

**Supplemental Table S1. Association of cognitive performance and brain imaging for the subset with a baseline exam<sup>1</sup>**

Variable	3MSE <sup>2</sup>	DSST <sup>2</sup>	Stroop <sup>3</sup>	RAVLT <sup>2</sup>	Phonemic Fluency	Semantic Fluency	
GMFA <sup>2</sup>	β Estimate (CI) 0.44 (-0.33, 1.21)	2.40 (0.90, 3.89)	-0.07 (-0.14, -0.01)	0.54 (-0.57, 1.66)	0.85 (-0.45, 2.14)	0.98 (-0.02, 1.99)	
	p-value	0.260	0.0016	0.023	0.338	0.199	0.056
GMMD <sup>2</sup>	β Estimate (CI) -0.52 (-1.31, 0.27)	-1.48 (-3.30, 0.35)	0.04 (-0.002, 0.09)	-0.87 (-1.96, 0.21)	-1.79 (-3.49, -0.09)	-1.99 (-2.98, -0.99)	
	p-value	0.194	0.113	0.059	0.114	0.039	<b>8.9 x 10<sup>-5</sup></b>
WMMD <sup>2</sup>	β Estimate (CI) -0.13 (-0.79, 0.52)	-1.13 (-2.51, 0.25)	0.04 (0.002, 0.08)	-0.81 (-1.69, 0.07)	-1.74 (-3.09, -0.40)	-1.26 (-2.08, -0.44)	
	p-value	0.689	0.110	0.040	0.070	0.011	0.003

<sup>1</sup> All models adjusted for age, gender, educational attainment, type 2 diabetes, and hypertension.

<sup>2</sup> 3MSE: Modified Mini Mental State Exam; DSST: Digit Symbol Substitution; RAVLT: Rey Auditory-Verbal Learning Task; GMFA: Fractional anisotropy gray matter; GMMD: Mean diffusivity gray matter; WMMD: Mean diffusivity white matter

<sup>3</sup> Stroop is log transformed.

**Supplemental Table S2. Association of cognitive performance and standardized brain imaging in the full Mind sample<sup>1</sup>**

Variable	3MSE <sup>2</sup>	DSST <sup>2</sup>	Stroop <sup>3</sup>	RAVLT <sup>2</sup>	Phonemic Fluency	Semantic Fluency	
TBV <sup>23</sup>	β Estimate (CI)	4.35 (1.36, 7.34)	10.17 (5.78, 14.55)	-0.21 (-0.44, 0.02)	5.76 (2.94, 8.57)	6.95 (3.42, 10.48)	5.63 (3.19, 8.06)
	p-value	0.004	<b>6.0 x 10<sup>-6</sup></b>	0.075	<b>6.1 x 10<sup>-5</sup></b>	<b>1.2 x 10<sup>-4</sup></b>	<b>6.0 x 10<sup>-6</sup></b>
WMLV <sup>23</sup>	β Estimate (CI)	-0.90 (-1.47, -0.33)	-3.64 (-4.81, -2.47)	0.06 (0.01, 0.10)	-1.68 (-2.52, -0.83)	-1.68 (-2.65, -0.71)	-1.58 (-2.23, -0.93)
	p-value	2.0 x 10 <sup>-3</sup>	<b>2.2 x 10<sup>-7</sup></b>	0.016	<b>9.9 x 10<sup>-5</sup></b>	<b>6.8 x 10<sup>-4</sup></b>	<b>2.0 x 10<sup>-6</sup></b>
GMV <sup>2</sup>	β Estimate (CI)	2.42 (1.23, 3.62)	4.94 (2.88, 7.00)	-0.13 (-0.22, -0.04)	1.49 (0.10, 2.88)	2.18 (0.44, 3.92)	2.40 (1.20, 3.60)
	p-value	<b>7.3 x 10<sup>-5</sup></b>	<b>2.0 x 10<sup>-6</sup></b>	0.005	0.035	0.014	<b>8.5 x 10<sup>-5</sup></b>
WMV <sup>23</sup>	β Estimate (CI)	-0.19 (-1.41, 1.03)	0.15 (-2.45, 2.74)	0.02 (-0.06, 0.11)	1.47 (-0.17, 3.10)	1.71 (-0.51, 3.92)	0.43 (-1.05, 1.92)
	p-value	0.762	0.912	0.592	0.079	0.131	0.566
WMFA <sup>2</sup>	β Estimate (CI)	0.62 (0.10, 1.13)	1.25 (0.19, 2.31)	-0.04 (-0.07, -0.001)	1.20 (0.53, 1.86)	1.22 (0.28, 2.15)	0.95 (0.32, 1.57)
	p-value	0.020	0.021	0.043	<b>4.5 x 10<sup>-4</sup></b>	0.011	3.0 x 10 <sup>-3</sup>
GMCBF <sup>23</sup>	β Estimate (CI)	-0.41 (-0.93, 0.11)	0.36 (-0.79, 1.50)	-0.04 (-0.08, -0.001)	0.99 (0.25, 1.73)	0.55 (-0.36, 1.45)	0.54 (-0.19, 1.27)
	p-value	0.122	0.540	0.043	8.5 x 10 <sup>-3</sup>	0.239	0.145
GMFA <sup>24</sup>	β Estimate (CI)	0.30 (-0.18, 0.79)	-0.17 (-1.20, 0.85)	-0.003 (-0.04, 0.03)	0.72 (-0.04, 1.48)	0.61 (-0.23, 1.45)	0.26 (-0.38, 0.90)
	p-value	0.218	0.740	0.877	0.064	0.155	0.421
GMMD <sup>24</sup>	β Estimate (CI)	-0.73 (-1.4, -0.06)	-1.67 (-3.25, -0.10)	0.04 (0.001, 0.09)	-0.95 (-1.92, 0.03)	-1.64 (-3.02, -0.26)	-1.65 (-2.55, -0.76)
	p-value	0.033	0.037	0.044	0.058	0.019	<b>3.0 x 10<sup>-4</sup></b>
WMMD <sup>24</sup>	β Estimate (CI)	-0.37 (-0.93, 0.19)	-1.24 (-2.46, -0.03)	0.03 (-9.2 x 10 <sup>-5</sup> , 0.07)	-0.94 (-1.70, -0.19)	-1.44 (-2.57, -0.31)	-1.20 (-1.90, -0.51)
	p-value	0.196	0.045	0.050	0.015	0.013	<b>6.8 x 10<sup>-4</sup></b>

