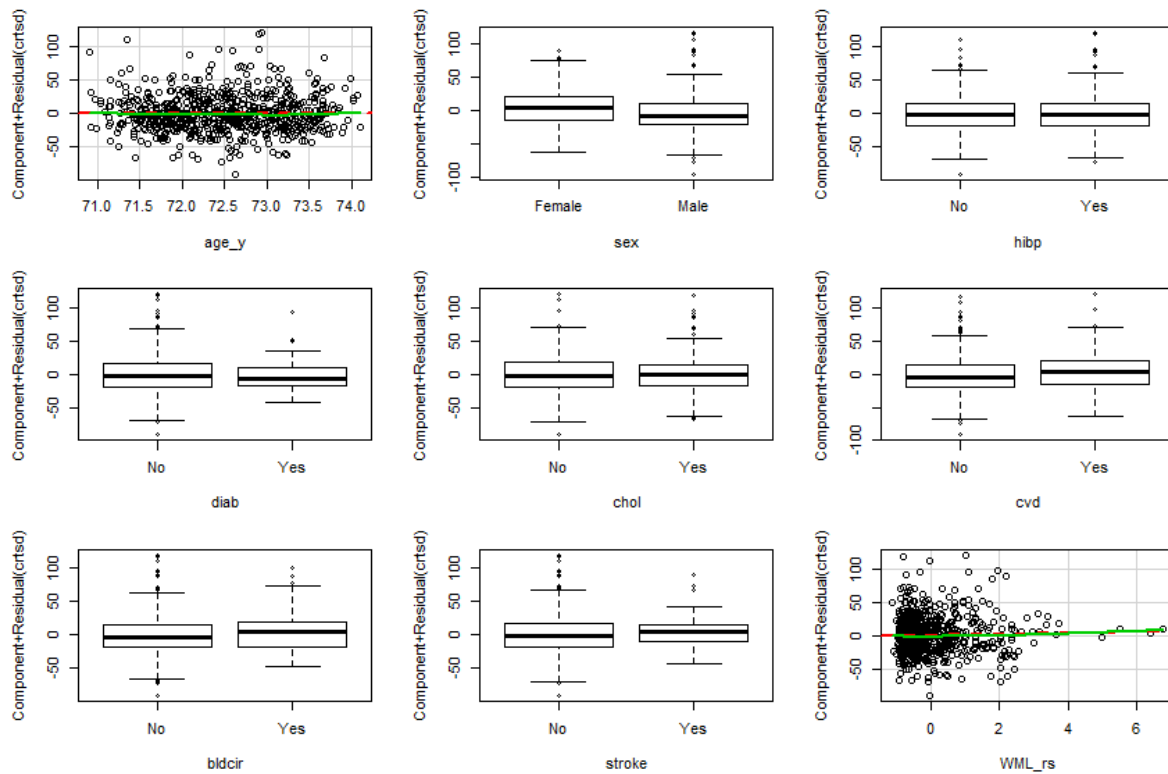
Assumptions

Max VIF = 1.2.





RUNNING HEAD: Speed Variability and White Matter Integrity



Component + Residual Plots

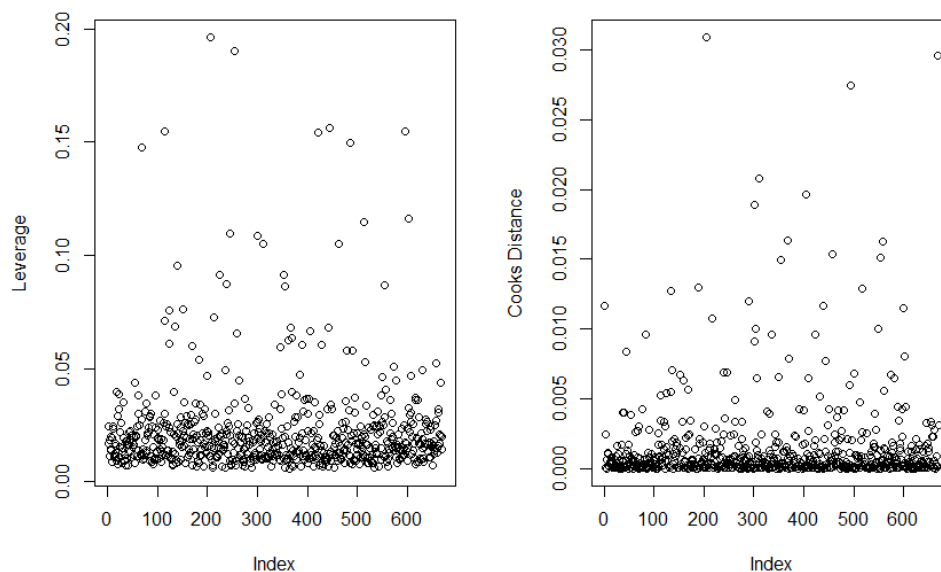
Table S3: Regression Model Results for Four-Choice Reaction Time SD and WMH Severity in different brain regions (n=670)

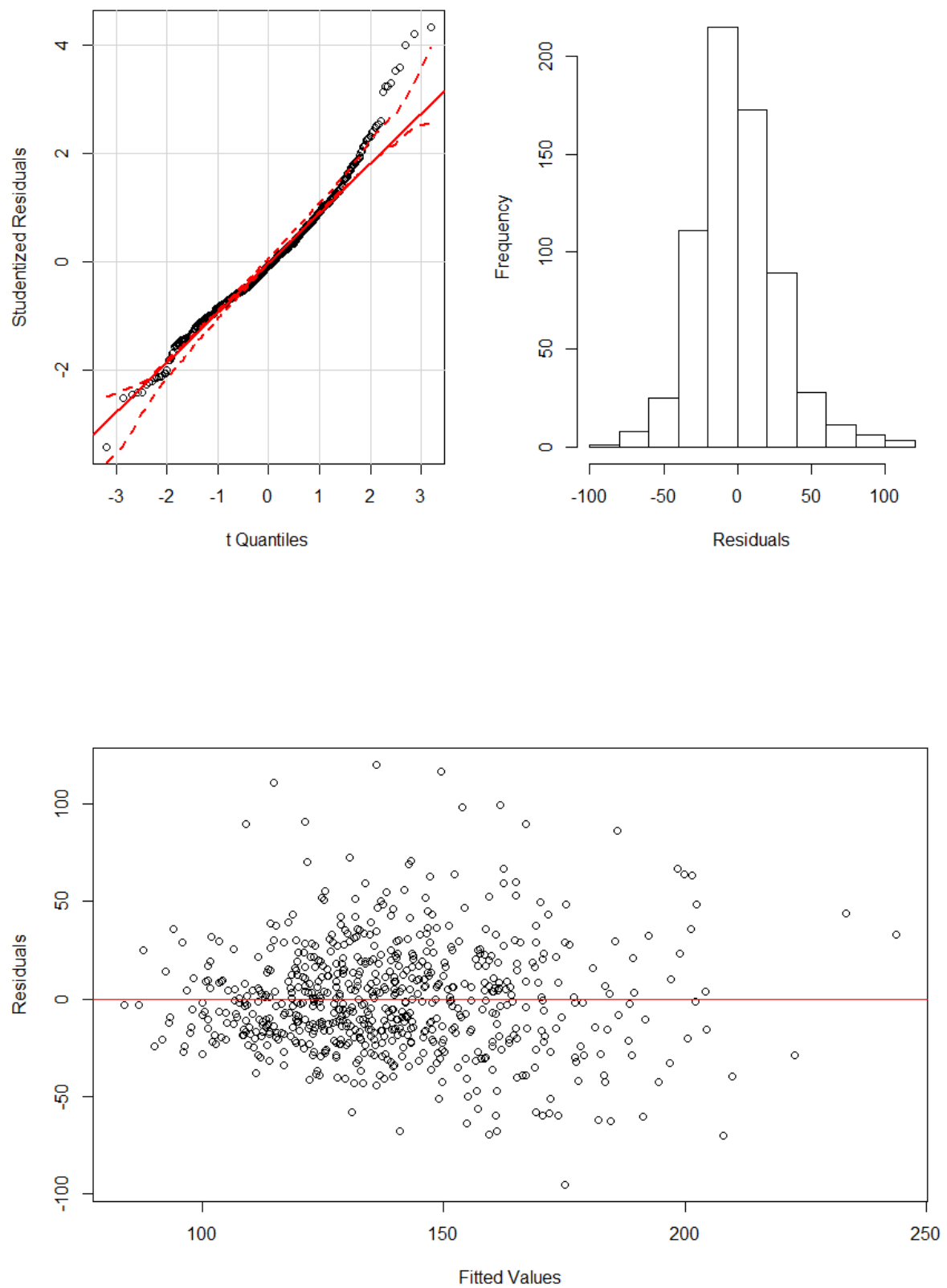
	Model 1			Model 2		
	b	se	p-value	b	se	p-value
Age	4.425	1.982	0.026	0.079	1.574	0.960
Sex	-8.661	2.862	0.003	-10.599	2.254	<.001
Hypertension	-0.226	2.980	0.940	0.455	2.345	0.846
Diabetes	3.027	4.757	0.525	-2.343	3.753	0.533
Cholesterol	2.340	3.084	0.448	-0.024	2.429	0.992
CVD	7.173	3.284	0.029	5.474	2.586	0.035
Blood Circulation	7.790	3.754	0.038	5.296	2.956	0.074
Stroke	8.554	5.718	0.135	6.703	4.500	0.137
Wahlund: Frontal	12.421	3.981	0.002	4.831	3.155	0.126
Wahlund: Parieto-Occipital	-5.126	3.843	0.183	-5.952	3.024	0.049
Wahlund: Basal Ganglia	-11.894	8.293	0.152	-2.938	6.540	0.653
Wahlund: Temporal	8.293	13.619	0.543	-2.807	10.73	0.794
Wahlund: Infratentorial	16.061	10.225	0.117	6.298	8.060	0.435
CRT Mean	-	-	-	0.265	0.013	<.001
F	3.609	(13, 656)	<.001	34.32	(14,655)	<.001
R-square	0.067			0.423		
Adjusted R-square	0.048			0.411		

Notes: CVD = cardiovascular disease; CRT = choice reaction time.

Assumptions

Max VIF = 1.63





RUNNING HEAD: Speed Variability and White Matter Integrity

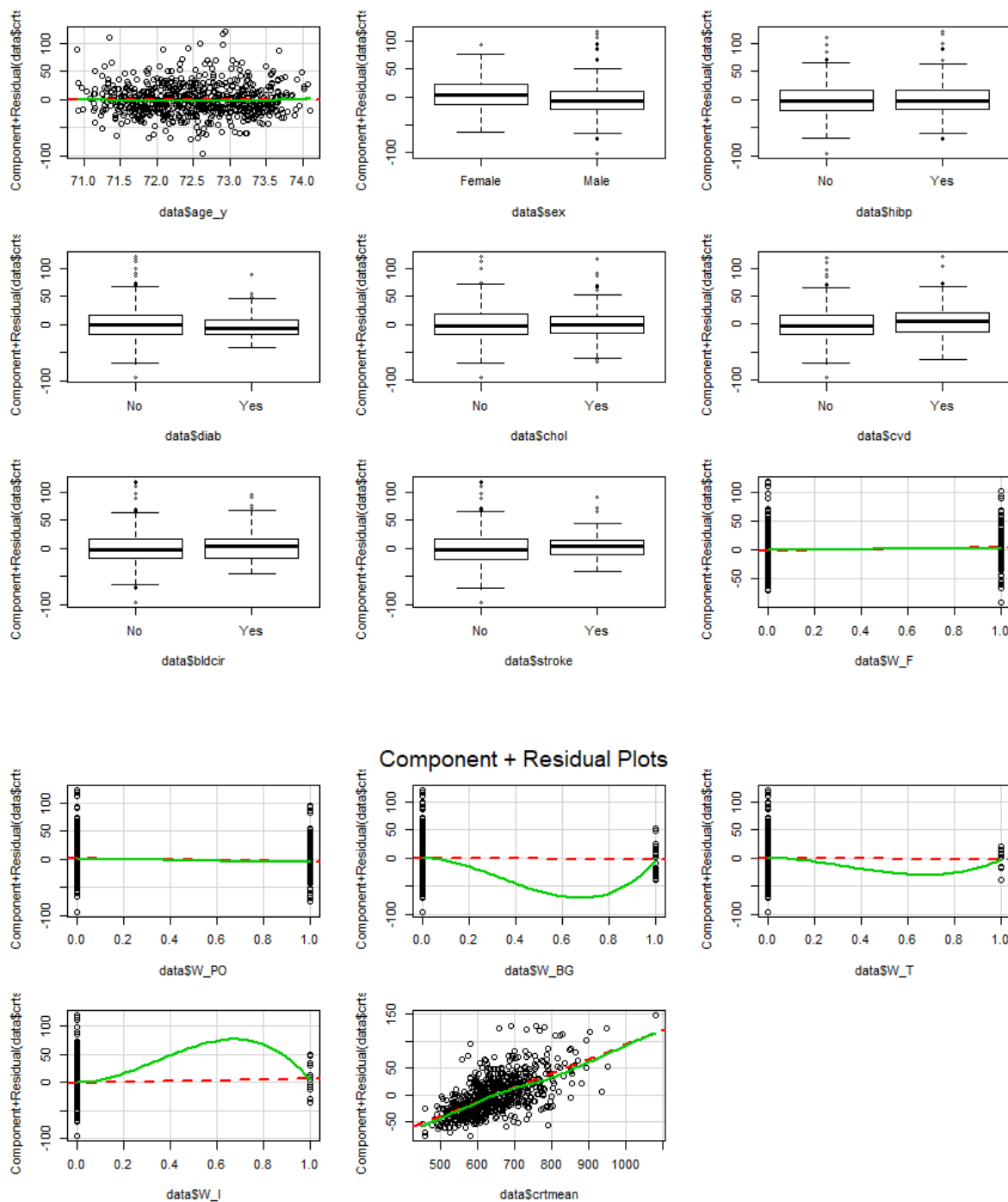


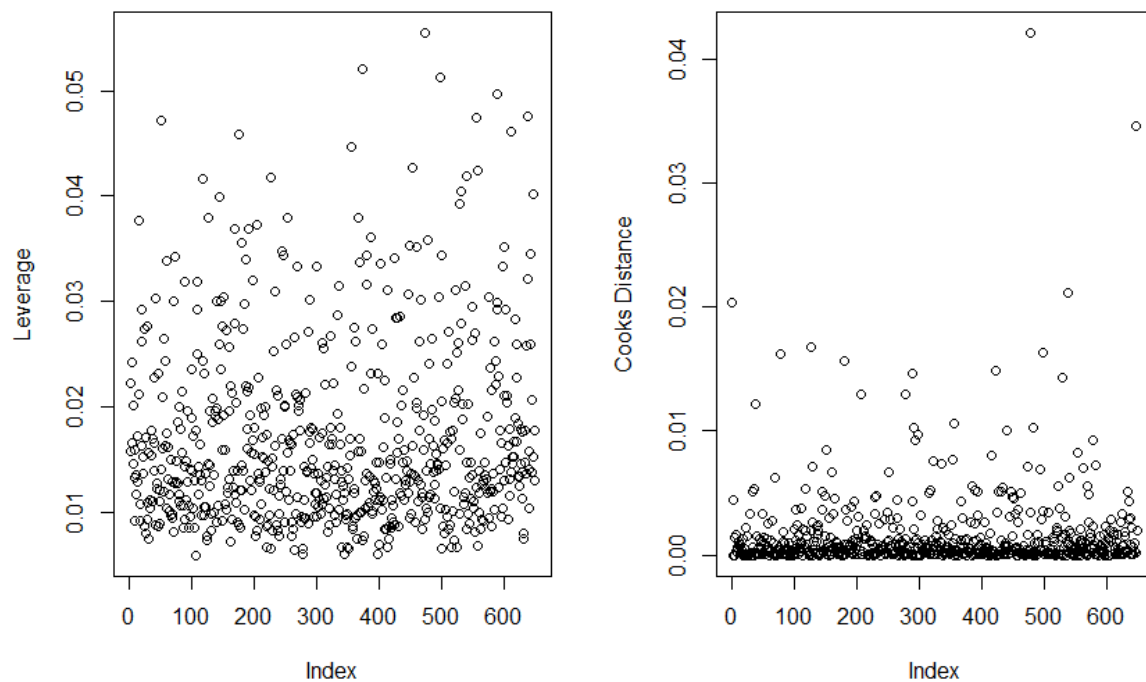
Table S4: Regression Model Results for Four-Choice Reaction Time SD Average White Matter Tract Fractional Anisotropy (n=647)

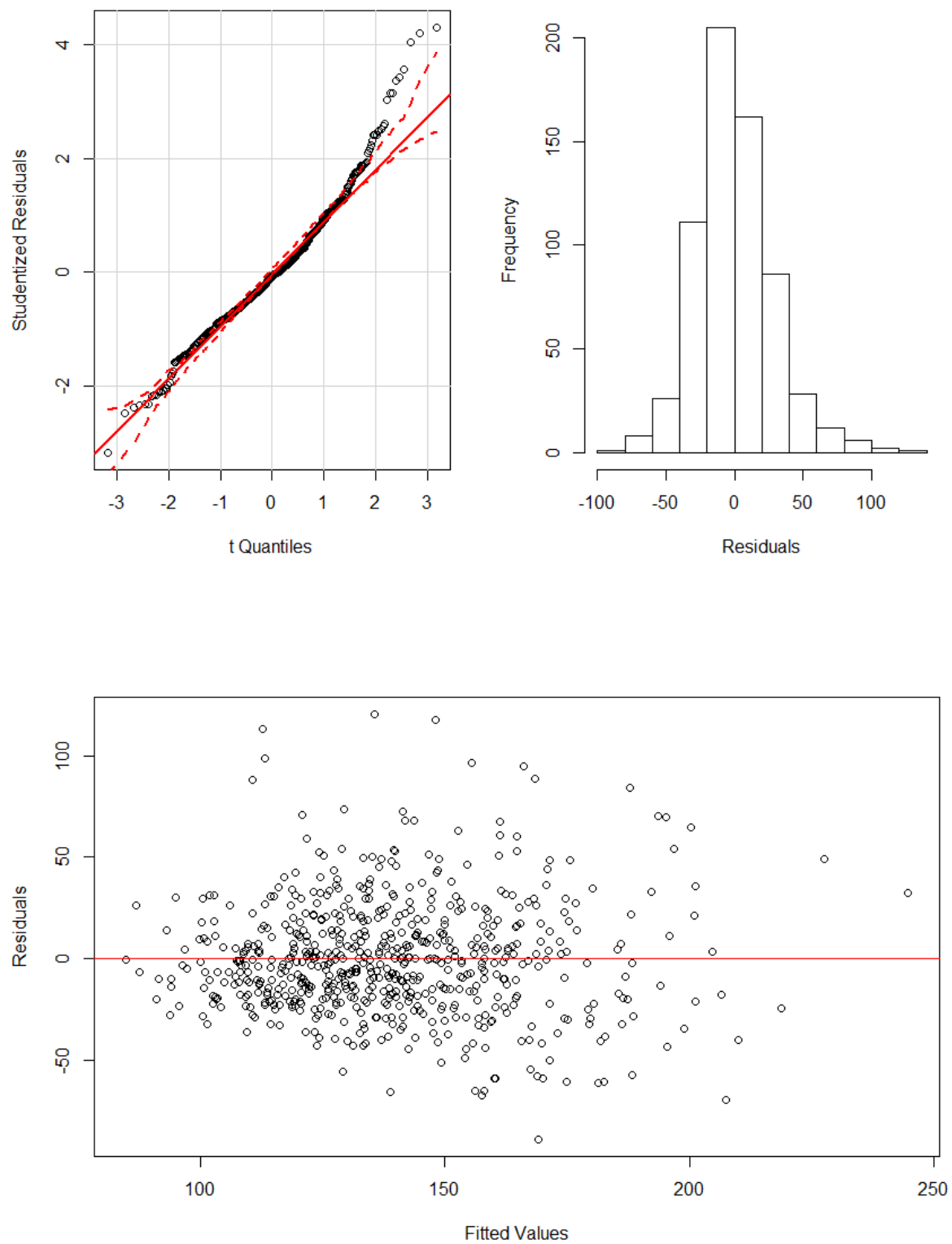
	Model 1			Model 2		
	b	se	p-value	b	se	p-value
Age	4.602	2.065	0.026	0.202	1.632	0.902
Sex	-8.491	2.955	0.004	-10.546	2.317	<.001
Hypertension	-0.872	3.054	0.775	0.196	2.392	0.935
Diabetes	4.010	4.920	0.415	-1.932	3.865	0.617
Cholesterol	3.202	3.169	0.313	-0.163	2.488	0.948
CVD	5.916	3.368	0.079	5.607	2.638	0.034
Blood Circulation	7.516	3.846	0.051	5.670	3.013	0.060
Stroke	8.742	5.723	0.127	7.359	4.483	0.101
gFA	2.294	1.592	0.150	-1.576	1.261	0.212
CRT Mean	-	-	-	0.268	0.013	<.001
F	3.678	(9, 638)	<.001	45.700	(10, 637)	<.001
R-square	0.049			0.418		
Adjusted R-square	0.036			0.409		

Notes: WMT gFA = white matter tract general fractional anisotropy factor; CVD = cardiovascular disease; CRT = choice reaction time.

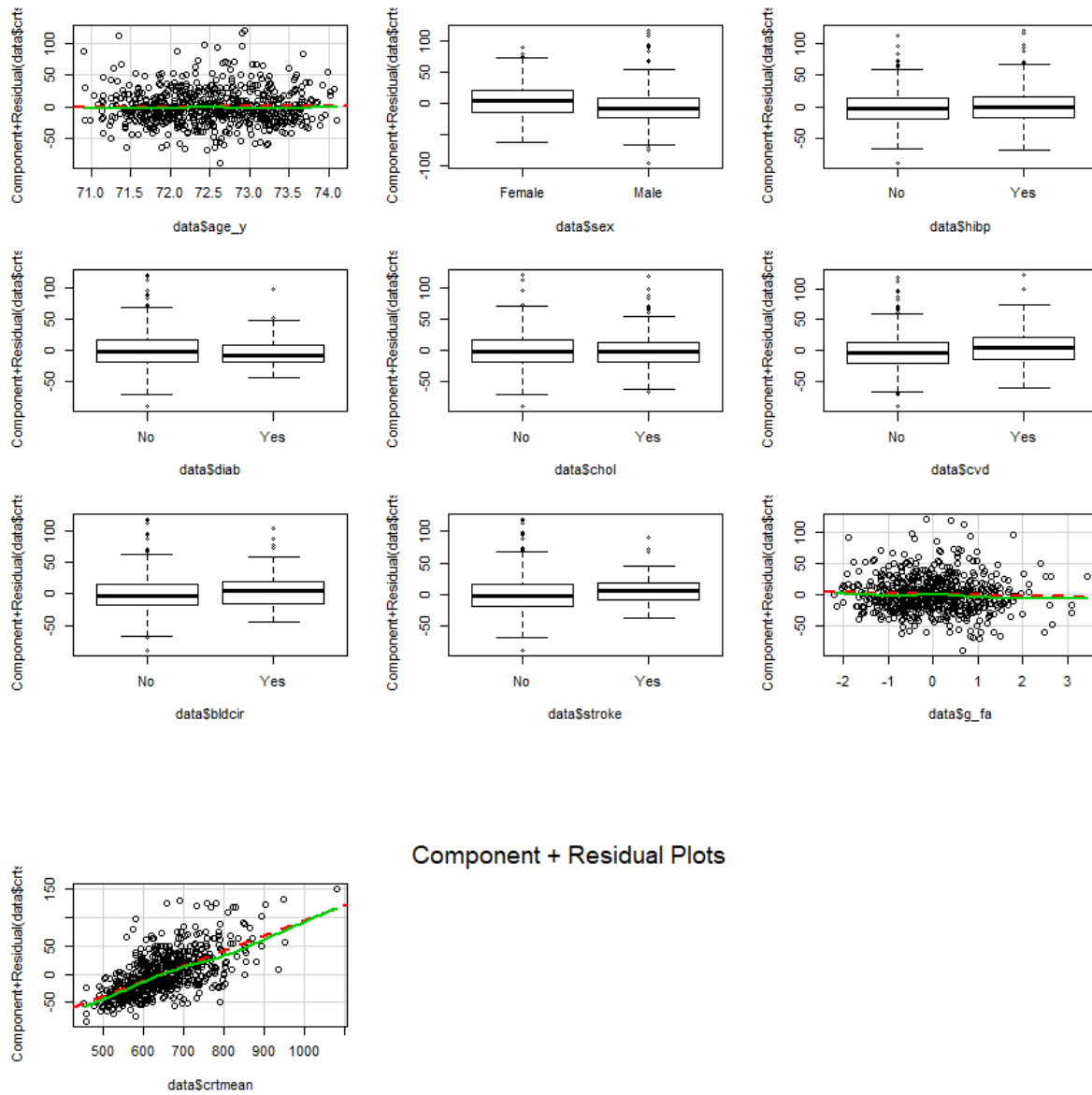
Assumptions

Max VIF = 1.20





RUNNING HEAD: Speed Variability and White Matter Integrity



Component + Residual Plots

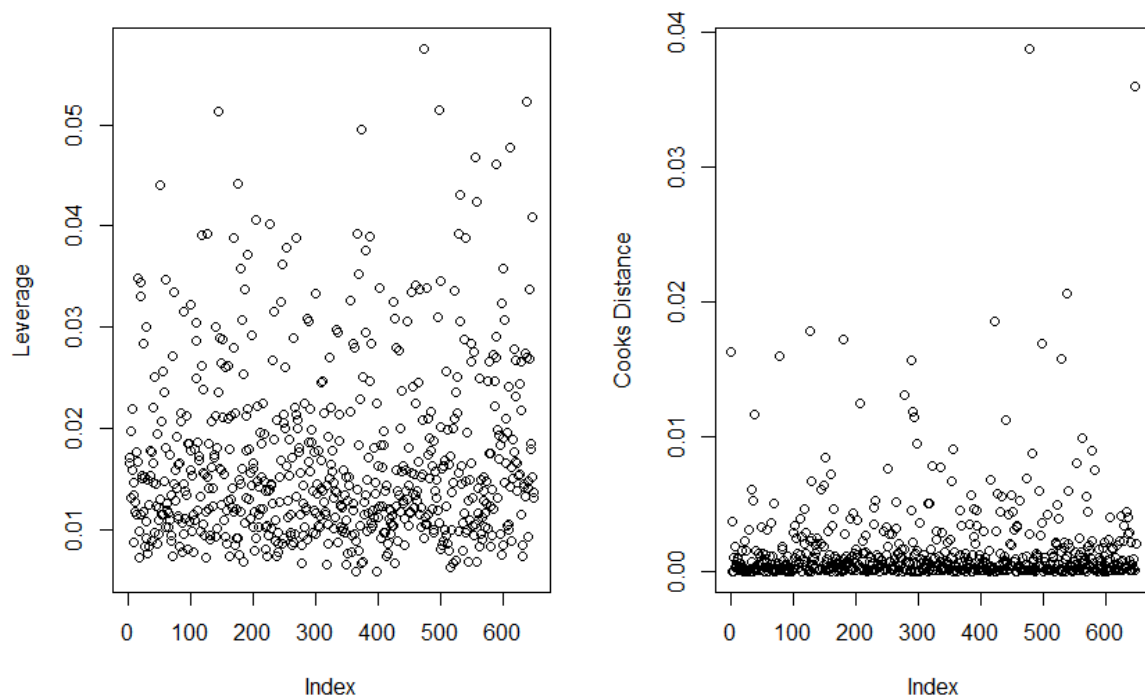
Table S5: Regression Model Results for Four-Choice Reaction Time SD on Average White Matter Tract Mean Diffusivity (n=647)

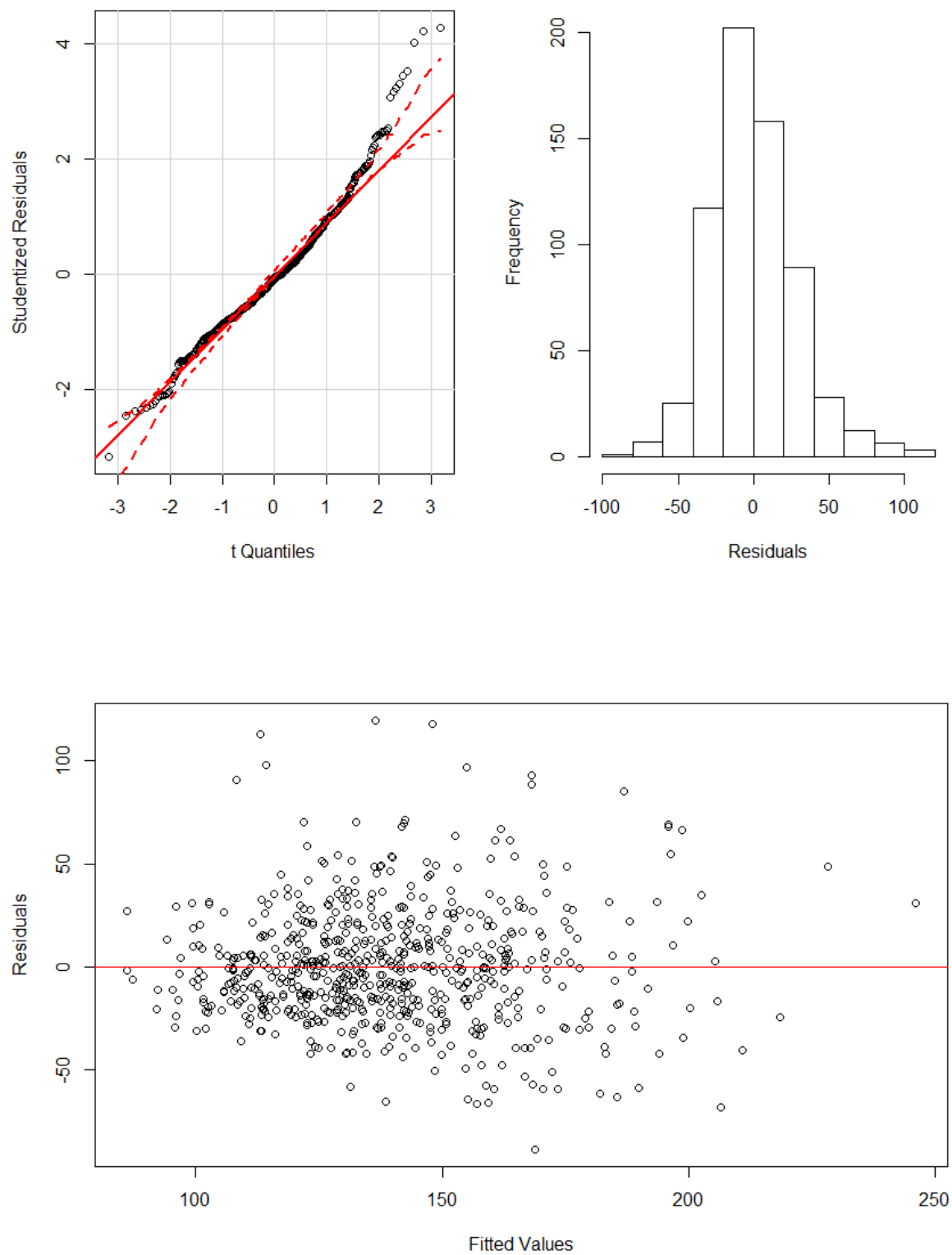
	Model 1			Model 2		
	b	se	p-value	b	se	p-value
Age	4.704	2.076	0.024	0.259	1.639	0.874
Sex	-8.431	2.961	0.005	-10.613	2.320	<.001
Hypertension	-0.421	3.040	0.890	-0.087	2.379	0.971
Diabetes	3.863	4.930	0.434	-1.724	3.868	0.656
Cholesterol	3.004	3.170	0.344	-0.031	2.485	0.990
CVD	6.092	3.371	0.071	5.491	2.638	0.038
Blood Circulation	7.521	3.851	0.051	5.691	3.015	0.060
Stroke	9.106	5.724	0.112	7.165	4.480	0.110
gMD	0.880	1.576	0.577	-1.239	1.238	0.317
CRT Mean	-	-	-	0.267	0.013	<.001
F	3.472	(9, 638)	<.001	45.600	(10, 637)	<.001
R-square	0.047			0.417		
Adjusted R-square	0.033			0.408		

Notes: WMT gMD = white matter tract general mean diffusivity factor; CVD = cardiovascular disease; CRT = choice reaction time.

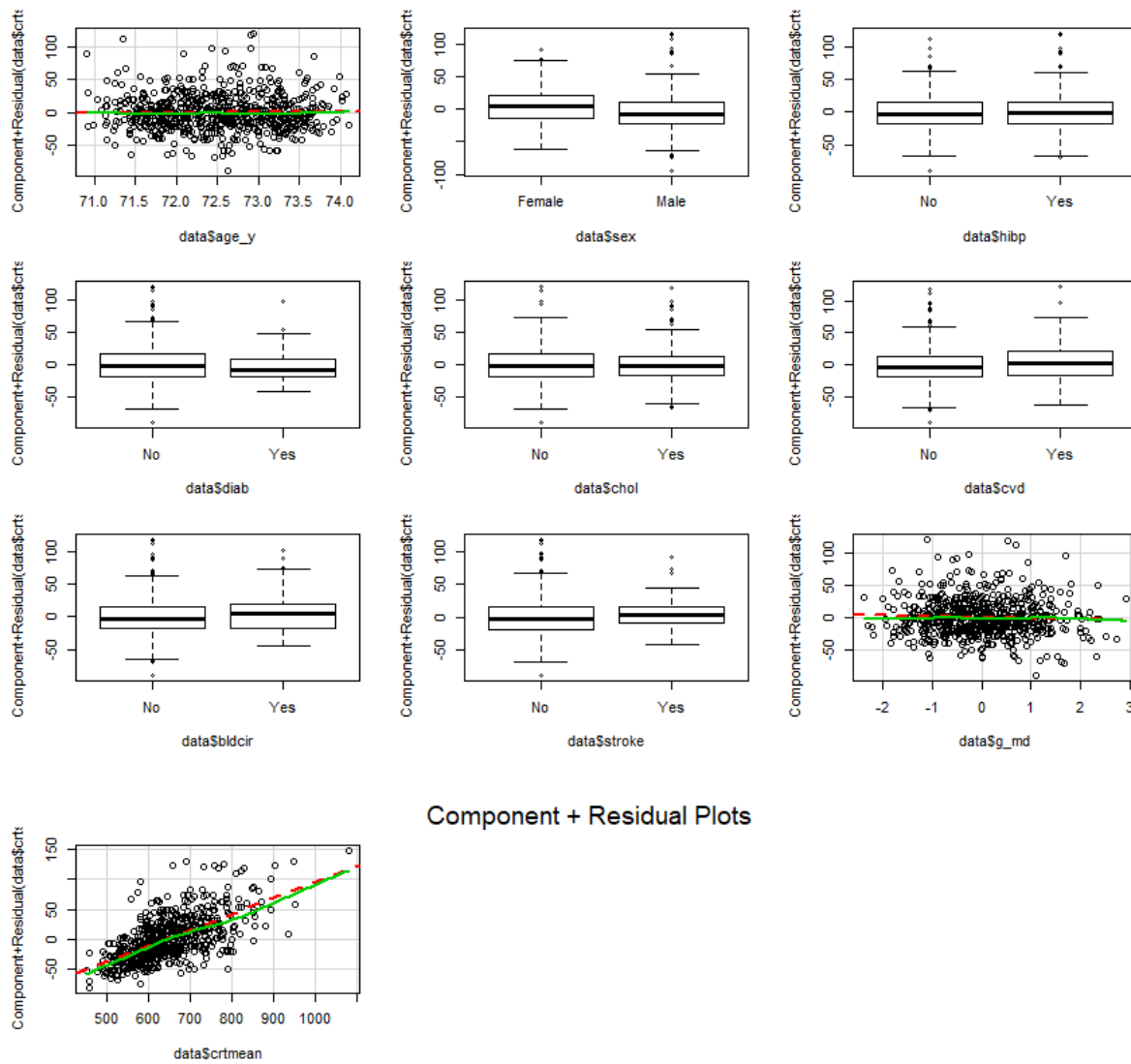
Assumptions

Max VIF = 1.20





RUNNING HEAD: Speed Variability and White Matter Integrity



Component + Residual Plots

CRT Mean

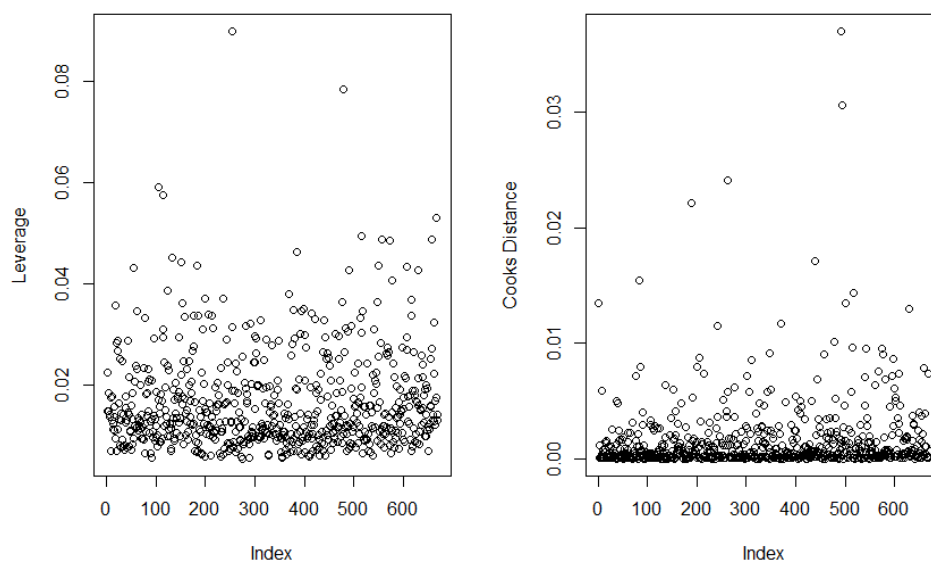
Table S6: Regression Model Results for Four-Choice Reaction Time Mean and WMH Volume (n=670)

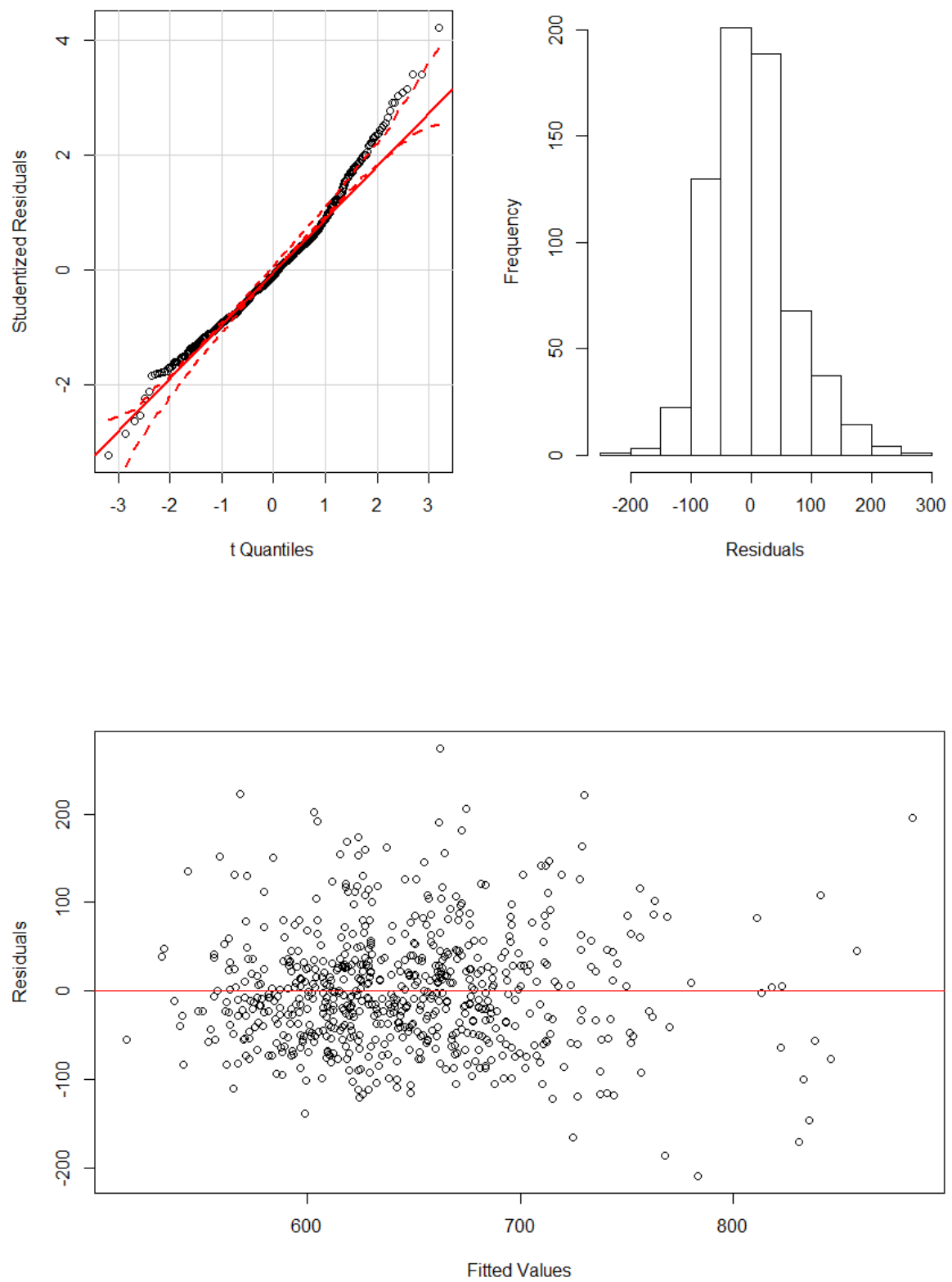
	Model 1			Model 2		
	b	se	p-value	b	se	p-value
Age	15.152	4.674	0.001	9.426	3.683	0.011
Sex	7.450	6.693	0.266	19.92	5.294	<.001
Hypertension	-3.061	6.959	0.660	-1.914	5.468	0.726
Diabetes	21.257	11.092	0.056	15.733	8.718	0.072
Cholesterol	10.179	7.198	0.158	6.364	5.658	0.261
CVD	5.418	7.668	0.480	-4.055	6.042	0.502
Blood Circulation	9.253	8.744	0.290	-1.662	6.891	0.809
Stroke	4.681	13.216	0.723	-6.829	10.398	0.512
WMH Volume	12.062	3.334	<.001	6.419	2.634	0.015
CRT SD	-	-	-	1.449	0.072	<.001
F	4.551	(9, 660)	<.001	47.670	(10, 659)	<.001
R-square	0.058			0.420		
Adjusted R-square	0.046			0.411		

Notes: WMH = white matter hyperintensity; CVD = cardiovascular disease; CRT = choice reaction time.

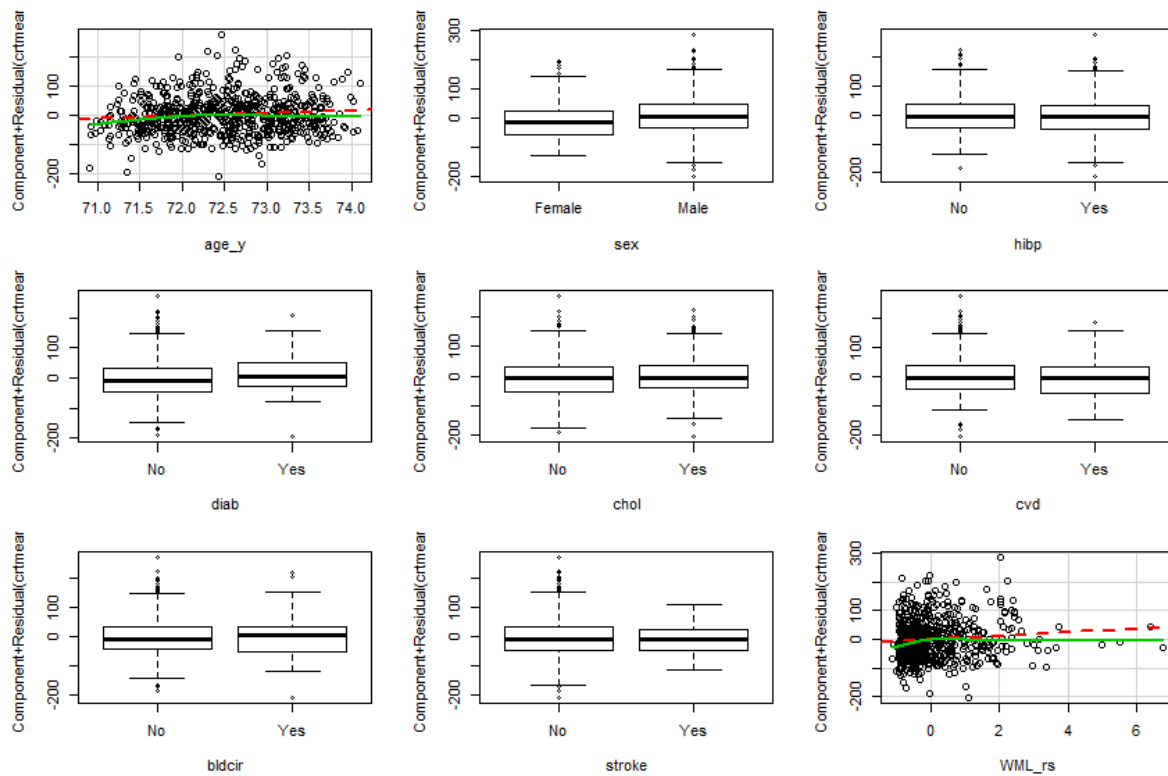
Assumptions

Max VIF = 1.19





RUNNING HEAD: Speed Variability and White Matter Integrity



Component + Residual Plots

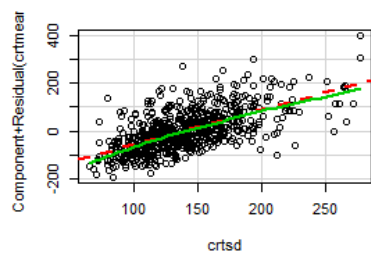


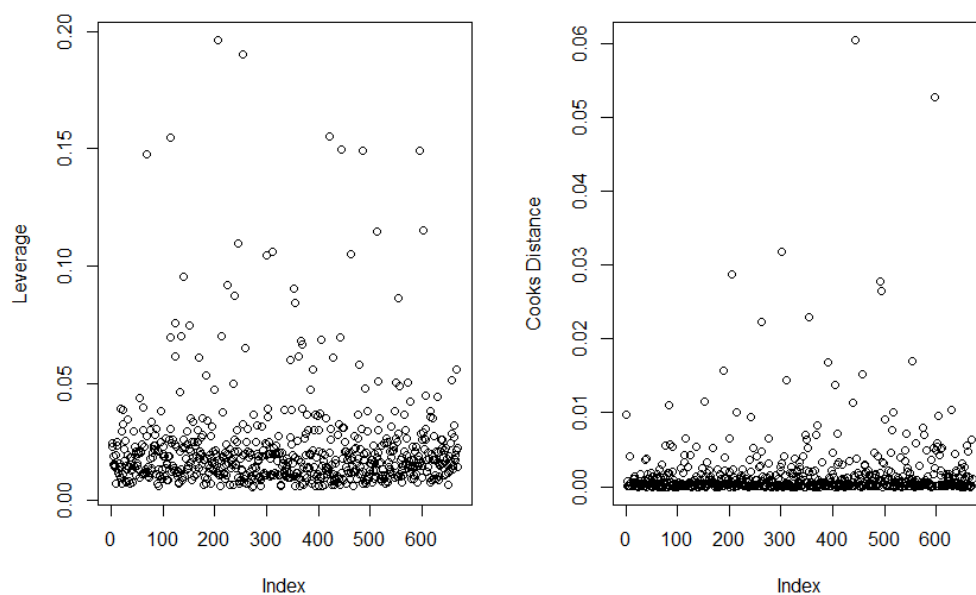
Table S7: Regression Model Results for Four-Choice Reaction Time Mean and WMH Severity in different brain regions (n=670)

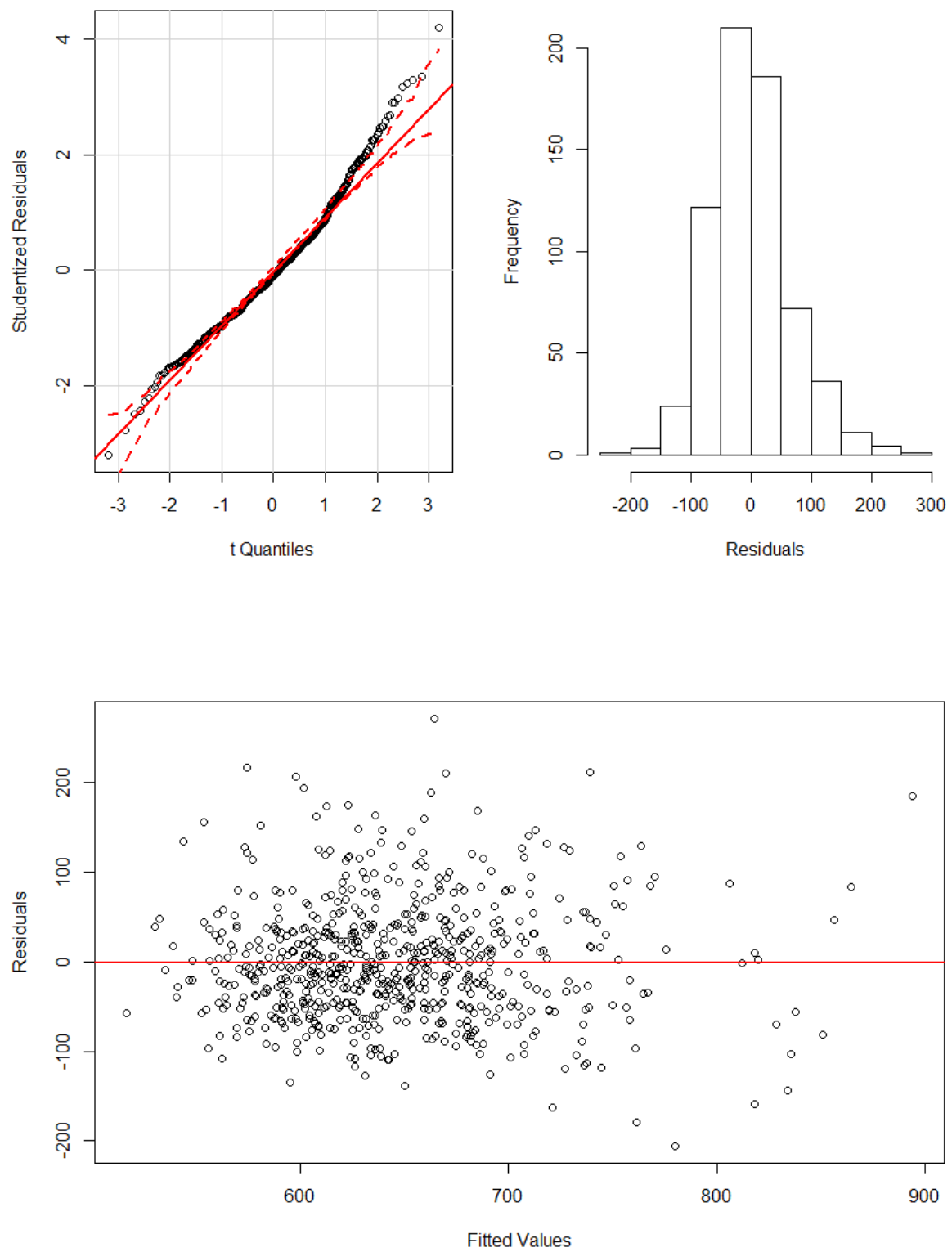
	Model 1			Model 2		
	b	se	p-value	b	se	p-value
Age	16.407	4.625	<.001	10.027	3.653	0.006
Sex	7.315	6.678	0.274	19.804	5.291	<.001
Hypertension	-2.570	6.953	0.712	-2.244	5.47	0.682
Diabetes	20.276	11.100	0.068	15.911	8.736	0.069
Cholesterol	8.925	7.196	0.215	5.551	5.664	0.327
CVD	6.417	7.663	0.403	-3.926	6.052	0.517
Blood Circulation	9.419	8.760	0.283	-1.814	6.915	0.793
Stroke	6.988	13.342	0.601	-5.346	10.516	0.611
Wahlund: Frontal	28.658	9.288	0.002	10.747	7.362	0.145
Wahlund: Parieto-Occipital	3.119	8.968	0.728	10.511	7.066	0.137
Wahlund: Basal Ganglia	-33.818	19.350	0.081	-16.668	15.248	0.275
Wahlund: Temporal	41.913	31.778	0.188	29.955	25.01	0.231
Wahlund: Infratentorial	36.862	23.858	0.123	13.703	18.807	0.467
CRT SD	-	-	-	1.442	0.072	<.001
F	3.915	(13, 656)	<.001	34.780	(14, 654)	<.001
R-square	0.072			0.426		
Adjusted R-square	0.054			0.414		

Notes: CVD = cardiovascular disease; CRT = choice reaction time.