<sup>1</sup> All models adjusted for age, gender, educational attainment, type 2 diabetes, and hypertension; TBV, WMLV, GMV, and WMV additionally adjusted for intracranial volume

<sup>2</sup> 3MSE: Modified Mini Mental State Exam; DSST: Digit Symbol Substitution; RAVLT: Rey Auditory-Verbal Learning Task; TBV: Total brain volume; WMLV: Total white matter lesion volume; GMV: Gray matter volume; WMV: White matter volume; WMFA: Fractional anisotropy white matter; GMCBF: Gray matter cerebral blood flow; GMFA: Fractional anisotropy gray matter; GMMD: Mean diffusivity gray matter; WMMD: Mean diffusivity white matter

<sup>3</sup> Stroop, TBV, WMLV, and WMV are log transformed. GMCBF is squared root transformed.

<sup>4</sup> Not primary interest

**Supplemental Table S3. Association of brain imaging (standardized) and coronary artery calcified plaque (standardized) for the subset with a baseline exam<sup>1</sup>**

Variable		GMFA <sup>2</sup>	GMMD <sup>2</sup>	WMMD <sup>2</sup>
Coronary calcified plaque <sup>3</sup>	$\beta$ Estimate (CI)	0.06 (-0.02, 0.13)	0.10 (0.02, 0.17)	0.04 (-0.06, 0.13)
	p-value	0.116	0.016	0.425

<sup>1</sup>Adjust for age, gender, educational attainment, type 2 diabetes, and hypertension

<sup>2</sup>GMFA: Fractional anisotropy gray matter; GMMD: Mean diffusivity gray matter; WMMD: Mean diffusivity white matter

<sup>3</sup>coronary calcified plaque is log transformed.

**Supplemental Table S4. Association of cognitive performance and brain imaging (Standardized) after adjusting for calcified plaque measures and other covariates in the subset with a baseline exam<sup>1</sup>**

Imaging measure	3MSE <sup>2</sup>	DSST <sup>2</sup>	Stroop <sup>23</sup>	RAVLT <sup>2</sup>	Phonemic Fluency	Semantic Fluency
GMFA <sup>2</sup>						
β Estimate (CI)	0.39 (-0.42, 1.20)	2.44 (0.94, 3.94)	-0.07 (-0.13, -0.003)	0.67 (-0.46, 1.81)	0.74 (-0.34, 1.83)	1.07 (0.05, 2.08)
p-value	0.344	0.0014	0.041	0.246	0.180	0.039
GMMD <sup>2</sup>						
β Estimate (CI)	-0.56 (-1.36, 0.23)	-1.49 (-3.34, 0.36)	0.04 (-0.01, 0.09)	-0.71 (-1.82, 0.40)	-1.76 (-3.51, -0.02)	-2.11 (-3.12, -1.11)
p-value	0.162	0.114	0.086	0.212	0.047	<b>3.7 x 10<sup>-5</sup></b>
WMMD <sup>2</sup>						
β Estimate (CI)	-0.24 (-0.91, 0.43)	-1.15 (-2.48, 0.19)	0.05 (0.005, 0.09)	-0.82 (-1.71, 0.07)	-1.72 (-3.07, -0.38)	-1.38 (-2.20, -0.56)
p-value	0.491	0.093	0.028	0.071	0.012	<b>9.6 x 10<sup>-4</sup></b>

<sup>1</sup> Adjust for age, gender, educational attainment, type 2 diabetes, hypertension, and coronary calcified plaque

<sup>2</sup> 3MSE: Modified Mini Mental State Exam; DSST: Digit Symbol Substitution; RAVLT: Rey Auditory-Verbal Learning Task; GMFA: Fractional anisotropy gray matter; GMMD: Mean diffusivity gray matter; WMMD: Mean diffusivity white matter

<sup>3</sup> Stroop and coronary calcified plaque are log transformed.