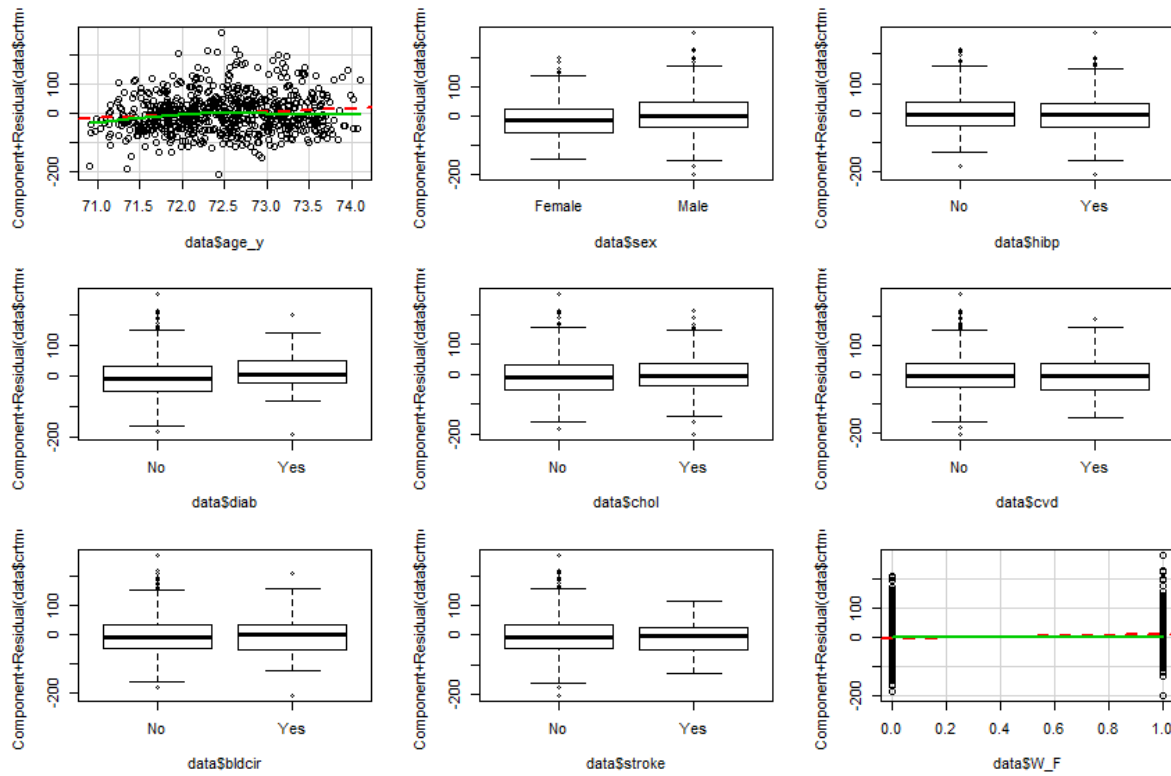
Assumptions

Max VIF = 1.63





RUNNING HEAD: Speed Variability and White Matter Integrity



Component + Residual Plots

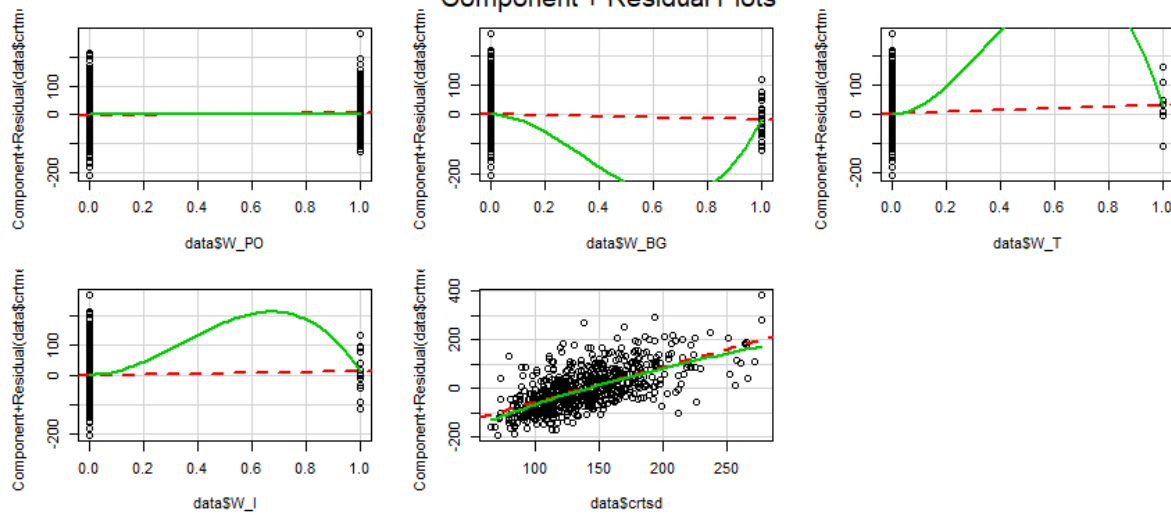


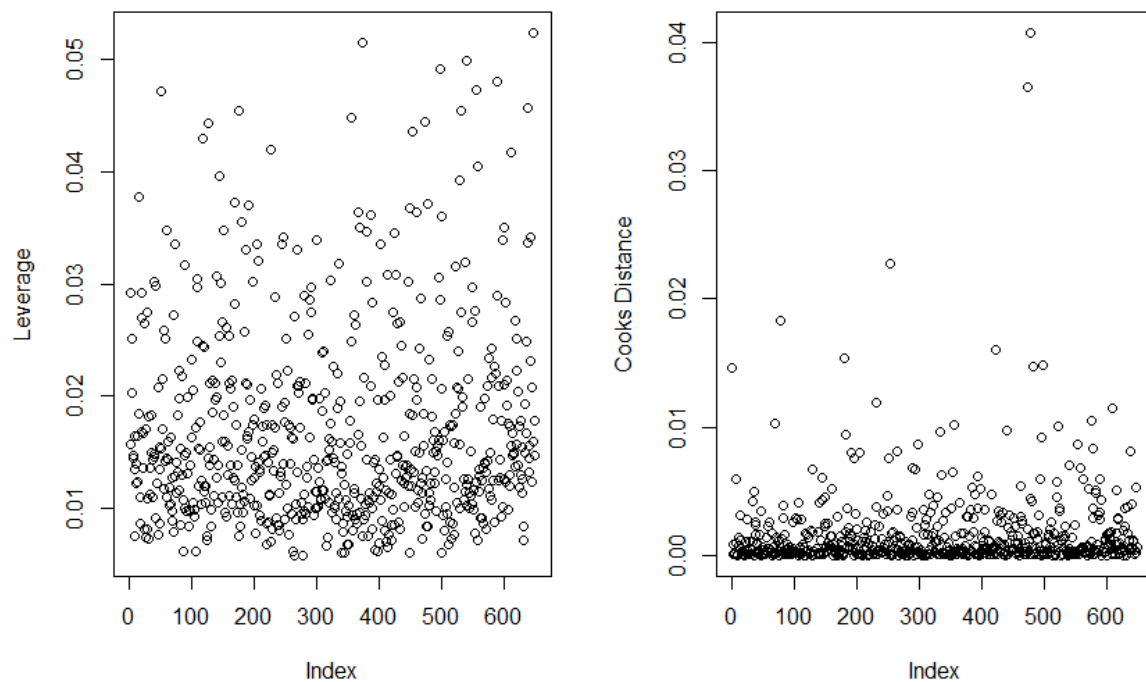
Table S8: Regression Model Results for Four-Choice Reaction Time Mean Average White Matter Tract Fractional Anisotropy (n=647)

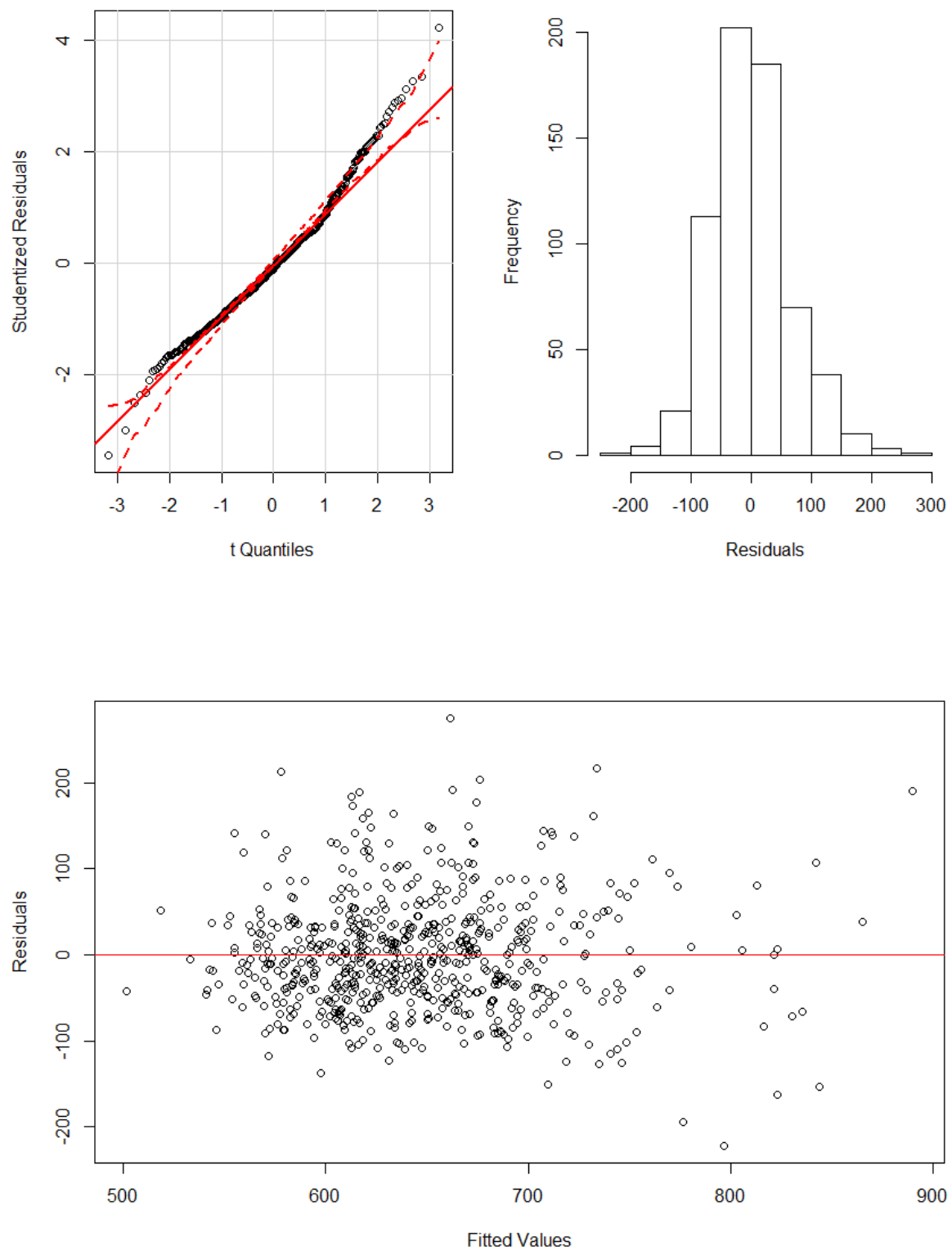
	Model 1			Model 2		
	b	se	p-value	b	se	p-value
Age	16.399	4.790	0.001	9.753	3.766	0.010
Sex	7.658	6.857	0.264	19.921	5.405	<.001
Hypertension	-3.981	7.085	0.574	-2.722	5.550	0.624
Diabetes	22.147	11.415	0.053	16.354	8.945	0.068
Cholesterol	12.543	7.353	0.089	7.918	5.764	0.170
CVD	1.153	7.815	0.883	-7.392	6.135	0.229
Blood Circulation	6.882	8.922	0.441	-3.973	7.009	0.571
Stroke	5.154	13.278	0.698	-7.471	10.419	0.474
gFA	14.421	3.693	<.001	11.109	2.897	<.001
CRT SD	-	-	-	1.444	0.072	<.001
F	4.684	(9, 638)	<.001	47.170	(10, 637)	<.001
R-square	0.062			0.426		
Adjusted R-square	0.049			0.417		

Notes: WMT gFA = white matter tract general fractional anisotropy factor; CVD = cardiovascular disease; CRT = choice reaction time.

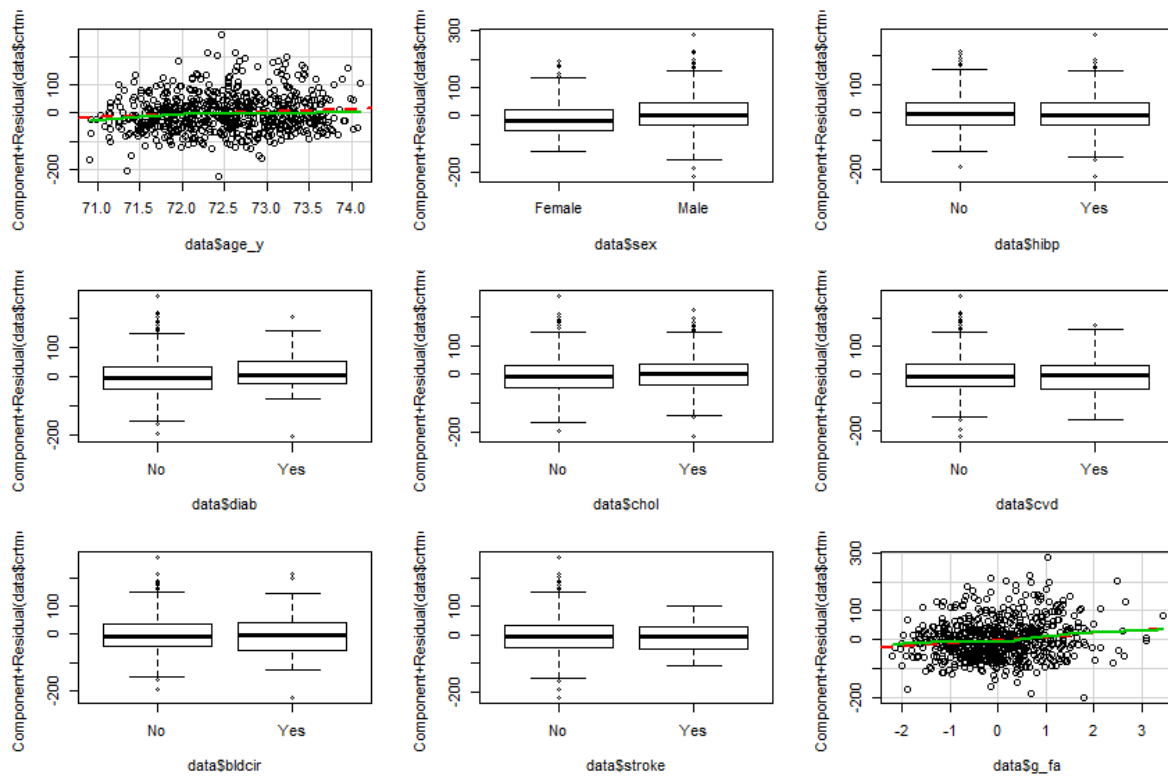
Assumptions

Max VIF = 1.4





RUNNING HEAD: Speed Variability and White Matter Integrity



Component + Residual Plots

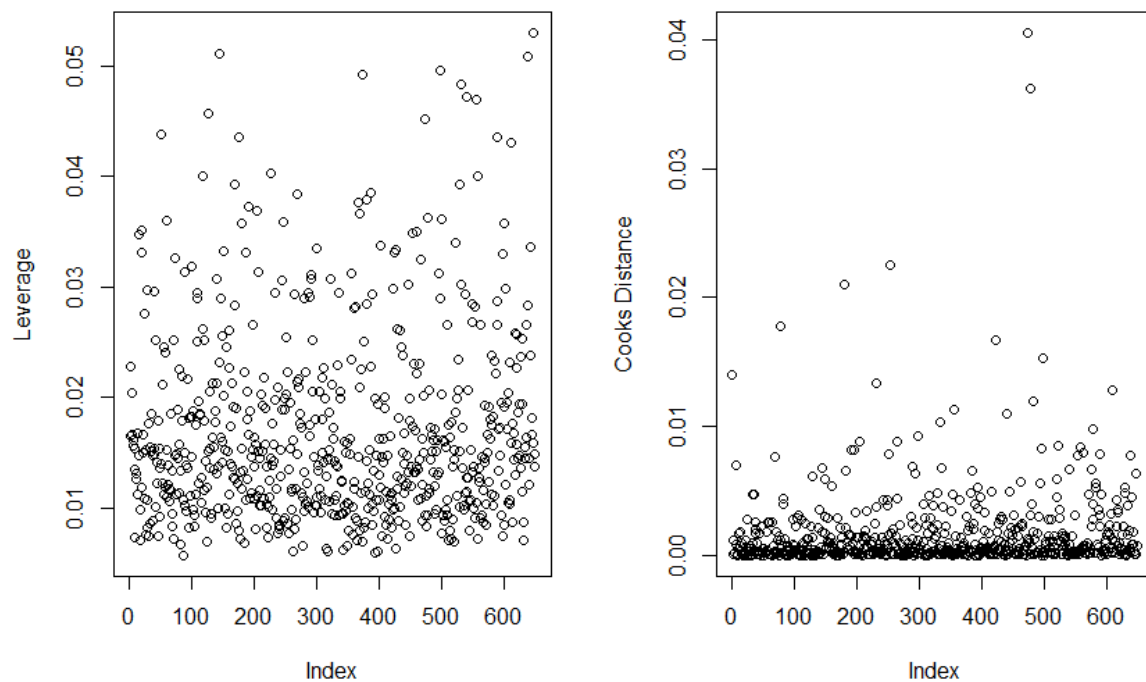
Table S9: Regression Model Results for Four-Choice Reaction Time Mean on Average White Matter Tract Mean Diffusivity (n=647)

	Model 1			Model 2		
	b	se	p-value	b	se	p-value
Age	16.653	4.850	0.001	9.803	3.810	0.010
Sex	8.175	6.917	0.238	20.453	5.447	<.001
Hypertension	-1.253	7.101	0.860	-0.640	5.557	0.908
Diabetes	20.932	11.517	0.070	15.307	9.016	0.090
Cholesterol	11.372	7.405	0.125	6.998	5.799	0.228
CVD	2.254	7.873	0.775	-6.619	6.177	0.284
Blood Circulation	6.859	8.996	0.446	-4.095	7.06	0.562
Stroke	7.272	13.371	0.587	-5.989	10.484	0.568
gMD	7.942	3.681	0.031	6.660	2.881	0.021
CRT SD	-	-	-	1.456	0.072	<.001
F	3.459	(9, 638)	<.001	45.580	(10, 637)	<.001
R-square	0.047			0.417		
Adjusted R-square	0.033			0.408		

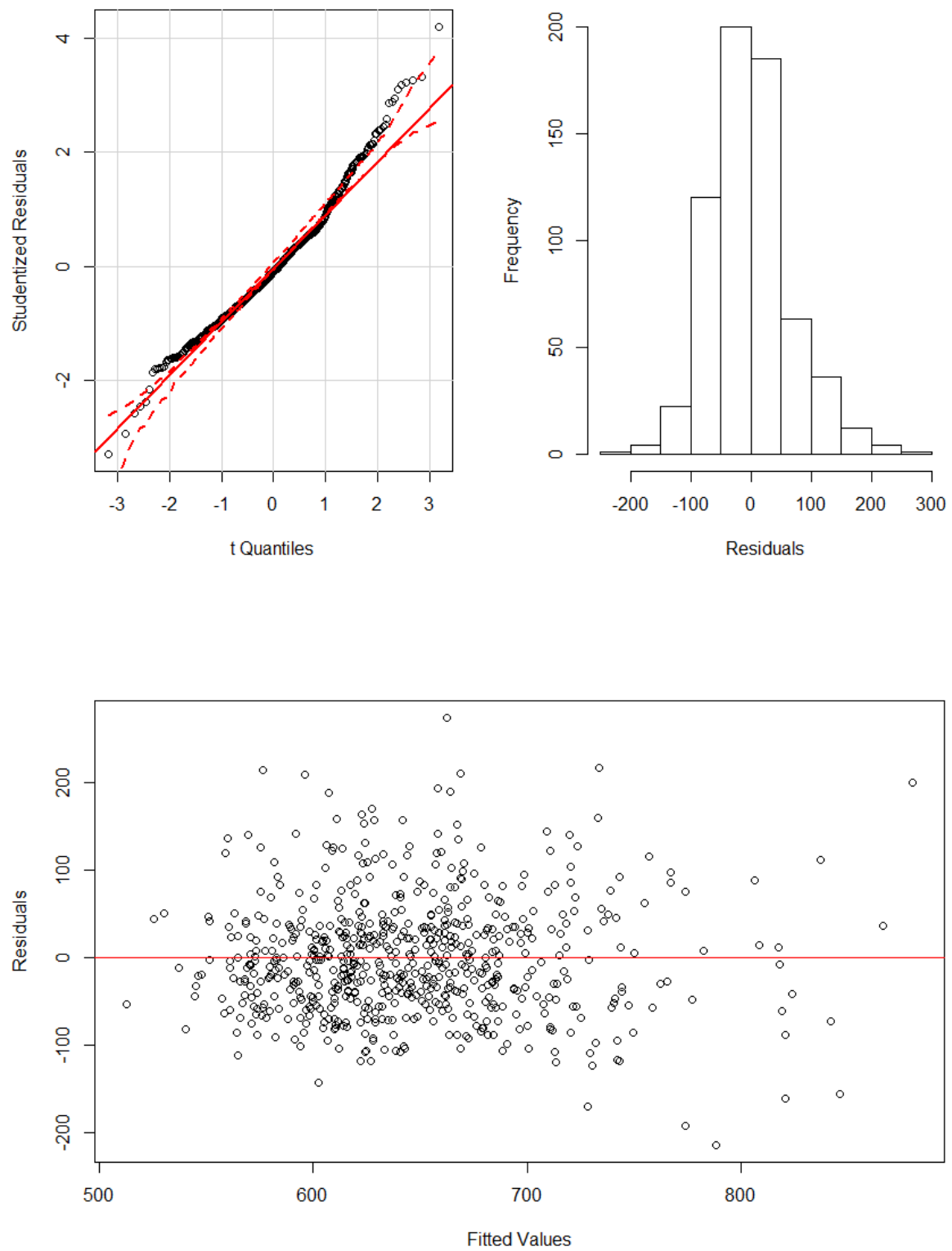
Notes: WMT gMD = white matter tract general mean diffusivity factor; CVD = cardiovascular disease; CRT = choice reaction time.

Assumptions

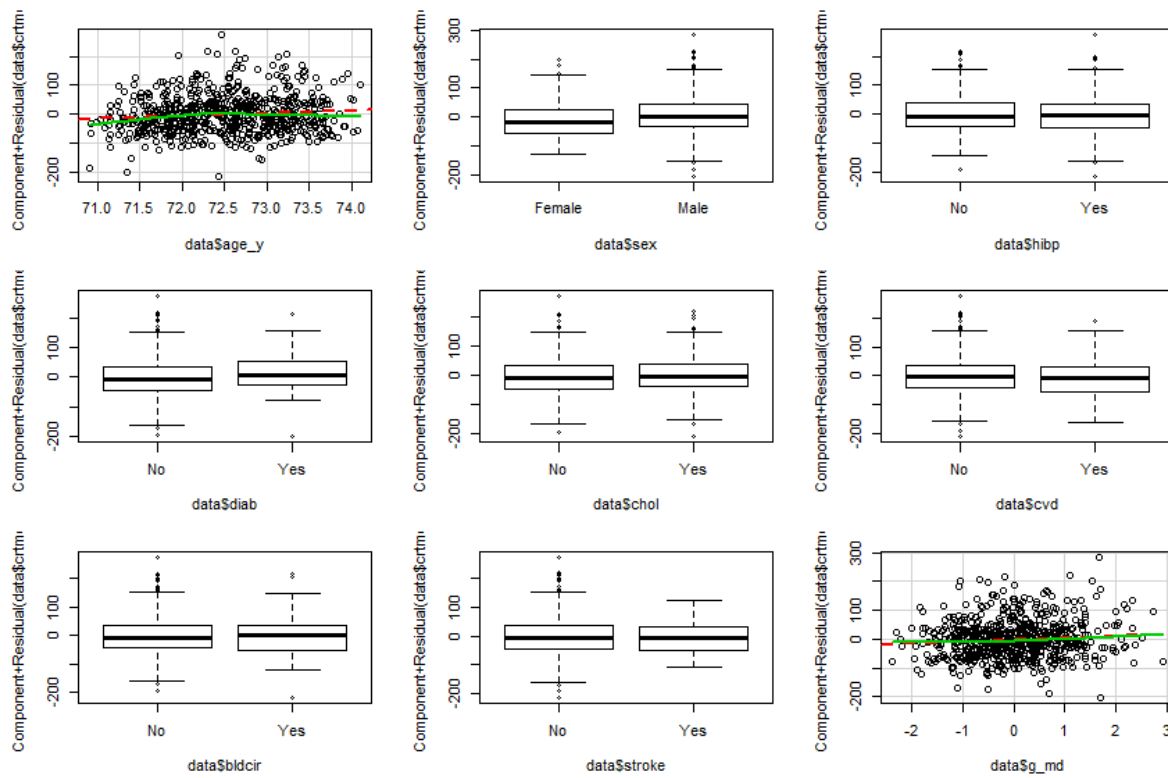
Max VIF = 1.19



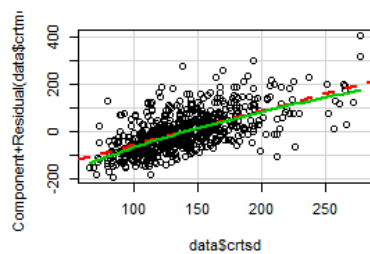
RUNNING HEAD: Speed Variability and White Matter Integrity



RUNNING HEAD: Speed Variability and White Matter Integrity



Component + Residual Plots



CRT CV

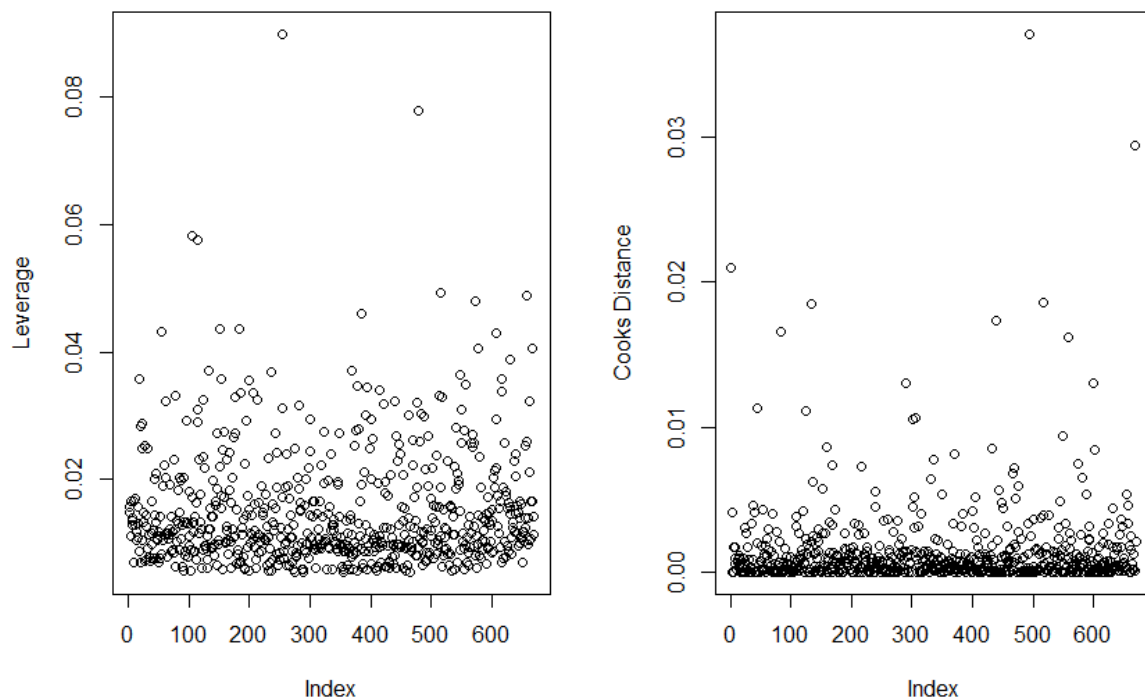
Table S10: Regression Model Results for Four-Choice Reaction Time CV and WMH Volume (n=670)

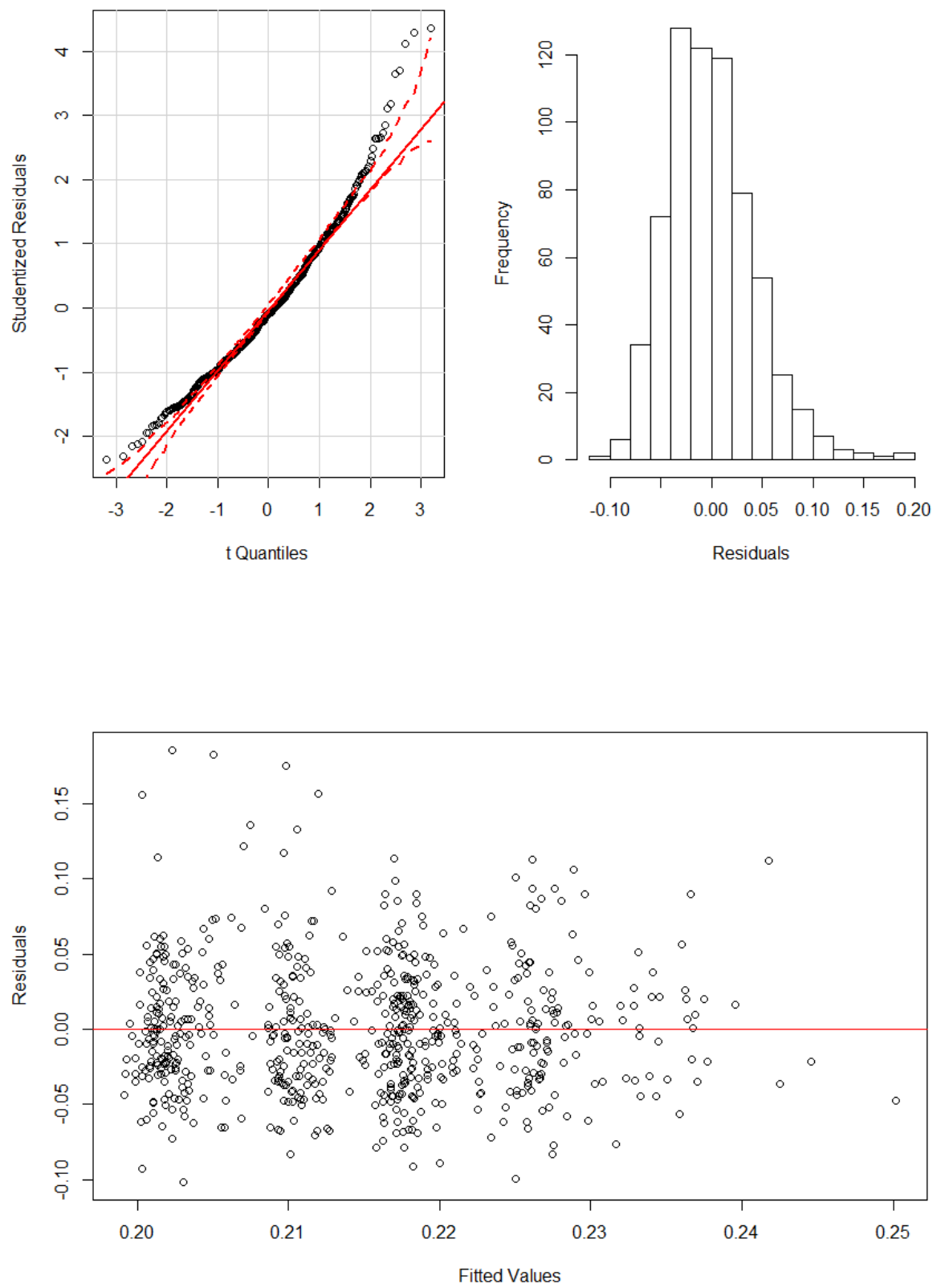
	Model 1		
	b	se	p-value
Age	0.001	0.002	0.798
Sex	-0.016	0.003	<.001
Hypertension	0.000	0.004	0.901
Diabetes	-0.001	0.006	0.797
Cholesterol	0.000	0.004	0.973
CVD	0.009	0.004	0.031
Blood Circulation	0.008	0.004	0.063
Stroke	0.010	0.007	0.134
WMH Volume	0.002	0.002	0.224
F	3.857	(9, 660)	<.001
R-square	0.050		
Adjusted R-square	0.037		

Notes: WMH = white matter hyperintensity; CVD = cardiovascular disease.

Assumptions

Max VIF = 1.19





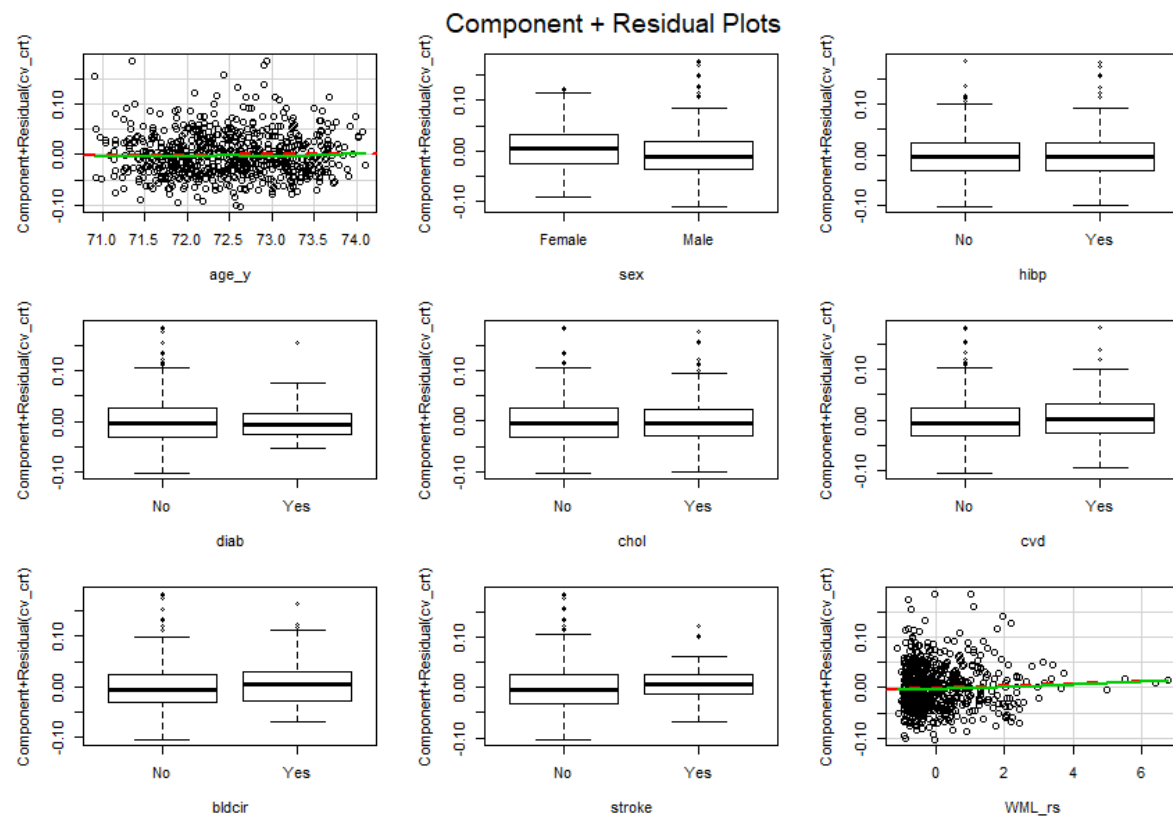


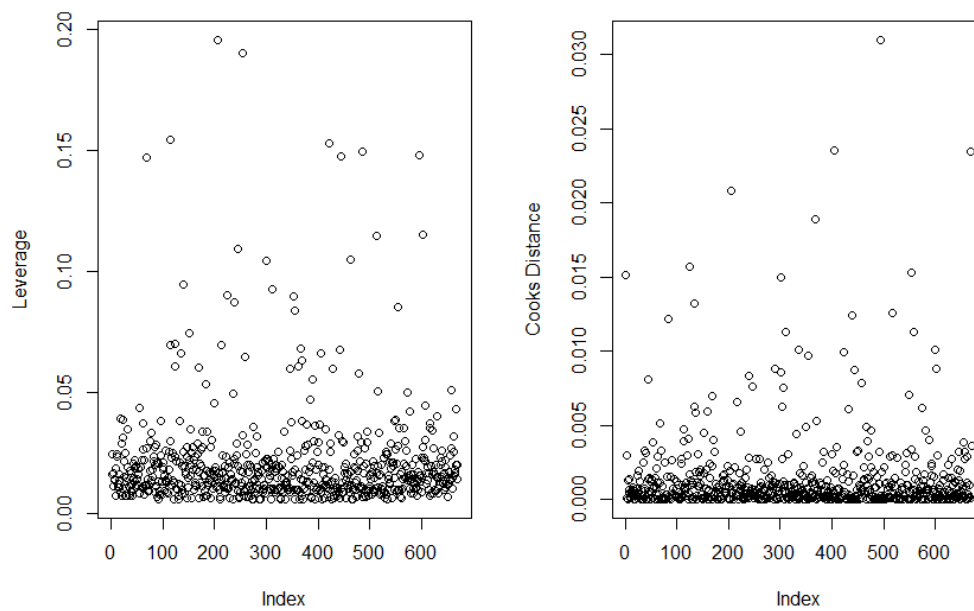
Table S11: Regression Model Results for Four-Choice Reaction Time CV and WMH Severity in different brain regions (n=670)

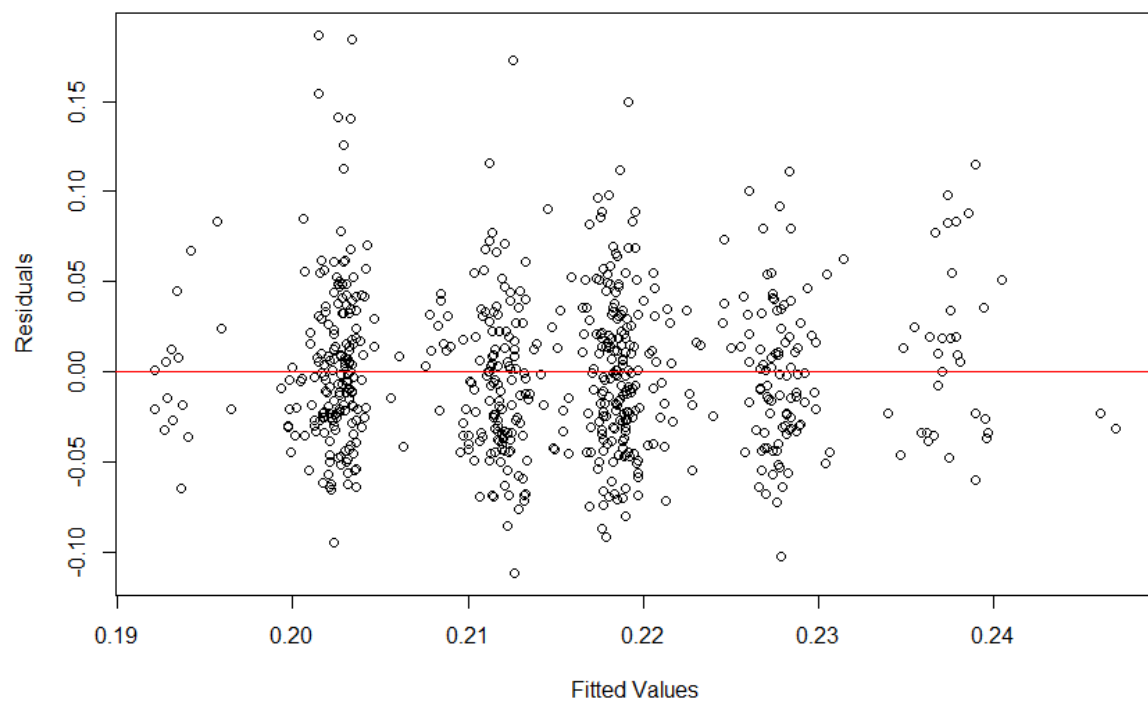
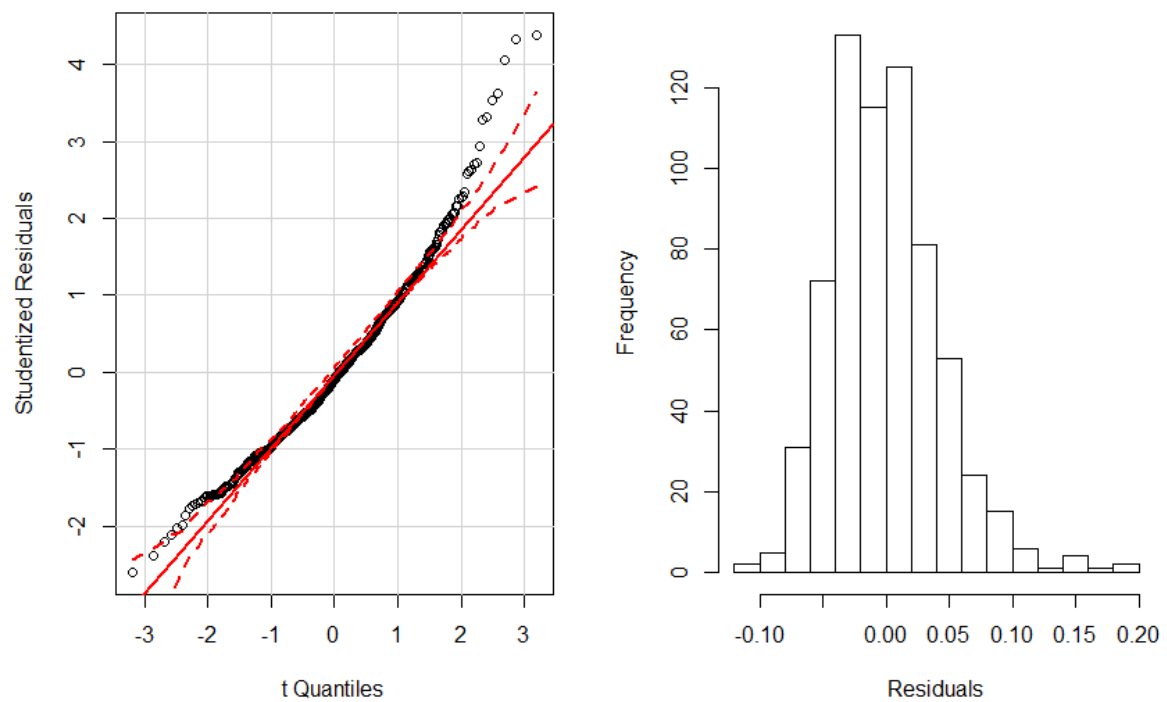
	Model 1		
	b	se	p-value
Age	0.001	0.002	0.689
Sex	-0.016	0.003	<.001
Hypertension	0.000	0.004	0.932
Diabetes	-0.002	0.006	0.669
Cholesterol	0.000	0.004	0.977
CVD	0.009	0.004	0.021
Blood Circulation	0.009	0.005	0.053
Stroke	0.010	0.007	0.129
Wahlund: Frontal	0.010	0.005	0.040
Wahlund: Parieto-Occipital	-0.010	0.005	0.039
Wahlund: Basal Ganglia	-0.007	0.010	0.463
Wahlund: Temporal	0.001	0.016	0.964
Wahlund: Infratentorial	0.013	0.012	0.309
F	3.068	(13, 656)	<.001
R-square	0.573		
Adjusted R-square	0.039		

Notes: CVD = cardiovascular disease.

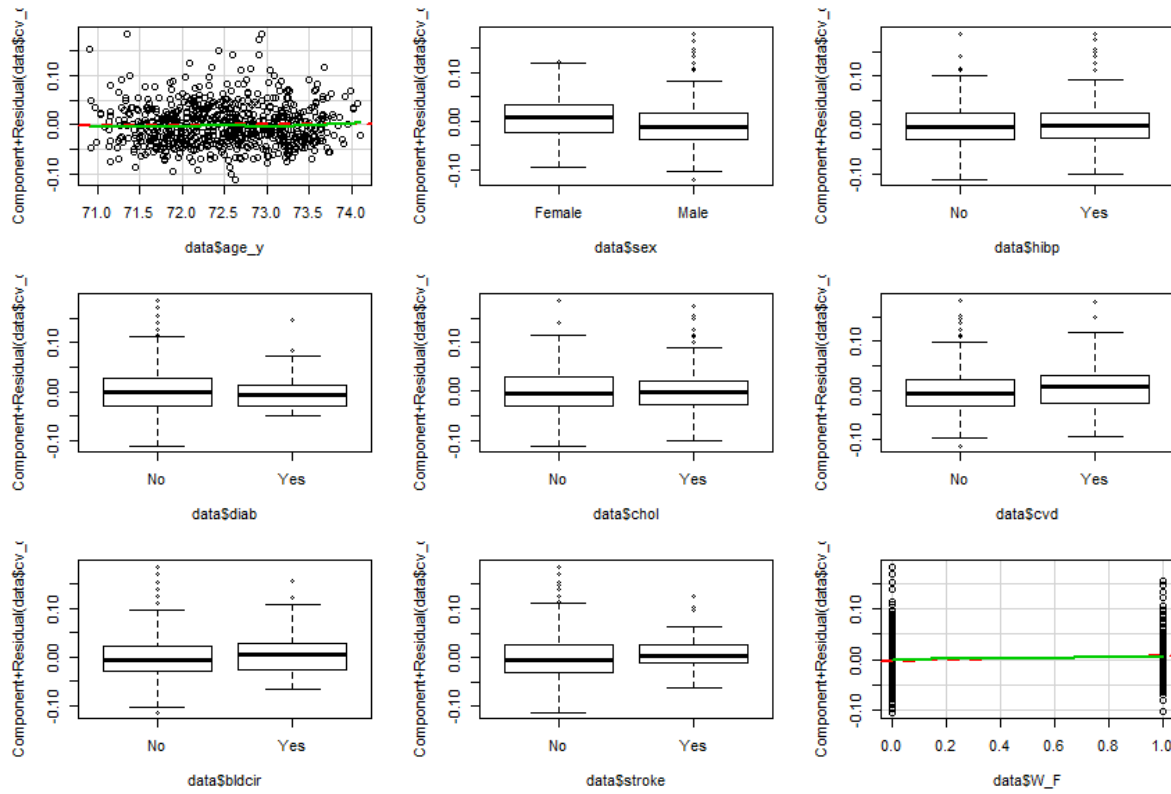
Assumptions

Max VIF = 1.61





RUNNING HEAD: Speed Variability and White Matter Integrity



Component + Residual Plots

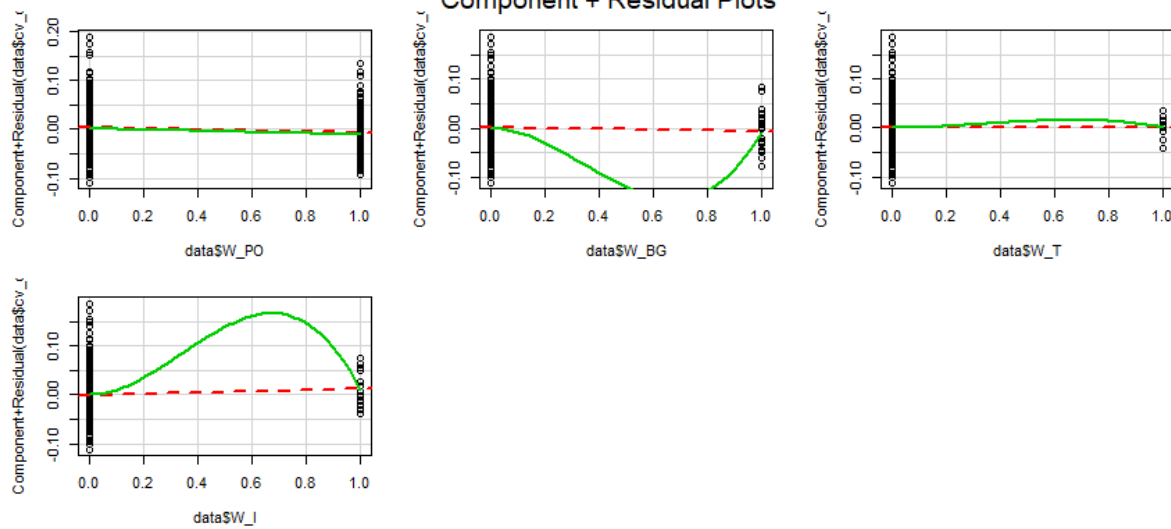


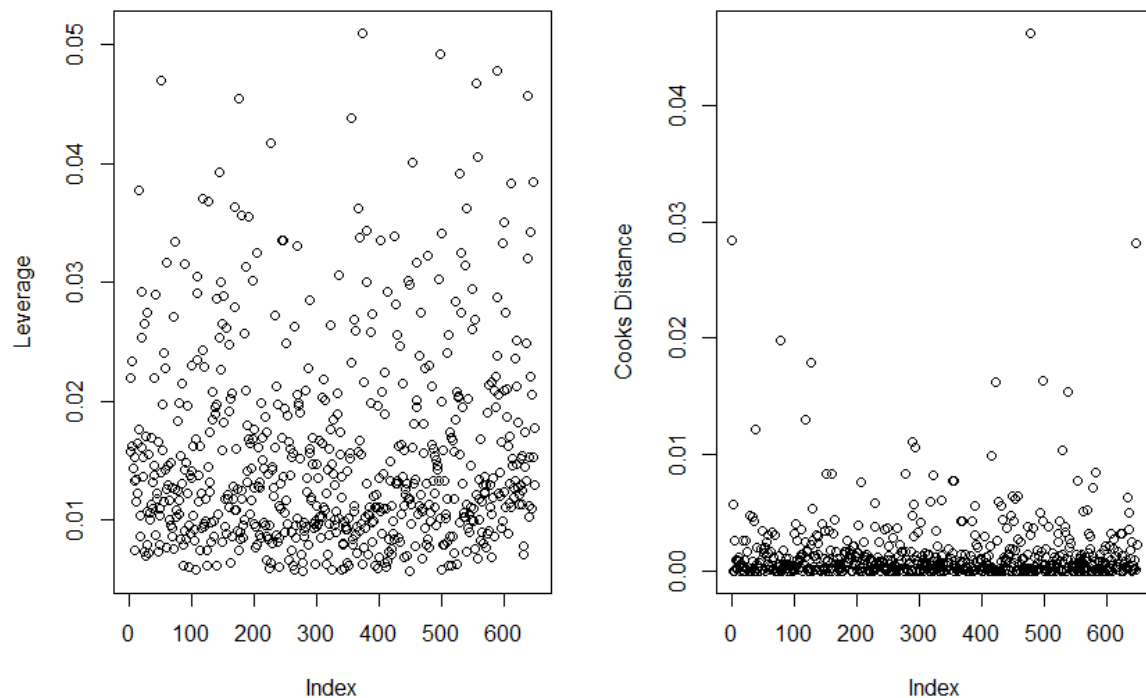
Table S12: Regression Model Results for Four-Choice Reaction Time CV Average White Matter Tract Fractional Anisotropy (n=647)

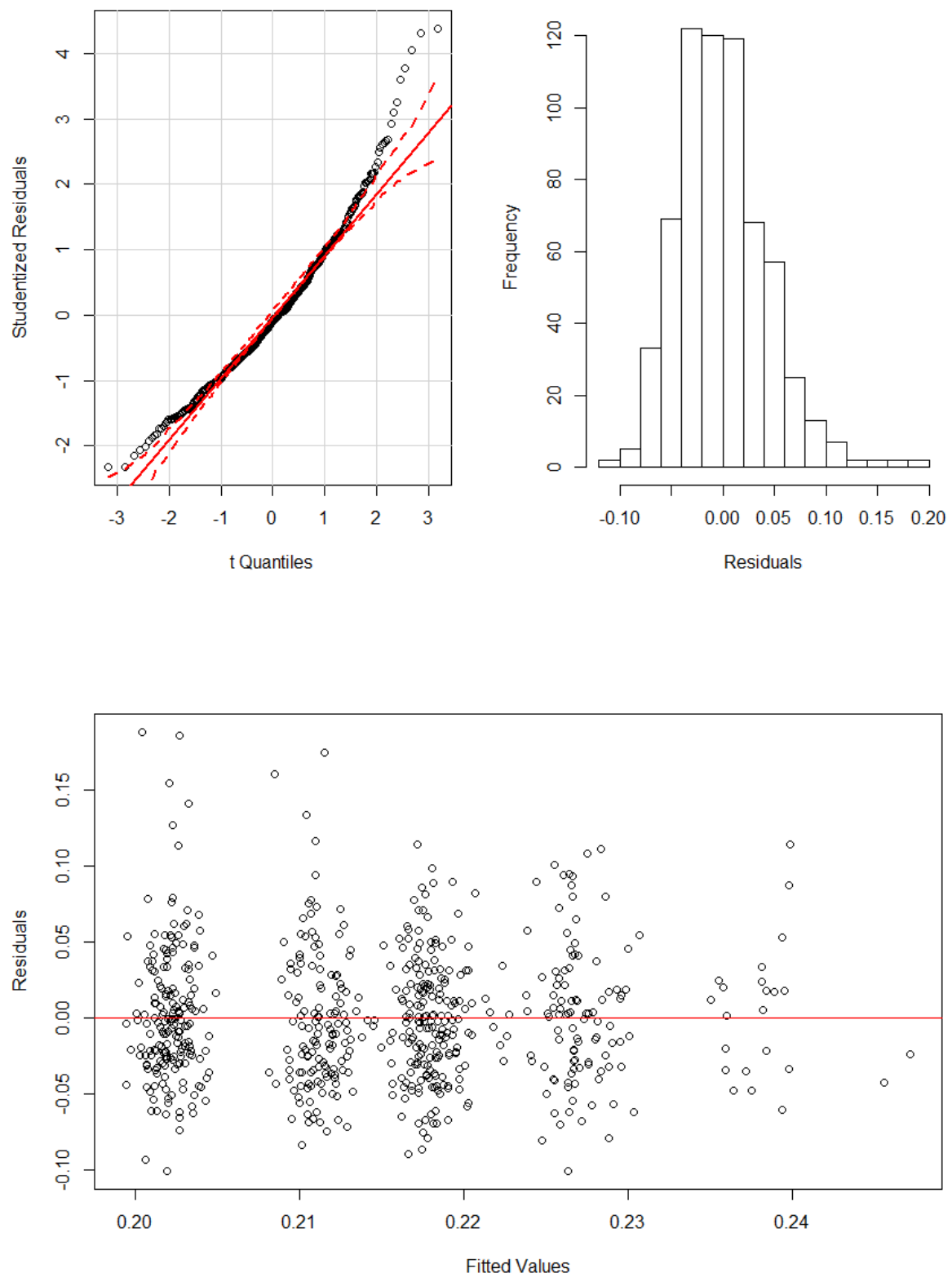
	Model 1		
	b	se	p-value
Age	0.001	0.002	0.626
Sex	-0.015	0.004	<.001
Hypertension	0.000	0.004	0.930
Diabetes	-0.002	0.006	0.793
Cholesterol	0.000	0.004	0.922
CVD	0.009	0.004	0.027
Blood Circulation	0.009	0.005	0.046
Stroke	0.011	0.007	0.104
gFA	-0.001	0.002	0.658
F	3.611	(9, 638)	<.001
R-square	0.049		
Adjusted R-square	0.035		

Notes: WMT gFA = white matter tract general fractional anisotropy factor; CVD = cardiovascular disease.

Assumptions

Max VIF = 1.20





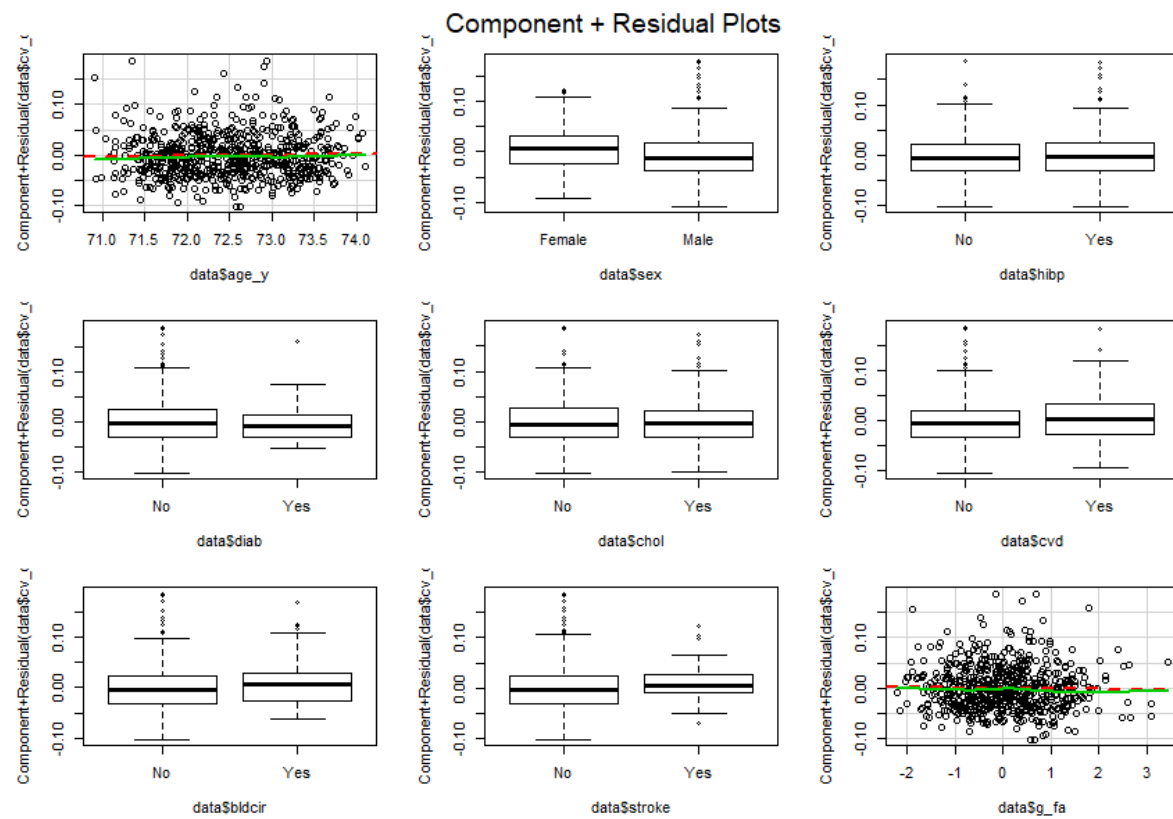


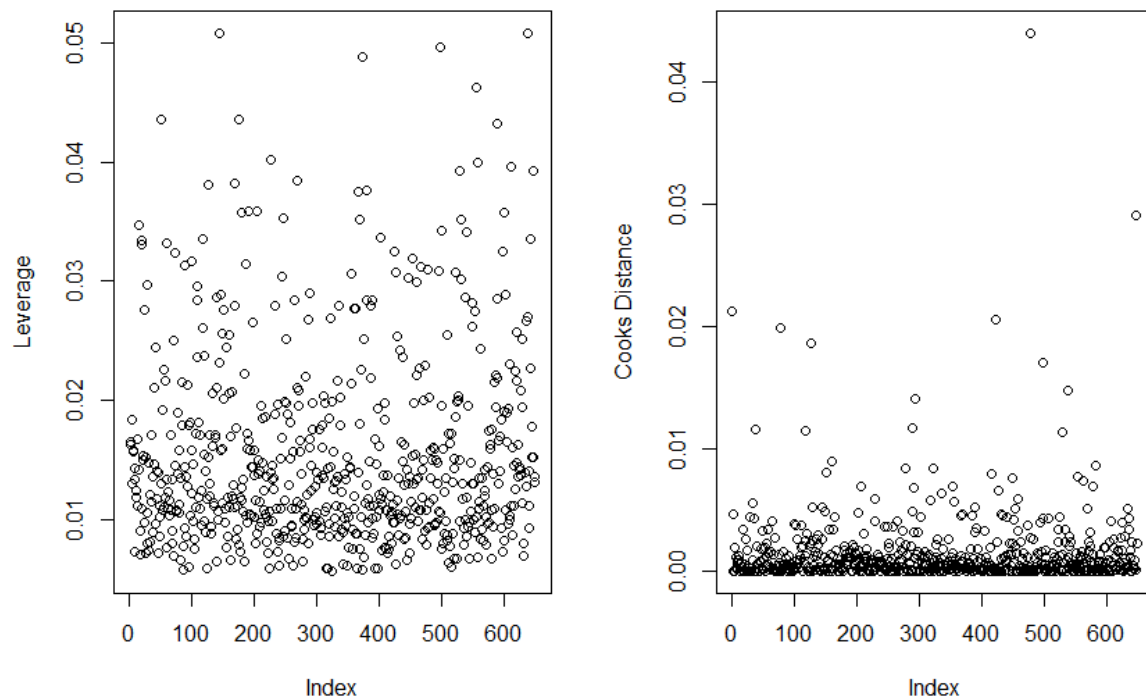
Table S13: Regression Model Results for Four-Choice Reaction Time CV on Average White Matter Tract Mean Diffusivity (n=647)

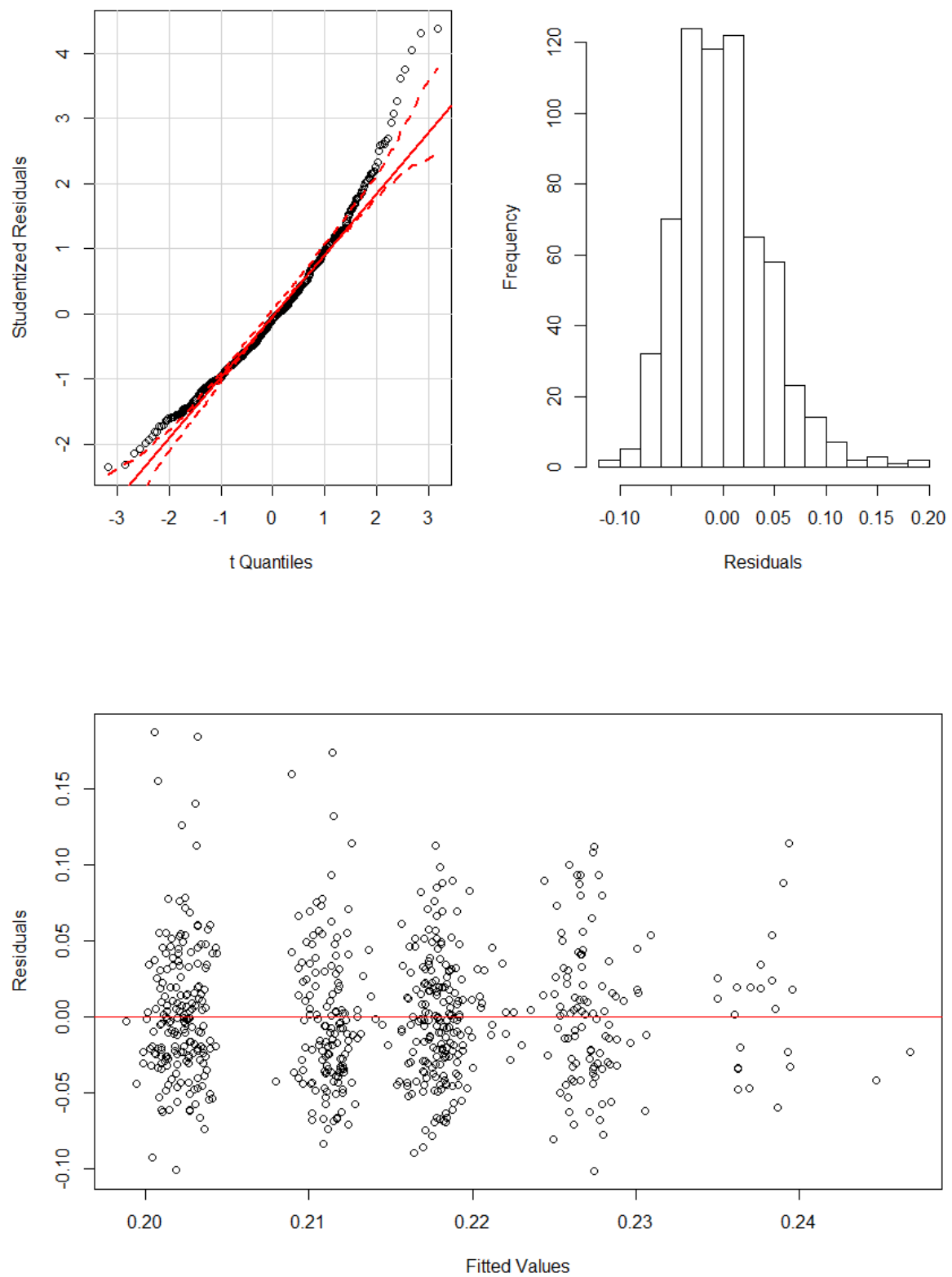
	Model 1		
	b	se	p-value
Age	0.001	0.002	0.624
Sex	-0.015	0.004	<.001
Hypertension	0.000	0.004	0.896
Diabetes	-0.001	0.006	0.805
Cholesterol	0.000	0.004	0.909
CVD	0.009	0.004	0.028
Blood Circulation	0.009	0.005	0.046
Stroke	0.011	0.007	0.107
gMD	-0.001	0.002	0.736
F	3.601	(9, 638)	<.001
R-square	0.048		
Adjusted R-square	0.035		

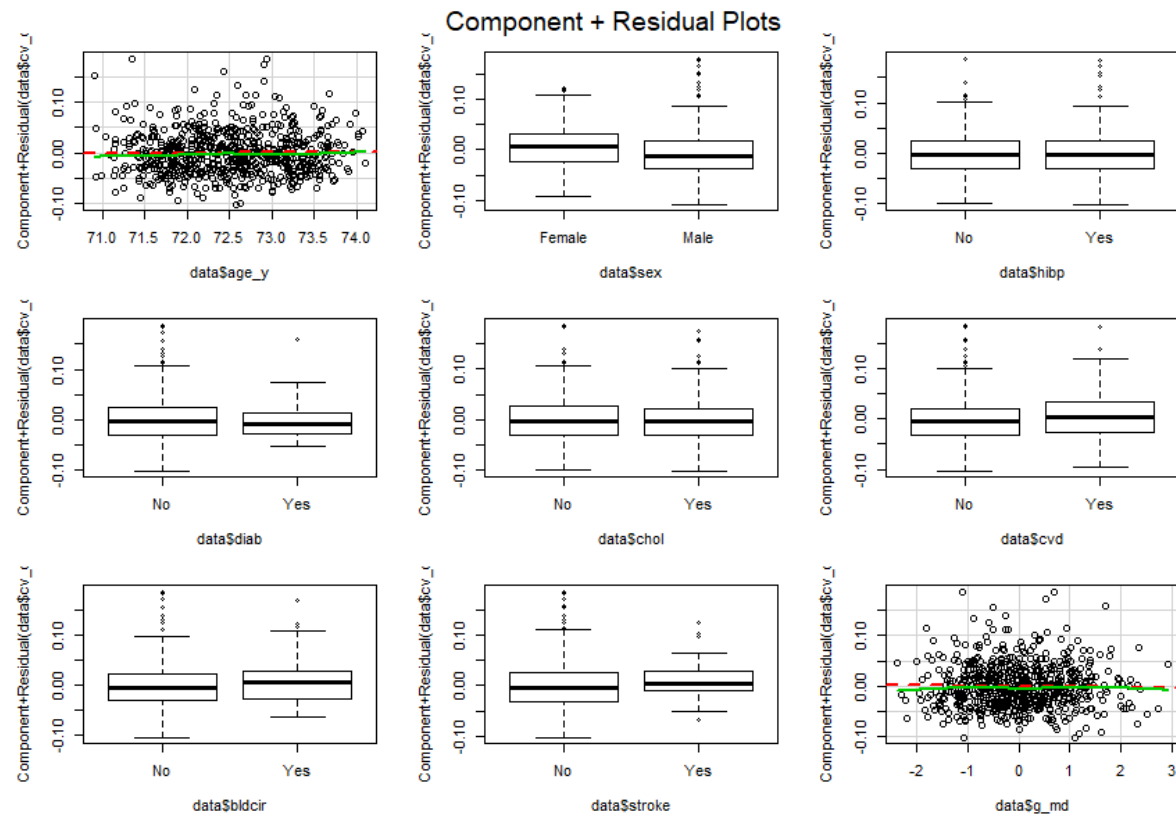
Notes: WMT gMD = white matter tract general mean diffusivity factor; CVD = cardiovascular disease; CRT = choice reaction time.

Assumptions

Max VIF = 1.19







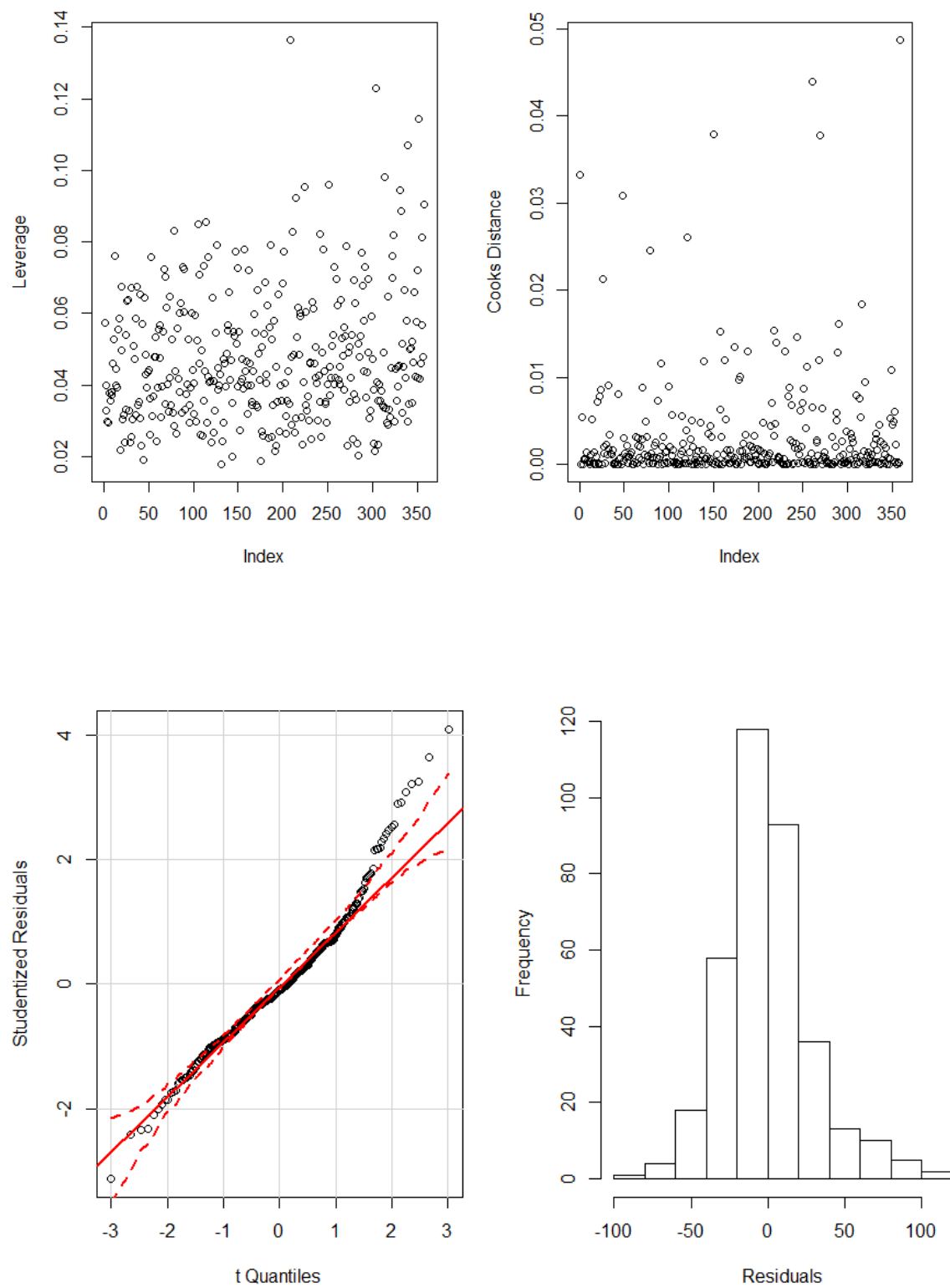
Individual White Matter Tract Models

Table S14: Regression Model Results for Four-Choice Reaction Time Standard Deviation and Individual White Matter Tract Fractional Anisotropy (n=358)

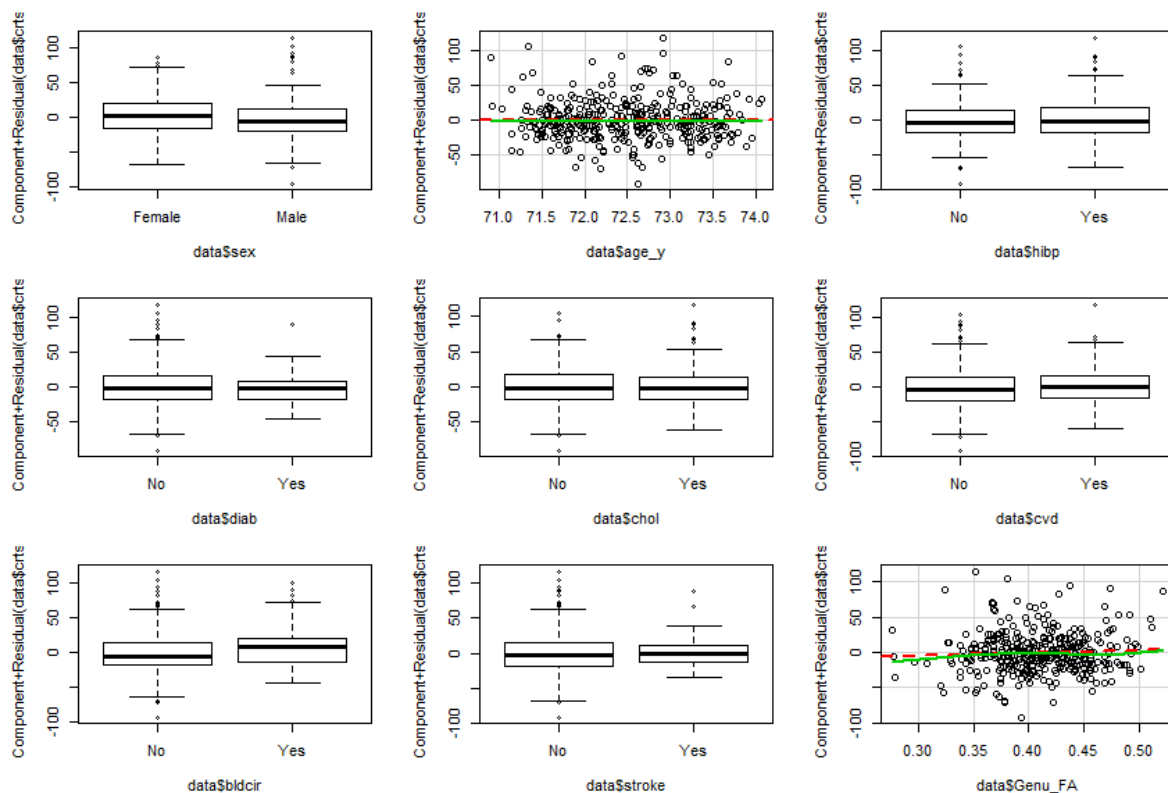
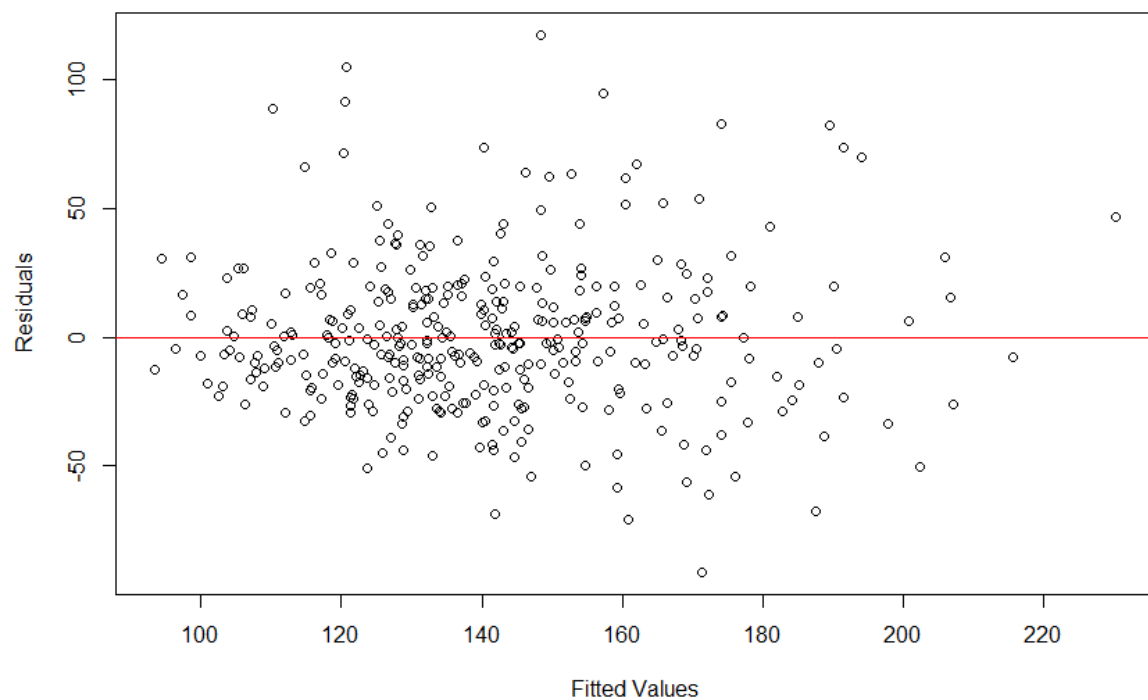
	Model 1			Model 2		
	b	se	p-value	b	se	p-value
Age	3.617	2.872	0.209	0.197	2.336	0.933
Sex	-5.732	4.346	0.188	-7.282	3.516	0.039
Hypertension	-0.966	4.327	0.824	1.195	3.503	0.733
Diabetes	0.003	6.979	1.000	-1.828	5.645	0.746
Cholesterol	2.697	4.304	0.531	-0.074	3.486	0.983
CVD	3.960	4.738	0.404	2.520	3.832	0.511
Blood Circulation	10.346	5.191	0.047	8.793	4.199	0.037
Stroke	10.326	8.850	0.244	6.336	7.162	0.377
Genu Corpus Callosum	126.023	56.589	0.027	37.200	46.227	0.422
Splenium Corpus Callosum	15.287	32.386	0.637	37.398	26.238	0.155
Arcuate Fasciculus	18.203	71.520	0.799	29.730	57.836	0.608
Anterior Thalamic Radiation	-147.639	88.673	0.097	-40.415	72.137	0.576
Rostral Cingulum	-94.898	65.514	0.148	-52.891	53.064	0.32
Uncinate Fasciculus	20.952	99.951	0.834	49.154	80.845	0.544
Inferior Longitudinal Thalamic Radiation	15.641	67.489	0.817	26.225	54.576	0.631
CRT SD	-	-	-	0.270	0.020	<.001
F	1.724	(15, 342)	0.030	13.85	(16, 341)	<.001
R-square	0.070			0.394		
Adjusted R-square	0.030			0.366		

Assumptions

Max VIF = 1.85



RUNNING HEAD: Speed Variability and White Matter Integrity



RUNNING HEAD: Speed Variability and White Matter Integrity

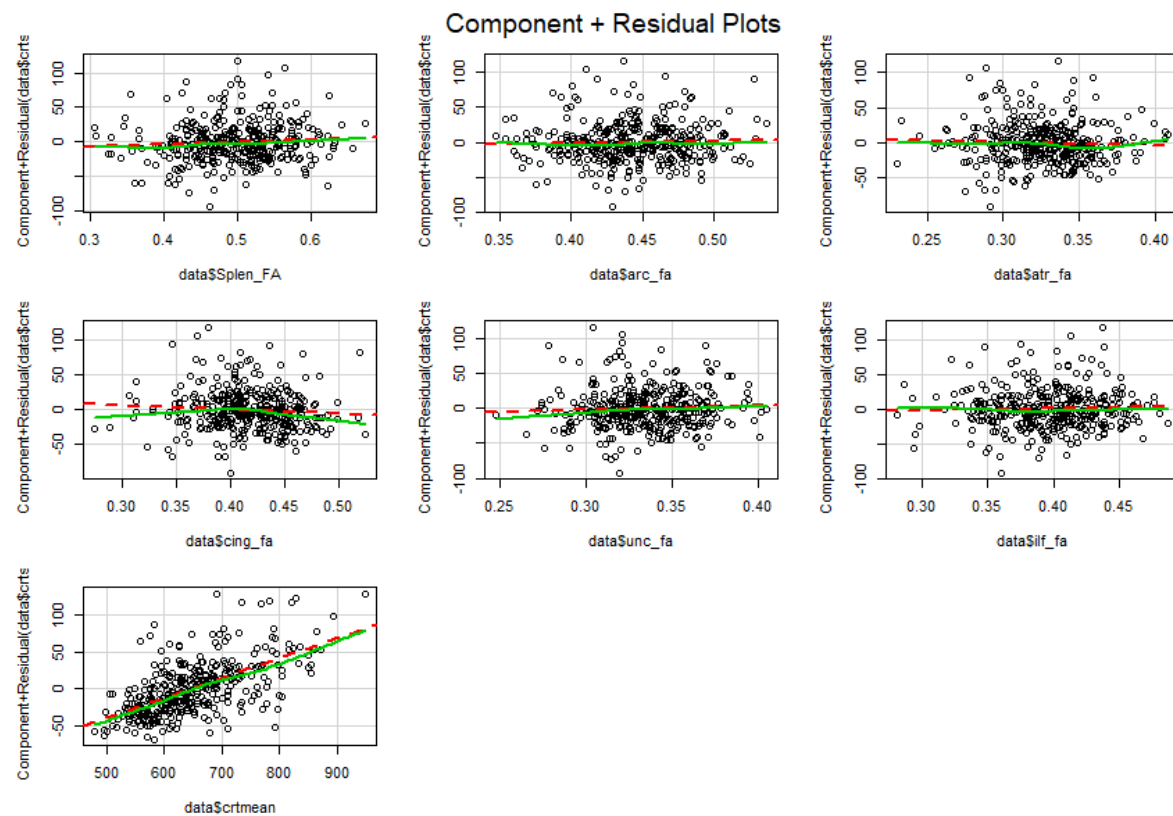
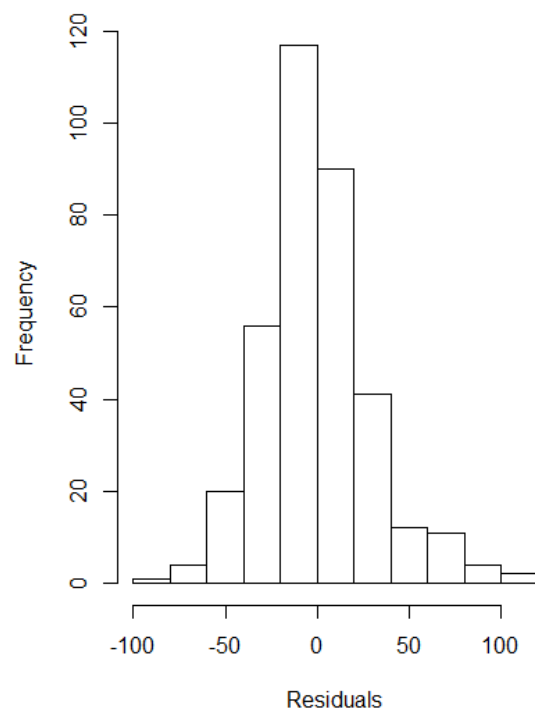
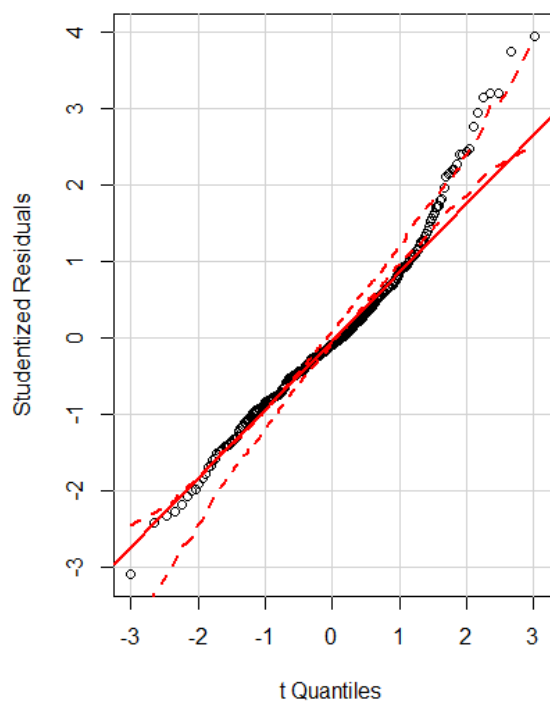
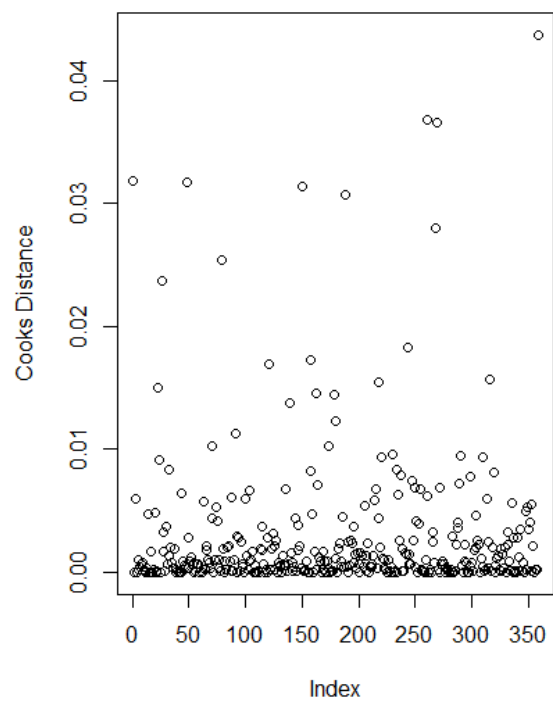
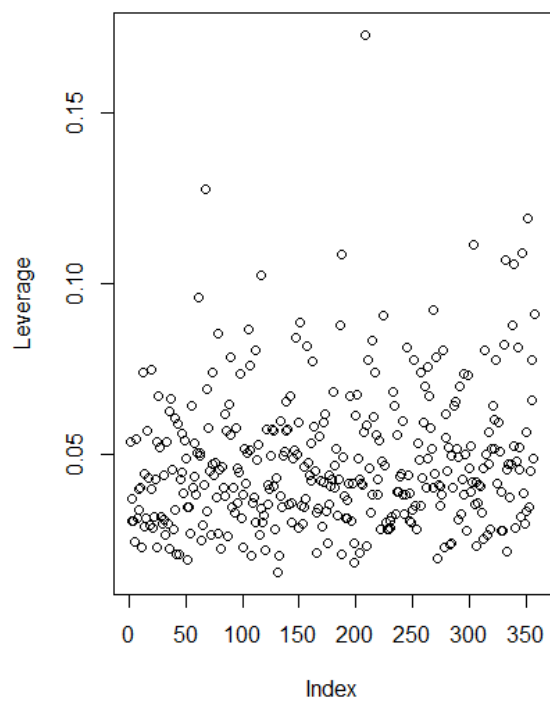


Table S15: Regression Model Results for Four-Choice Reaction Time Standard Deviation and Individual White Matter Tract Mean Diffusivity (n=358)

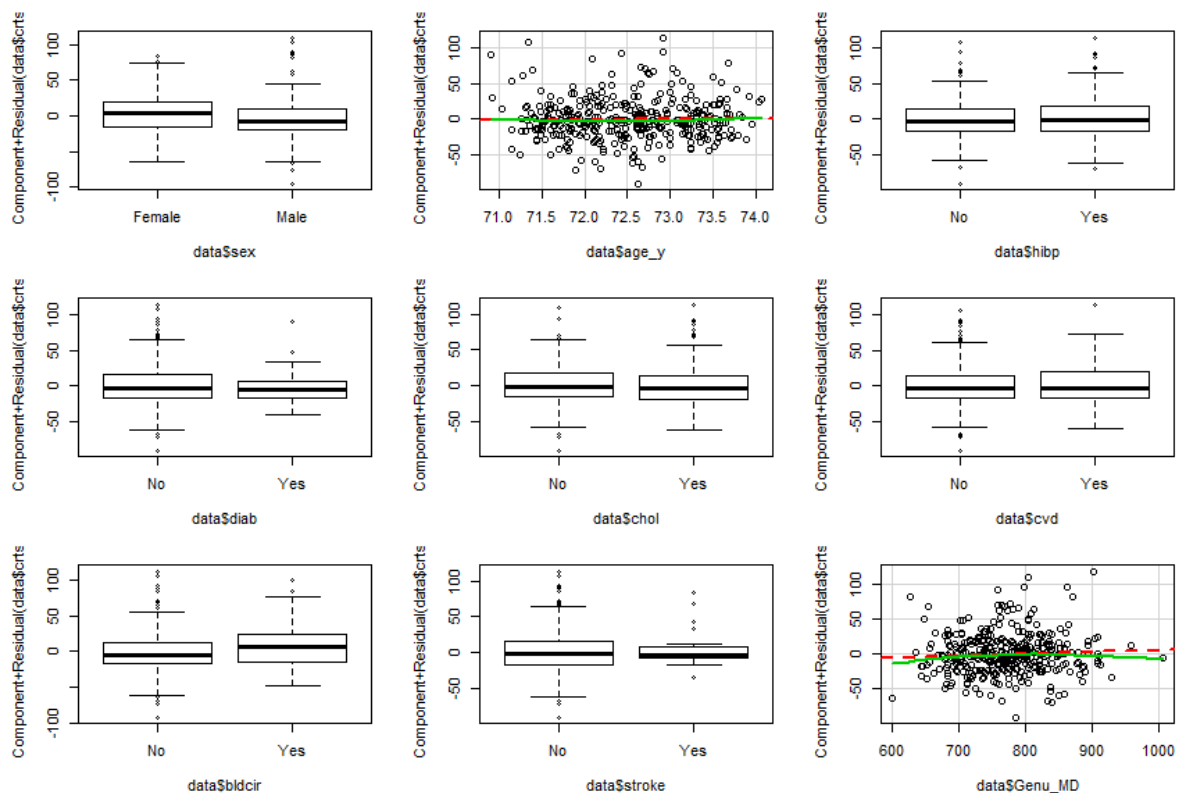
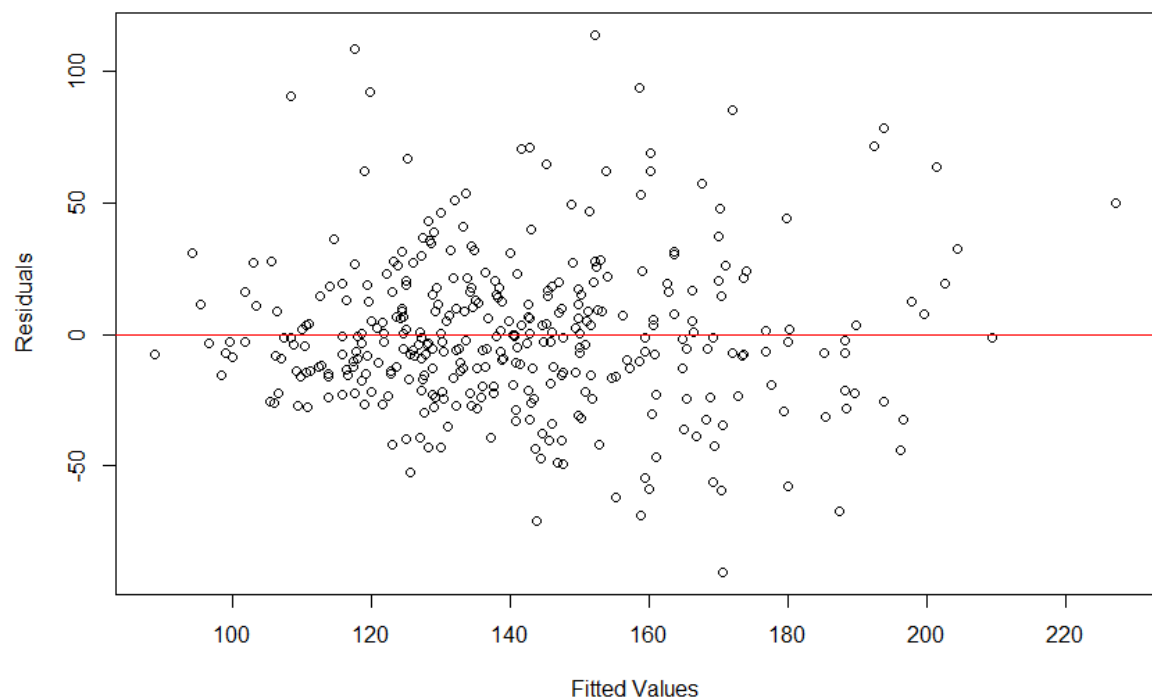
	Model 1			Model 2		
	b	se	p-value	b	se	p-value
Age	4.232	2.916	0.148	0.417	2.381	0.861
Sex	-7.763	4.461	0.083	-9.410	3.618	0.010
Hypertension	-1.081	4.328	0.803	0.798	3.511	0.820
Diabetes	0.957	6.932	0.890	-1.566	5.622	0.781
Cholesterol	2.428	4.300	0.573	-0.103	3.491	0.976
CVD	4.168	4.749	0.381	2.028	3.853	0.599
Blood Circulation	9.711	5.181	0.062	8.503	4.201	0.044
Stroke	11.829	8.805	0.180	6.167	7.15	0.389
Genu Corpus Callosum	-0.048	0.041	0.236	0.028	0.034	0.404
Splenium Corpus Callosum	-0.006	0.013	0.653	-0.009	0.011	0.404
Arcuate Fasciculus	0.034	0.067	0.608	0.004	0.054	0.935
Anterior Thalamic Radiation	0.118	0.050	0.018	0.021	0.041	0.604
Rostral Cingulum	-0.070	0.067	0.296	-0.045	0.055	0.408
Uncinate Fasciculus	0.007	0.061	0.914	-0.023	0.05	0.638
Inferior Longitudinal Thalamic Radiation	-0.028	0.034	0.413	-0.020	0.028	0.466
CRT SD	-	-	-	0.271	0.02	<.001
F	1.631	(15, 342)	0.064	13.54	(16, 341)	<.001
R-square	0.067			0.389		
Adjusted R-square	0.026			0.360		

Assumptions

Max VIF = 2.03



RUNNING HEAD: Speed Variability and White Matter Integrity



RUNNING HEAD: Speed Variability and White Matter Integrity

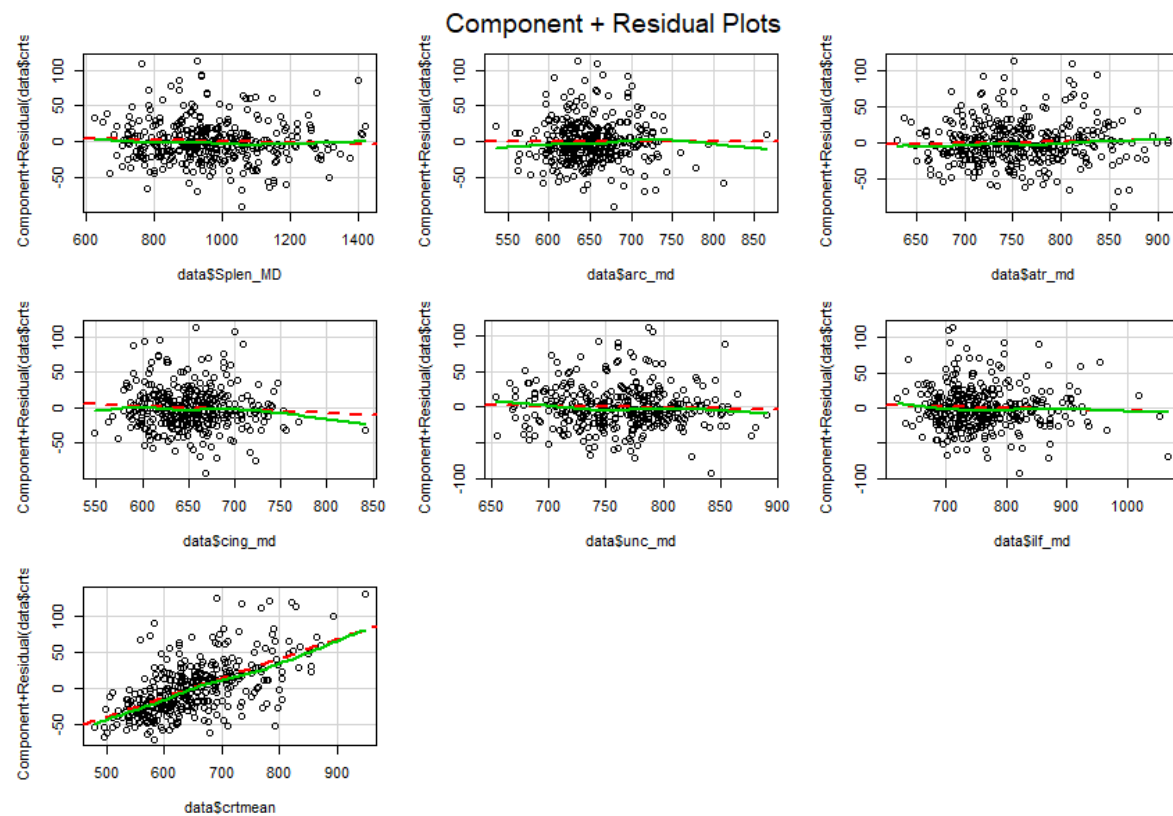
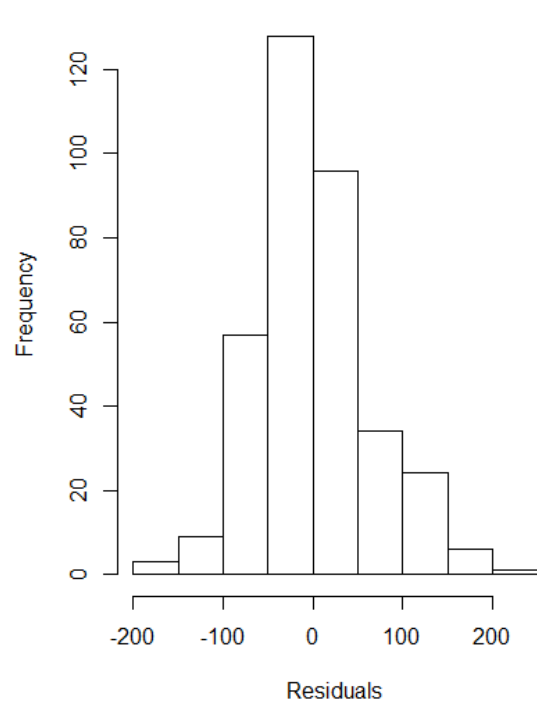
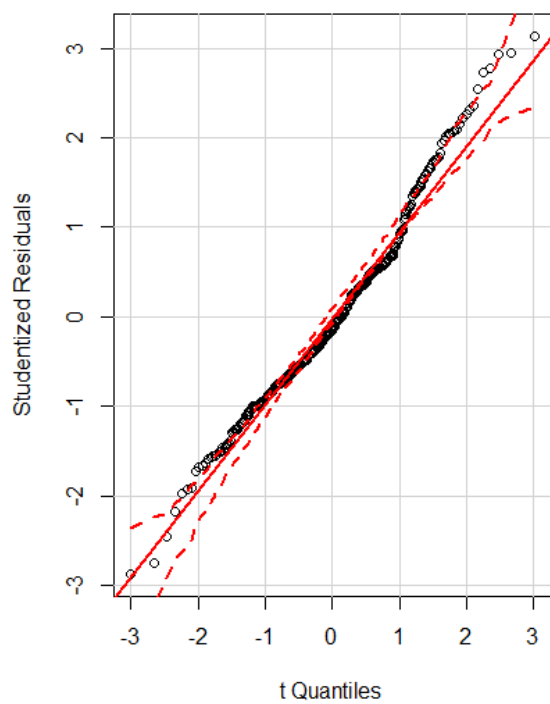
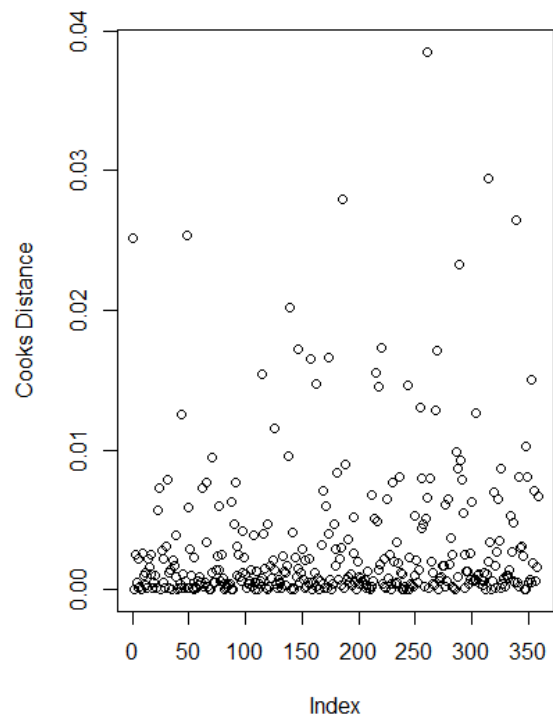
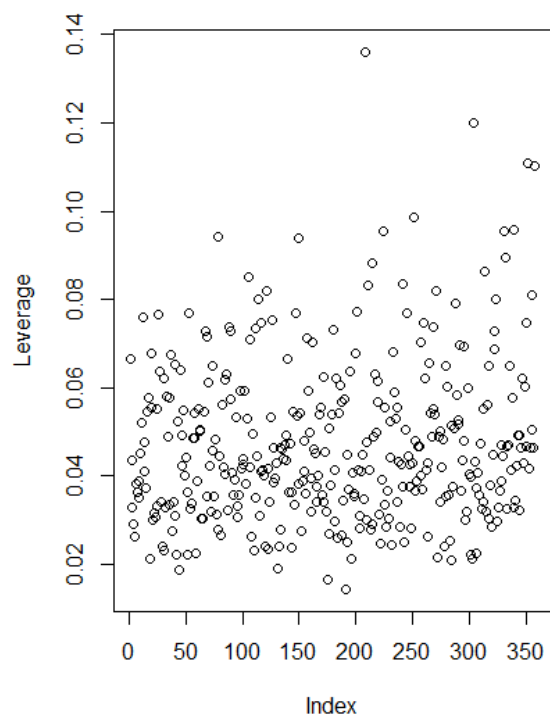


Table S16: Regression Model Results for Four-Choice Reaction Time Mean and Individual White Matter Tract Fractional Anisotropy (n=358)

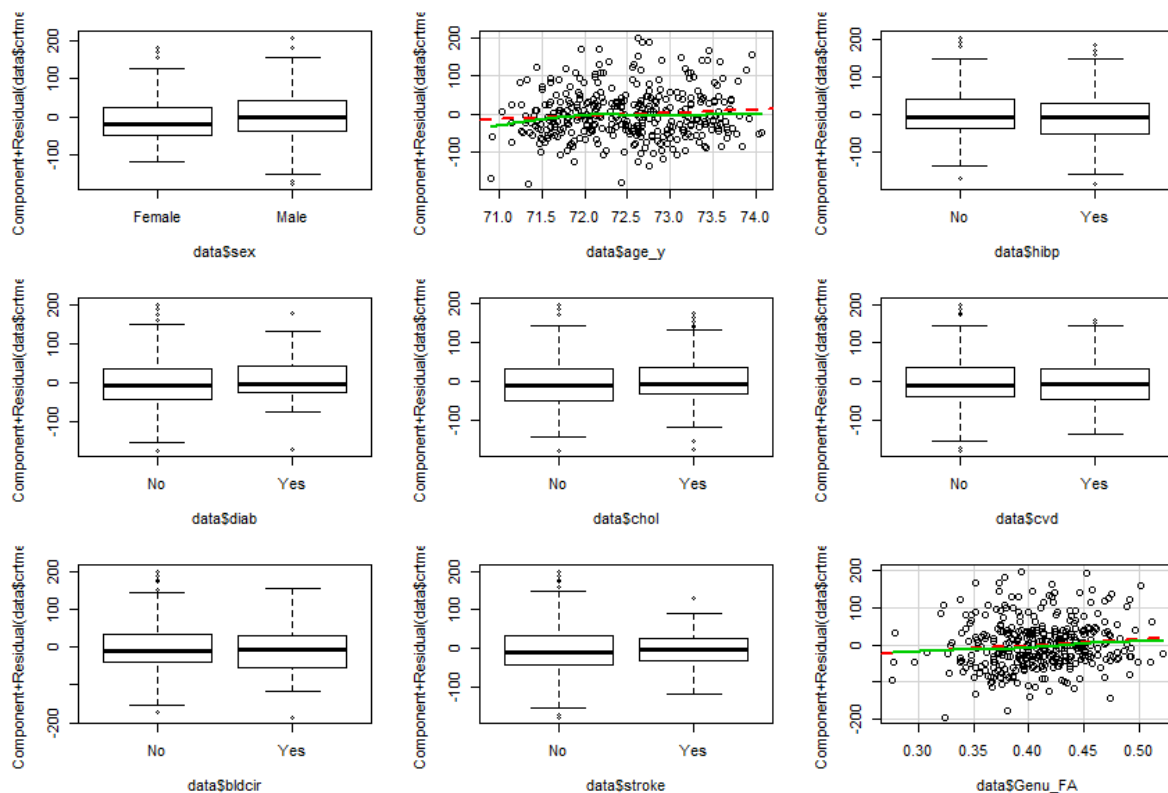
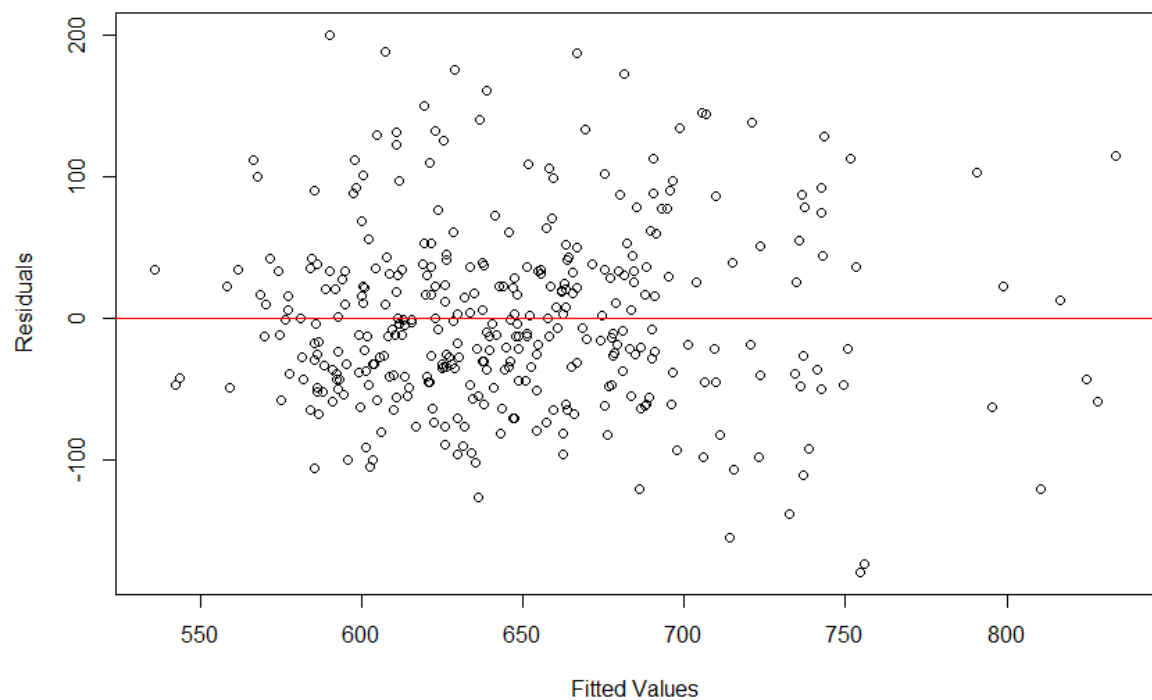
	Model 1			Model 2		
	b	se	p-value	b	se	p-value
Age	12.686	6.284	0.044	8.016	5.093	0.116
Sex	5.750	9.511	0.546	13.151	7.710	0.089
Hypertension	-8.014	9.470	0.398	-6.767	7.658	0.377
Diabetes	6.792	15.273	0.657	6.789	12.349	0.583
Cholesterol	10.278	9.420	0.276	6.795	7.621	0.373
CVD	5.341	10.368	0.607	0.227	8.392	0.978
Blood Circulation	5.760	11.361	0.612	-7.599	9.240	0.411
Stroke	14.799	19.367	0.445	1.466	15.691	0.926
Genu Corpus Callosum	329.459	123.842	0.008	166.735	100.859	0.099
Splenium Corpus Callosum	-82.013	70.876	0.248	-101.752	57.327	0.077
Arcuate Fasciculus	-42.756	156.520	0.785	-66.260	126.570	0.601
Anterior Thalamic Radiation	-397.711	194.057	0.041	-207.076	157.544	0.190
Rostral Cingulum	-155.810	143.375	0.278	-33.276	116.284	0.775
Uncinate Fasciculus	-104.604	218.738	0.633	-131.658	176.878	0.457
Inferior Longitudinal Thalamic Radiation	-39.258	147.698	0.791	-59.455	119.434	0.619
CRT SD	-	-	-	1.291	0.096	<.001
F	1.83	(15, 342)	0.034	14.01	(16, 341)	<.001
R-square	0.074			0.397		
Adjusted R-square	0.034			0.368		

Assumptions

Max VIF = 1.85



RUNNING HEAD: Speed Variability and White Matter Integrity



RUNNING HEAD: Speed Variability and White Matter Integrity

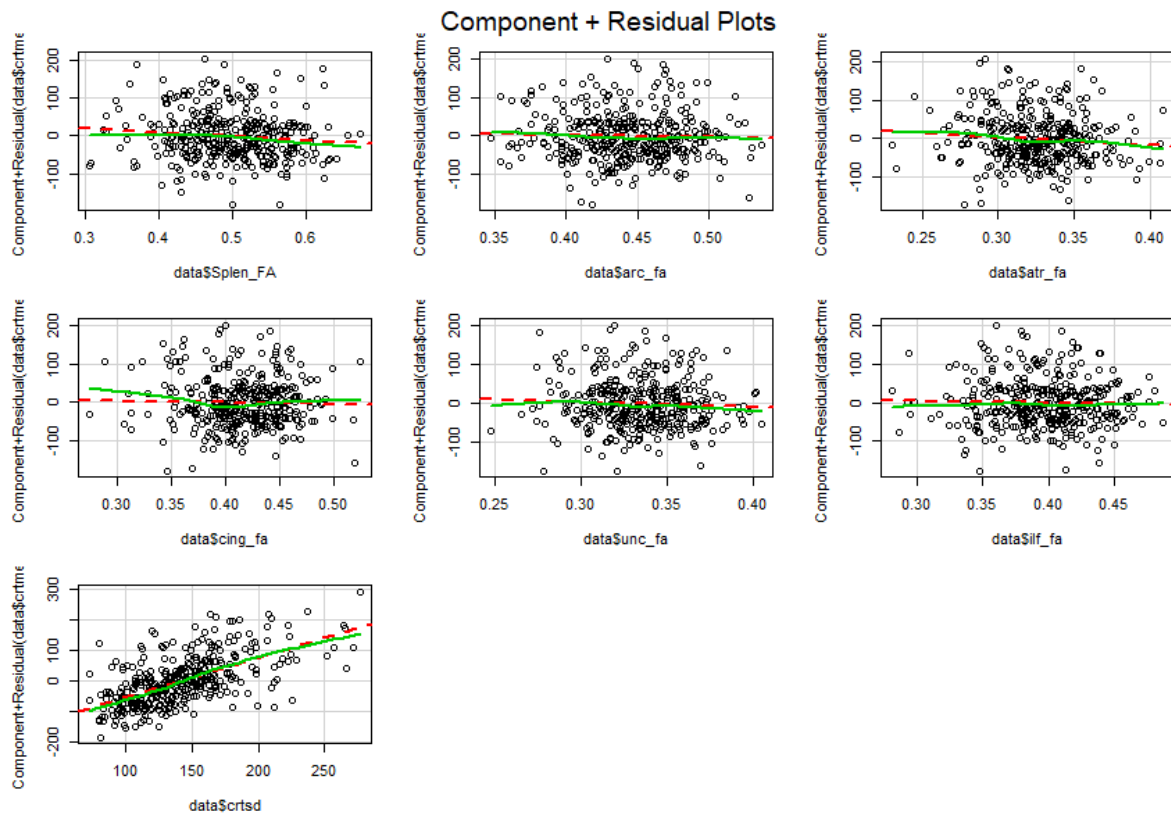
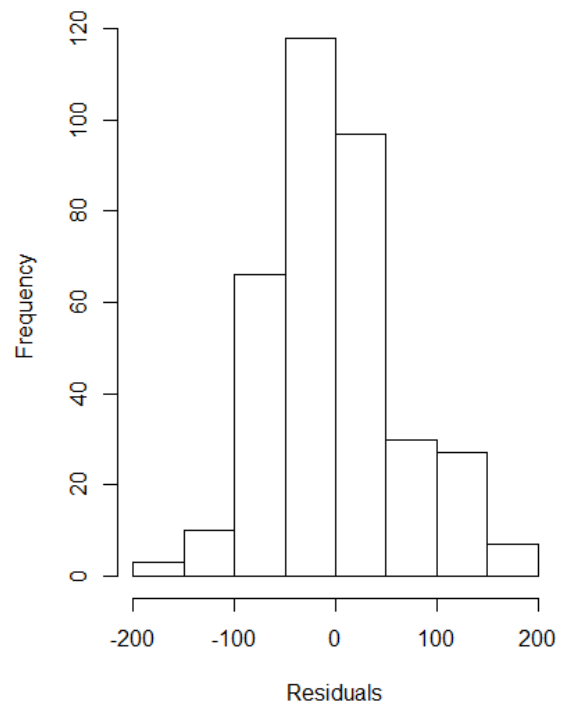
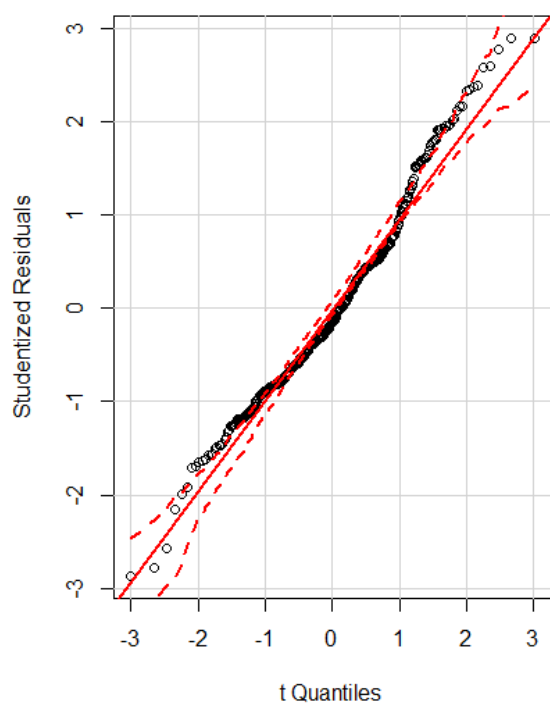
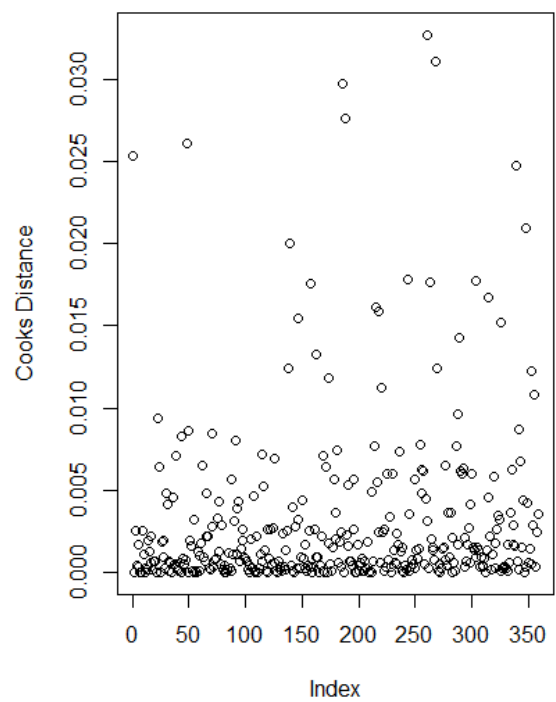
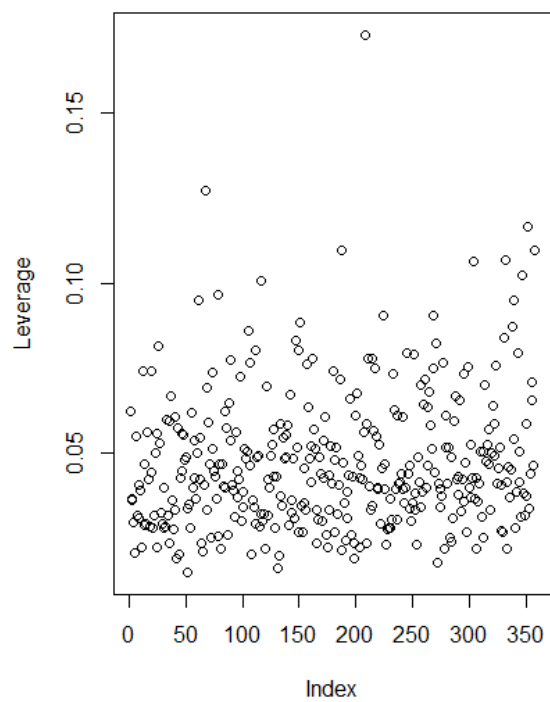


Table S17: Regression Model Results for Four-Choice Reaction Time Mean and Individual White Matter Tract Mean Diffusivity (n=358)

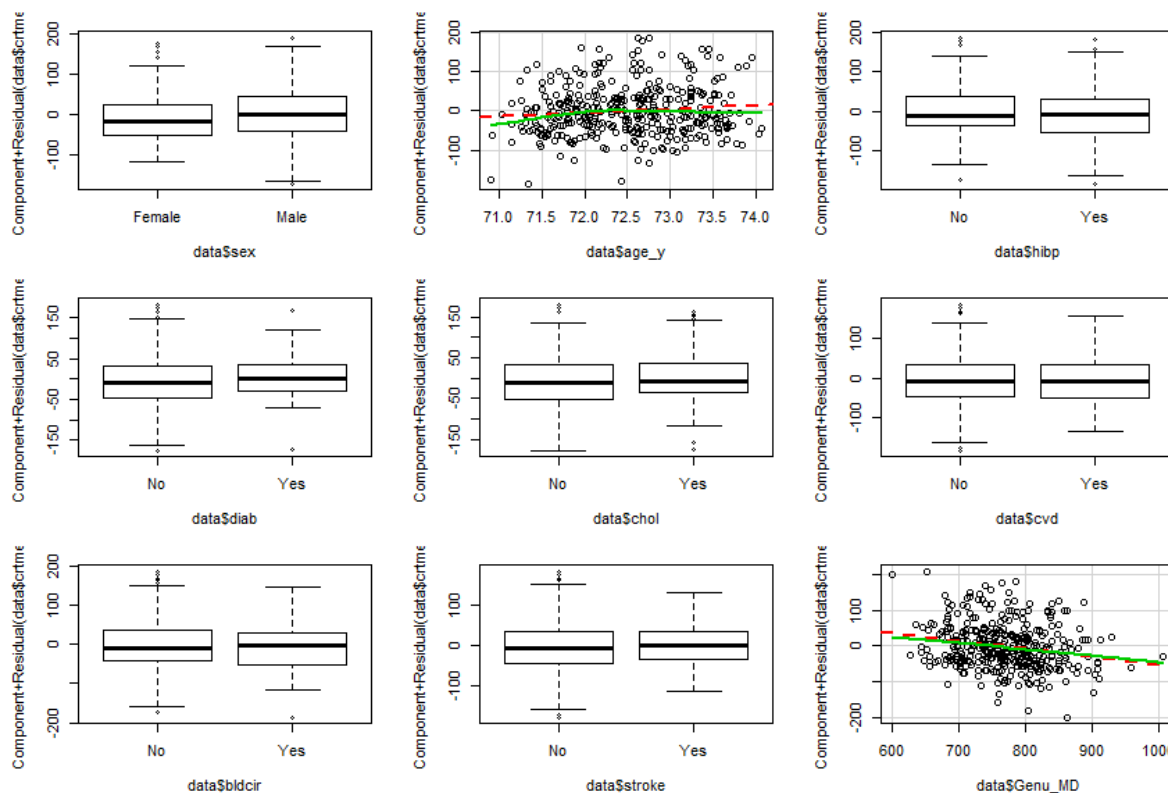
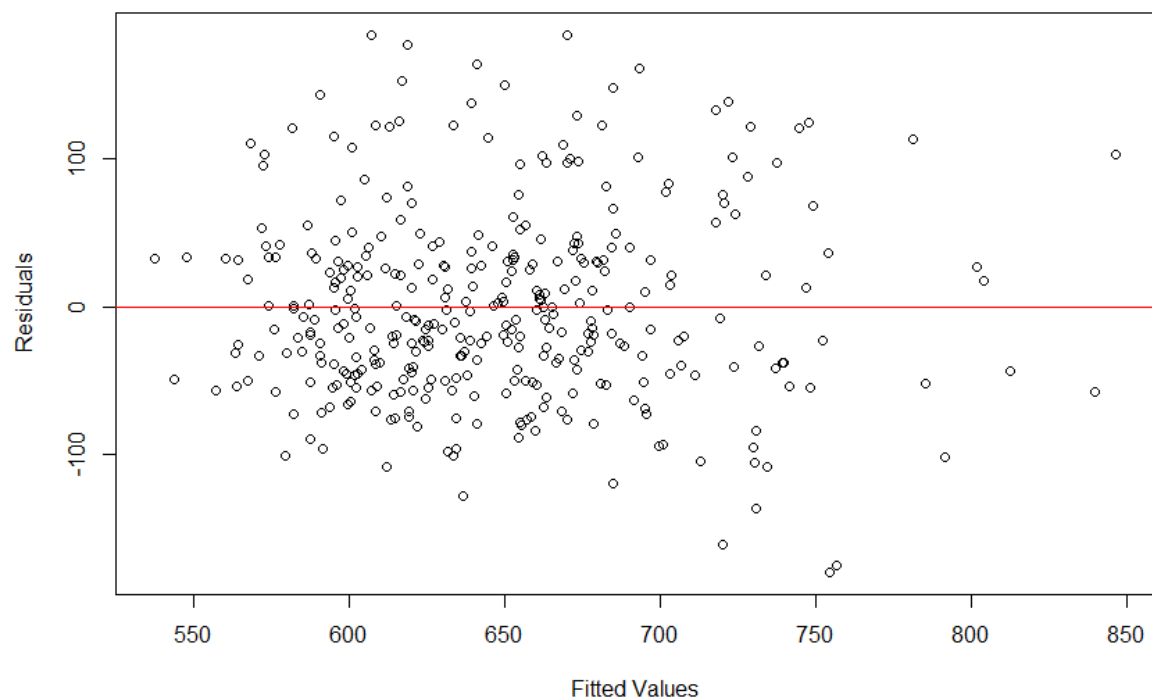
	Model 1			Model 2		
	b	se	p-value	b	se	p-value
Age	6.083	9.673	0.530	15.967	7.876	0.043
Sex	14.087	6.323	0.027	8.700	5.142	0.092
Hypertension	-6.938	9.385	0.460	-5.562	7.609	0.465
Diabetes	9.315	15.031	0.536	8.097	12.185	0.507
Cholesterol	9.348	9.325	0.317	6.256	7.563	0.409
CVD	7.905	10.299	0.443	2.598	8.358	0.756
Blood Circulation	4.460	11.234	0.692	-7.904	9.154	0.388
Stroke	20.912	19.092	0.274	5.852	15.519	0.706
Genu Corpus Callosum	-0.282	0.088	0.002	-0.221	0.072	0.002
Splenium Corpus Callosum	0.011	0.028	0.698	0.018	0.023	0.422
Arcuate Fasciculus	0.110	0.144	0.447	0.066	0.117	0.571
Anterior Thalamic Radiation	0.356	0.107	0.001	0.206	0.088	0.019
Rostral Cingulum	-0.093	0.146	0.524	-0.003	0.118	0.977
Uncinate Fasciculus	0.111	0.133	0.405	0.102	0.108	0.342
Inferior Longitudinal Thalamic Radiation	-0.029	0.075	0.697	0.007	0.061	0.910
CRT SD	-	-	-	1.273	0.095	<.001
F	2.192	(15, 342)	0.007	14.34	(16, 341)	<.001
R-square	0.088			0.402		
Adjusted R-square	0.048			0.374		

Assumptions

Max VIF = 2.02



RUNNING HEAD: Speed Variability and White Matter Integrity



RUNNING HEAD: Speed Variability and White Matter Integrity

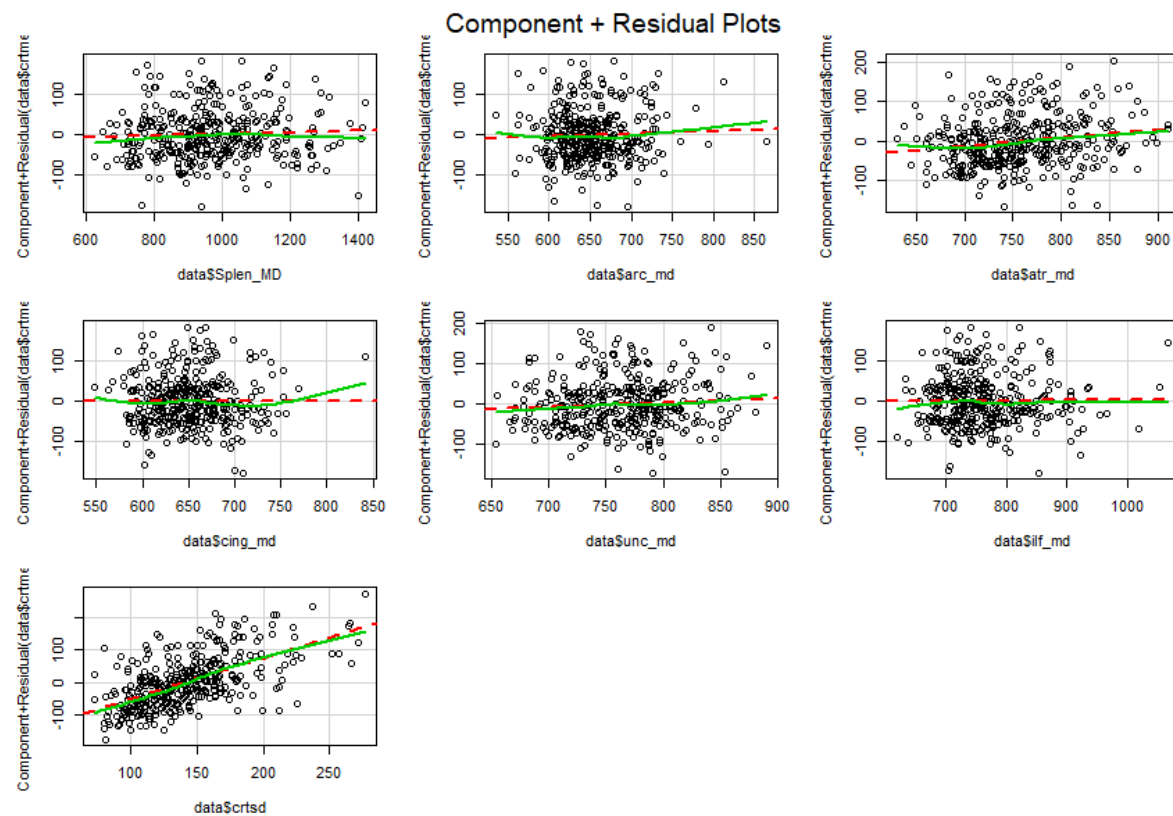
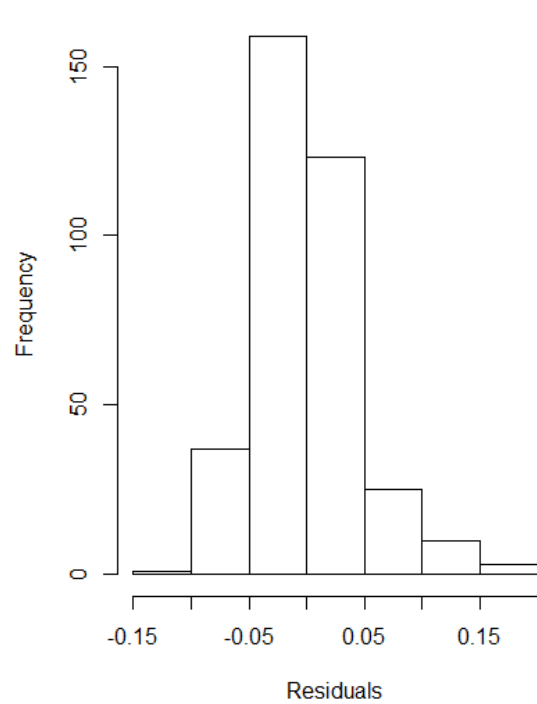
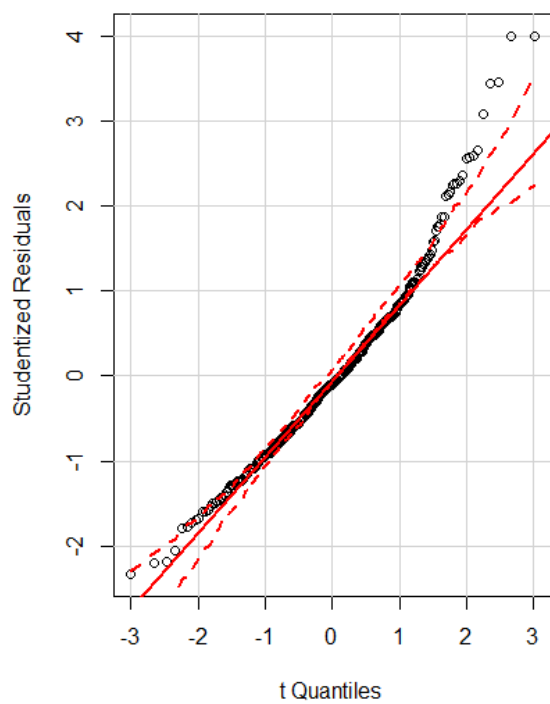
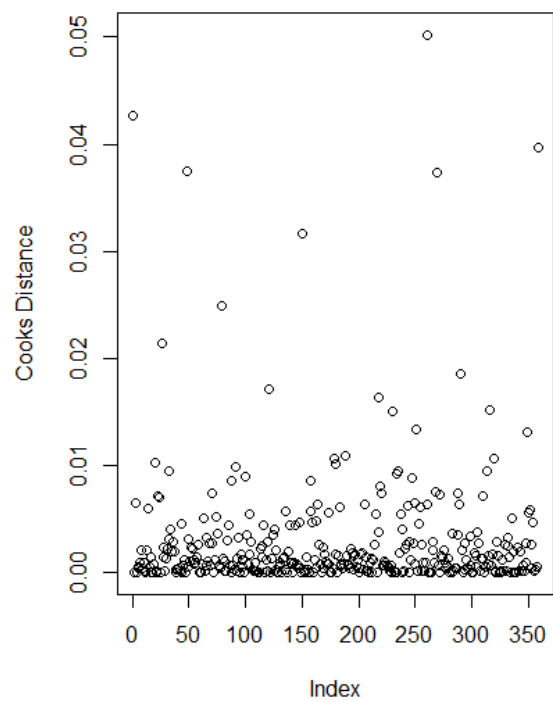
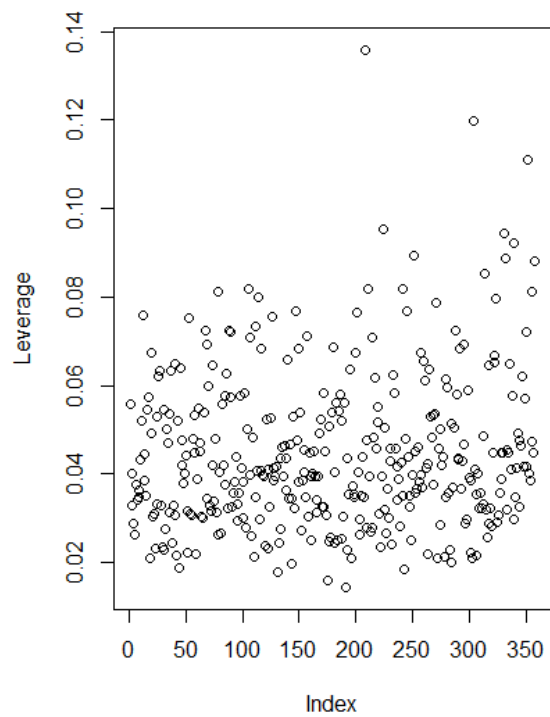


Table S18: Regression Model Results for Four-Choice Reaction Time CV and Individual White Matter Tract Fractional Anisotropy and Mean Diffusivity (n=358)

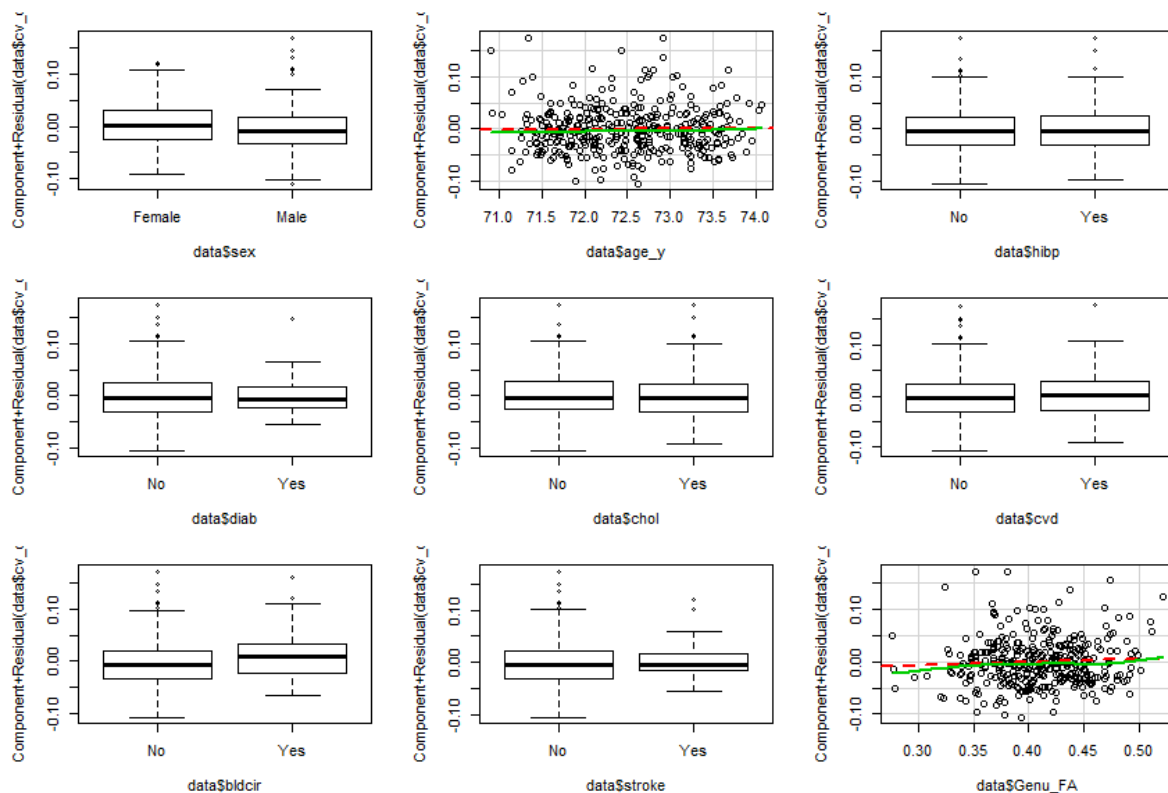
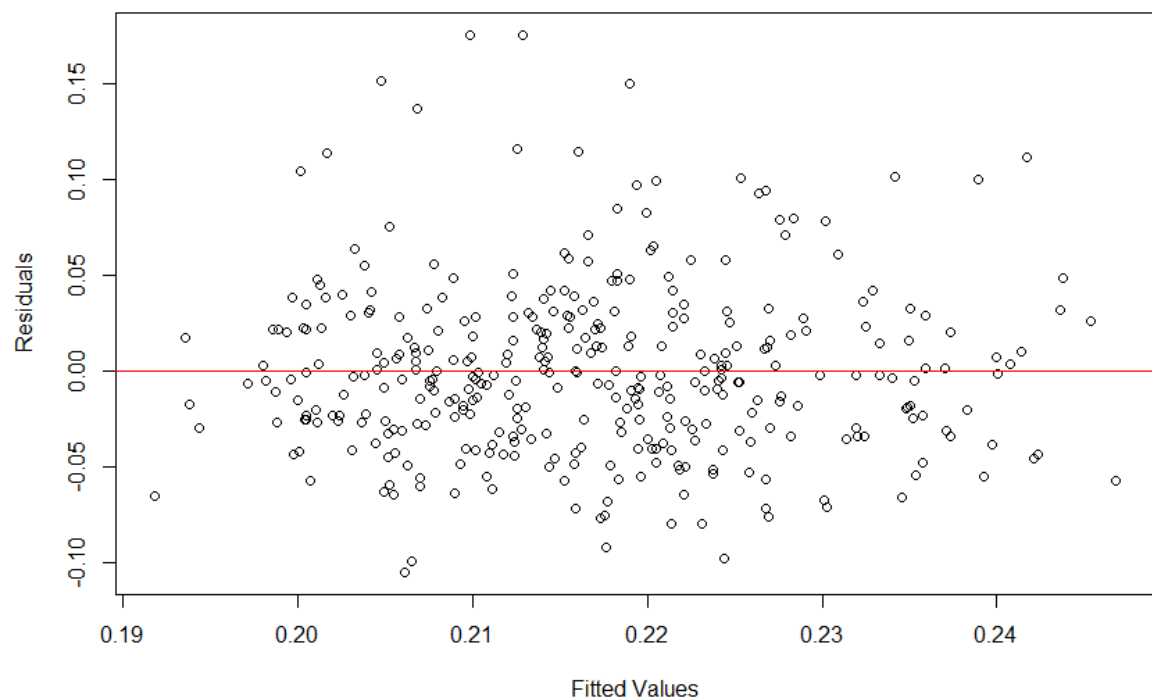
	FA			MD		
	b	se	p-value	b	se	p-value
Age	0.001	0.004	0.821	0.001	0.004	0.708
Sex	-0.011	0.005	0.046	-0.014	0.006	0.012
Hypertension	0.002	0.005	0.767	0.001	0.005	0.842
Diabetes	-0.001	0.009	0.862	-0.001	0.009	0.918
Cholesterol	0.000	0.005	0.998	0.000	0.005	0.981
CVD	0.003	0.006	0.553	0.003	0.006	0.588
Blood Circulation	0.013	0.006	0.044	0.012	0.006	0.054
Stroke	0.010	0.011	0.340	0.011	0.011	0.330
Genu Corpus Callosum	0.066	0.070	0.349	0.000	0.000	0.655
Splenium Corpus Callosum	0.051	0.040	0.198	0.000	0.000	0.472
Arcuate Fasciculus	0.063	0.088	0.476	0.000	0.000	0.849
Anterior Thalamic Radiation	-0.083	0.109	0.447	0.000	0.000	0.316
Rostral Cingulum	-0.100	0.081	0.217	0.000	0.000	0.385
Uncinate Fasciculus	0.070	0.123	0.573	0.000	0.000	0.777
Inferior Longitudinal	0.020	0.083	0.812	0.000	0.000	0.441
Thalamic Radiation						
F	1.436	(15, 342)	0.128	1.221	(15, 342)	0.253
R-square	0.059			0.051		
Adjusted R-square	0.018			0.009		

Assumptions – FA model

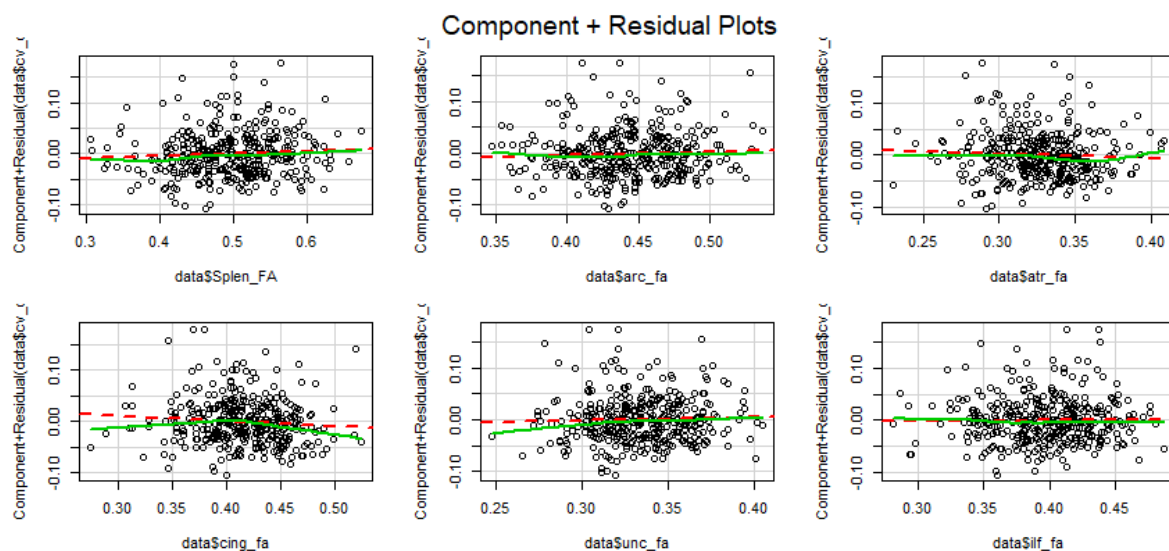
Max VIF = 1.85



RUNNING HEAD: Speed Variability and White Matter Integrity

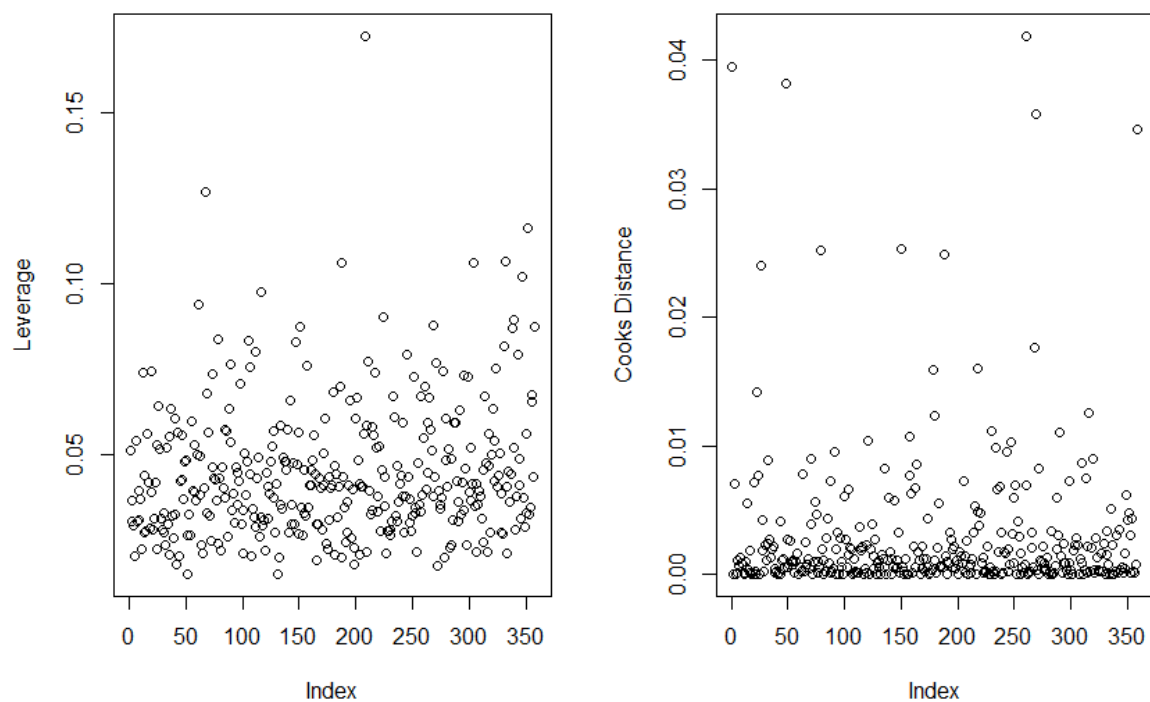


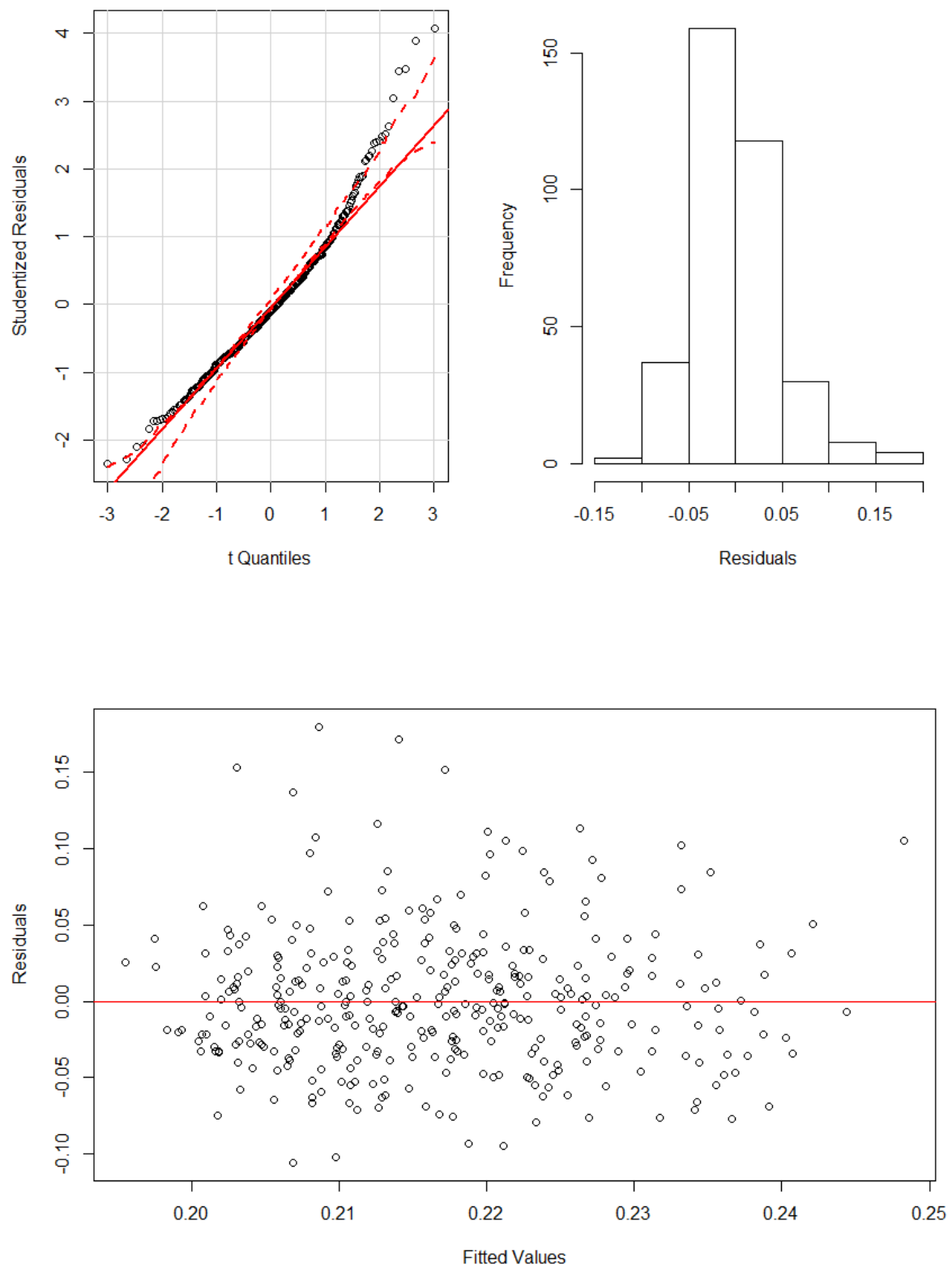
RUNNING HEAD: Speed Variability and White Matter Integrity



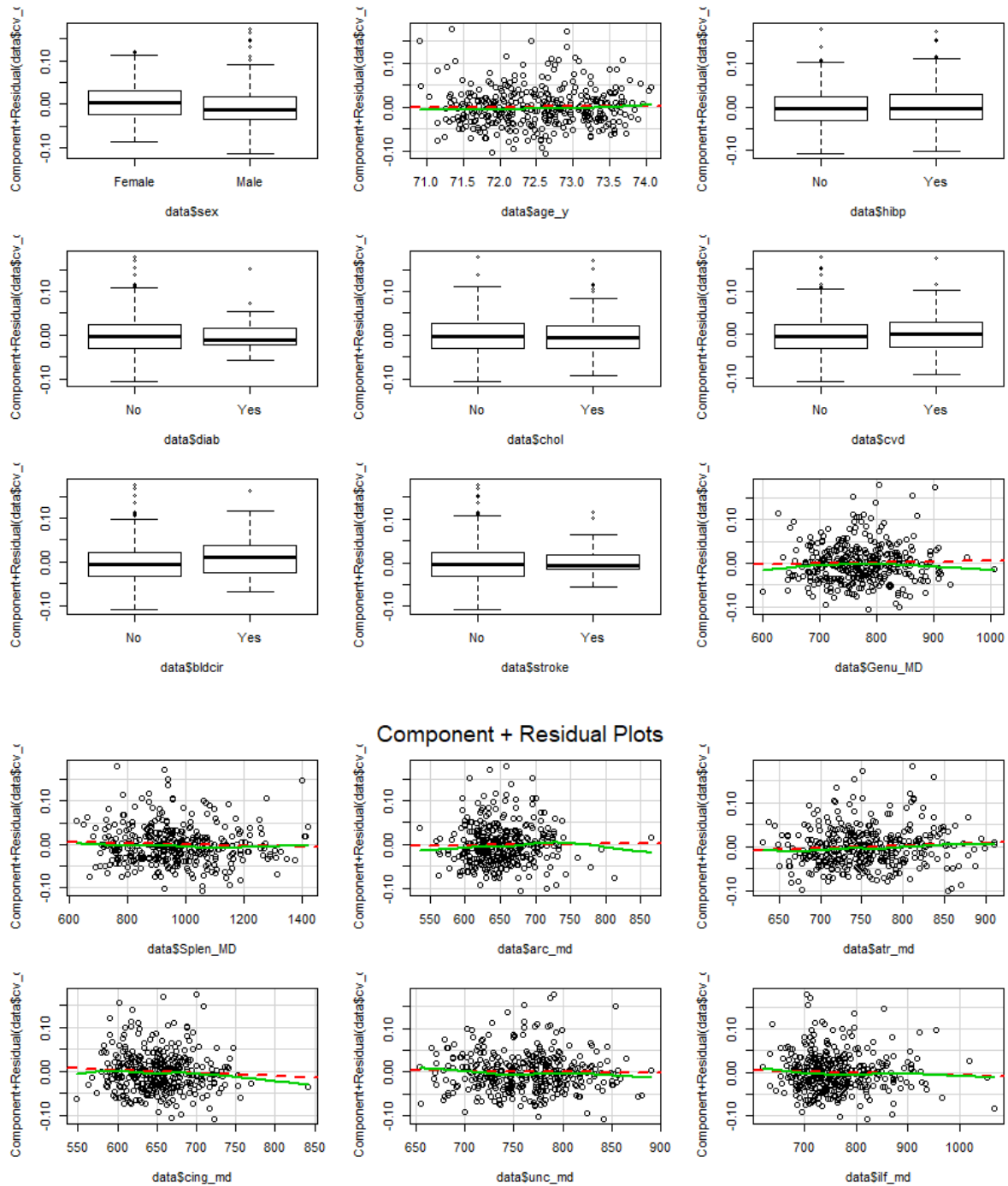
Assumptions – MD Model

Max VIF = 2.02





RUNNING HEAD: Speed Variability and White Matter Integrity



Robust regression

Table S19: Robust regression results for Choice Reaction Time Standard Deviation for the primary imaging predictors

	Value	SE	t-value	Value	SE	t-value	Value	SE	t-value	Value	SE	t-value
<i>Predictors</i>												
Sex	-10.797	2.085	-5.178	-0.189	1.438	-0.132	-10.807	2.136	-5.060	-10.84	2.130	-5.090
Age (Years)	-0.268	1.466	-0.183	-10.968	2.059	-5.328	0.007	1.504	0.005	-0.019	1.505	-0.013
Hypertension	0.060	2.167	0.027	0.474	2.142	0.221	0.102	2.205	0.046	-0.0800	2.184	-0.037
Diabetes	-2.284	3.462	-0.660	-3.022	3.428	-0.882	-2.435	3.562	-0.684	-2.35	3.551	-0.662
Cholesterol	-0.126	2.244	-0.056	-0.024	2.219	-0.011	-0.105	2.293	-0.046	-0.026	2.282	-0.011
CVD	5.256	2.388	2.201	5.675	2.362	2.403	5.801	2.432	2.386	5.717	2.422	2.361
Blood Circulation	3.453	2.724	1.267	3.661	2.700	1.356	4.038	2.778	1.454	4.056	2.768	1.465
Stroke	5.601	4.114	1.361	5.396	4.110	1.313	6.135	4.132	1.485	5.979	4.113	1.454
CRT Mean	0.269	0.012	22.195	0.270	0.012	22.431	0.271	0.012	21.985	0.270	0.012	22.165
WMH Volume	0.567	1.048	0.541									
Wahlund: Frontal				4.777	2.881	1.658						
Wahlund: Parieto-Occipital				-5.577	2.762	-2.019						
Wahlund: Basal Ganglia				-3.750	5.974	-0.628						
Wahlund: Temporal				-1.880	9.801	-0.192						
Wahlund: Infratentorial				6.712	7.362	0.912						
gFA							-1.204	1.163	-1.035			
gMD										-0.761	1.136	-0.670

Table S20: Robust regression results for Choice Reaction Time Mean for the primary imaging predictors

	Value	SE	t-value	Value	SE	t-value	Value	SE	t-value	Value	SE	t-value
<i>Predictors</i>												
Sex	20.287	5.027	4.035	20.205	5.108	3.956	20.796	5.194	4.004	20.989	5.208	4.031
Age (Years)	6.716	3.497	1.920	7.511	3.527	2.130	6.787	3.619	1.875	6.945	3.643	1.906
Hypertension	-1.182	5.192	-0.228	-1.201	5.281	-0.227	-2.066	5.333	-0.388	-0.25	5.313	-0.047
Diabetes	17.985	8.279	2.172	18.346	8.435	2.175	18.490	8.595	2.151	17.37	8.620	2.015
Cholesterol	5.299	5.373	0.986	5.141	5.468	0.940	6.843	5.538	1.235	6.168	5.544	1.112
CVD	-3.541	5.738	-0.617	-3.579	5.843	-0.613	-6.476	5.895	-1.098	-5.917	5.906	-1.002
Blood Circulation	-0.627	6.544	-0.096	-0.551	6.676	-0.082	-3.398	6.735	-0.504	-3.415	6.750	-0.506
Stroke	-3.917	9.874	-0.397	-3.298	10.153	-0.325	-4.134	10.011	-0.413	-3.195	10.024	-0.319
CRT SD	1.499	0.068	22.068	1.495	0.069	21.599	1.501	0.069	21.711	1.506	0.069	21.768
WMH Volume	5.345	2.501	2.137									
Wahlund: Frontal				6.173	7.108	0.869						
Wahlund: Parieto-Occipital				9.929	6.822	1.456						
Wahlund: Basal Ganglia				-13.698	14.722	-0.93						
Wahlund: Temporal				33.373	24.146	1.382						
Wahlund: Infratentorial				19.424	18.158	1.07						
gFA							9.847	2.784	3.537			
gMD										5.474	2.755	1.987

Table S21: Robust regression results for Choice Reaction Time Coefficient of Variation for the primary imaging predictors

	Value	SE	t-value	Value	SE	t-value	Value	SE	t-value	Value	SE	t-value
<i>Predictors</i>												
Sex	-0.017	0.003	-5.060	-0.017	0.003	-5.133	-0.017	0.003	-4.897	-0.017	0.003	-4.893
Age (Years)	0.001	0.002	0.308	0.001	0.002	0.425	0.001	0.002	0.536	0.001	0.002	0.519
Hypertension	-0.001	0.003	-0.205	0.000	0.003	-0.002	-0.001	0.004	-0.175	-0.001	0.004	-0.221
Diabetes	-0.001	0.005	-0.245	-0.002	0.006	-0.431	-0.001	0.006	-0.263	-0.001	0.006	-0.245
Cholesterol	0.000	0.004	0.037	0.000	0.004	0.034	0.000	0.004	0.103	0.000	0.004	0.112
CVD	0.009	0.004	2.332	0.010	0.004	2.548	0.009	0.004	2.436	0.009	0.004	2.423
Blood Circulation	0.007	0.004	1.564	0.007	0.004	1.661	0.008	0.004	1.699	0.008	0.004	1.705
Stroke	0.010	0.007	1.597	0.010	0.007	1.539	0.011	0.007	1.731	0.011	0.007	1.703
WMH Volume	0.002	0.002	1.049									
Wahlund: Frontal				0.009	0.005	2.019						
Wahlund: Parieto-Occipital				-0.009	0.004	-1.948						
Wahlund: Basal Ganglia				-0.008	0.010	-0.825						
Wahlund: Temporal				0.002	0.016	0.154						
Wahlund: Infratentorial				0.014	0.012	1.160						
gFA							-0.001	0.002	-0.451			
gMD										0.000	0.002	-0.219

Cardiovascular disease models

Table S22: Standardized beta estimates for the final models predicting CRT SD in subsamples based on CVD status

	CVD			No CVD		
	<i>b</i>	<i>se</i>	<i>p</i> -value	<i>b</i>	<i>se</i>	<i>p</i> -value
Sex	-14.367	4.221	0.001	-9.056	2.666	0.001
Age	-1.452	3.033	0.633	0.549	1.880	0.770
Hypertension	0.921	4.343	0.832	-0.396	2.793	0.887
Diabetes	-3.730	5.764	0.518	0.001	5.030	1.000
Cholesterol	-2.422	4.257	0.570	1.369	2.953	0.643
Blood Circulation	8.483	5.500	0.125	3.892	3.519	0.269
CRT Mean	0.278	0.023	<.001	0.259	0.016	<.001
WMH Volume	-0.300	2.150	0.889	1.149	1.331	0.389
Wahlund: Frontal	5.923	5.949	0.321	4.670	3.781	0.217
Wahlund: Parieto-Occipital	-7.701	5.315	0.149	-5.342	3.743	0.154
Wahlund: Basal Ganglia	-7.066	10.142	0.487	0.889	8.943	0.921
Wahlund: Temporal	-2.842	18.393	0.877	-2.620	13.371	0.845
Wahlund: Infratentorial	10.994	12.845	0.393	2.928	10.655	0.784
gFA	-4.211	2.177	0.054	-0.351	1.584	0.825
gMD	-1.584	2.272	0.486	-0.785	1.494	0.600

Note: Group 1 (CVD) = those with history of CVD or stroke (N=214); Group 2 (No CVD) = excluding all participants with CVD or stroke history (N=456). Covariate effects taken from the WMH model.

Table S23: Standardized beta estimates for the final models predicting CRT Mean in subsamples based on CVD status

	CVD			No CVD		
	<i>b</i>	<i>se</i>	<i>p</i> -value	<i>b</i>	<i>se</i>	<i>p</i> -value
Age	23.536	9.823	0.017	18.582	6.311	0.003
Sex	15.698	6.879	0.024	6.847	4.424	0.122
Hypertension	-5.576	9.962	0.576	-0.019	6.589	0.998
Diabetes	13.608	13.211	0.304	17.745	11.838	0.135
Cholesterol	12.892	9.739	0.187	1.887	6.969	0.787
Blood Circulation	-10.159	12.680	0.424	1.081	8.313	0.897
CRT SD	1.464	0.124	<.001	1.442	0.088	<.001
WMH Volume	9.480	4.891	0.054	5.017	3.135	0.110
Wahlund: Frontal	9.086	13.723	0.509	12.241	8.871	0.168
Wahlund: Parieto-Occipital	16.952	12.252	0.168	7.870	8.799	0.372
Wahlund: Basal Ganglia	-19.882	23.352	0.396	-12.315	20.984	0.558
Wahlund: Temporal	13.422	42.367	0.752	38.080	31.336	0.225
Wahlund: Infratentorial	20.617	29.612	0.487	6.544	25.011	0.794
gFA	14.275	4.860	0.004	10.707	3.685	0.004
gMD	3.559	5.194	0.494	7.607	3.506	0.031

Note: Group 1 (CVD) = those with history of CVD or stroke (N=214); Group 2 (No CVD) = excluding all participants with CVD or stroke history (N=456). Covariate effects taken from the WMH model.

Table S24: Standardized beta estimates for the final models predicting CRT CV in subsamples based on CVD status

	CVD			No CVD		
	<i>b</i>	<i>se</i>	<i>p</i> -value	<i>b</i>	<i>se</i>	<i>p</i> -value
Age	-0.020	0.006	0.002	-0.014	0.004	0.001
Sex	-0.001	0.004	0.827	0.001	0.003	0.635
Hypertension	0.000	0.006	0.962	-0.001	0.004	0.851
Diabetes	-0.005	0.009	0.600	0.001	0.008	0.875
Cholesterol	-0.003	0.006	0.622	0.002	0.005	0.652
Blood Circulation	0.014	0.008	0.079	0.006	0.005	0.264
WMH Volume	0.002	0.003	0.541	0.002	0.002	0.274
Wahlund: Frontal	0.012	0.009	0.164	0.009	0.006	0.104
Wahlund: Parieto-Occipital	-0.011	0.008	0.167	-0.009	0.006	0.113
Wahlund: Basal Ganglia	-0.016	0.015	0.291	-0.001	0.014	0.949
Wahlund: Temporal	0.001	0.027	0.965	0.001	0.021	0.960
Wahlund: Infratentorial	0.019	0.019	0.308	0.008	0.016	0.631
gFA	-0.004	0.003	0.195	0.001	0.002	0.754
gMD	-0.001	0.003	0.847	0.000	0.002	0.902

Note: Group 1 (CVD) = those with history of CVD or stroke (N=214); Group 2 (No CVD) = excluding all participants with CVD or stroke history (N=456). Covariate effects taken from the WMH model.