**Table S5A. Association of cognitive performance and brain imaging (standardized) after adjusting for standardized coronary calcified plaque and other covariates for the subset with a baseline exam in the affected by type 2 diabetes (n=463)<sup>1</sup>**

Imaging measure		3MSE <sup>2</sup>	DSST <sup>2</sup>	Stroop <sup>3</sup>	RAVLT <sup>2</sup>	Phonemic Fluency	Semantic Fluency
TBV <sup>23</sup>	β Estimate	4.75	10.64	-0.19	3.89	6.47	5.78
	(CI)	(-0.10, 9.59)	(4.77, 16.52)	(-0.57, 0.20)	(0.52, 7.26)	(1.68, 11.27)	(2.28, 9.28)
	p-value	0.055	<b>3.8 x 10<sup>-4</sup></b>	0.341	0.024	0.008	<b>0.001</b>
WMLV <sup>23</sup>	β Estimate	-0.32	-2.71	0.03	-1.03	-0.63	-1.58
	(CI)	(-1.09, 0.45)	(-4.18, -1.24)	(-0.04, 0.09)	(-2.11, 0.06)	(-2.02, 0.76)	(-2.53, -0.64)
	p-value	0.412	<b>3.1 x 10<sup>-4</sup></b>	0.404	0.063	0.375	0.001
GMV <sup>2</sup>	β Estimate	3.04	2.43	-0.02	1.46	3.06	2.01
	(CI)	(0.82, 5.25)	(-0.26, 5.11)	(-0.19, 0.14)	(-0.55, 3.47)	(0.41, 5.72)	(0.26, 3.76)
	p-value	0.007	0.076	0.765	0.155	0.024	0.024
WMV <sup>23</sup>	β Estimate	0.03	4.27	-0.10	0.91	0.79	1.72
	(CI)	(-2.02, 2.07)	(0.68, 7.85)	(-0.24, 0.05)	(-1.63, 3.45)	(-2.70, 4.28)	(-0.50, 3.93)
	p-value	0.980	0.020	0.195	0.481	0.658	0.129
WMFA <sup>2</sup>	β Estimate		2.96				
	(CI)	0.62 (-0.18, 1.42)	(1.38, 4.54)	-0.08 (-0.14, -0.01)	1.16 (0.12, 2.20)	1.75 (0.20, 3.30)	1.47 (0.50, 2.44)
	p-value	0.127	<b>2.3 x 10<sup>-4</sup></b>	0.020	0.028	0.027	0.003
GMCBF <sup>23</sup>	β Estimate	-0.69	0.27	-0.03	0.69	0.85	0.35
	(CI)	(-1.44, 0.06)	(-0.98, 1.51)	(-0.09, 0.02)	(-0.12, 1.49)	(-0.42, 2.12)	(-0.60, 1.30)
	p-value	0.072	0.674	0.229	0.095	0.189	0.469

<sup>1</sup> All models adjusted for age, gender, educational attainment, hypertension, and coronary calcified plaque; TBV, WMLV, GMV, and WMV additionally adjusted for intracranial volume

<sup>2</sup> 3MSE: Modified Mini Mental State Exam; DSST: Digit Symbol Substitution; RAVLT: Rey Auditory-Verbal Learning Task; TBV: Total brain volume; WMLV: Total white matter lesion volume; GMV: Gray matter volume; WMV: White matter volume; WMFA: Fractional anisotropy white matter; GMCBF: Gray matter cerebral blood flow

<sup>3</sup> Stroop, coronary calcified plaque, TBV, WMLV, and WMV are log transformed. GMCBF is squared root transformed.

**Table S5B. Association of cognitive performance and brain imaging (standardized) after adjusting for standardized coronary calcified plaque and other covariates for the subset with a baseline exam in the unaffected by type 2 diabetes (n=109)<sup>1</sup>**

Imaging measure		3MSE <sup>2</sup>	DSST <sup>2</sup>	Stroop <sup>3</sup>	RAVLT <sup>2</sup>	Phonemic Fluency	Semantic Fluency
TBV <sup>23</sup>	β Estimate	3.94	10.64	-0.06	2.01	2.63	-0.65
	(CI)	(-0.55, 8.42)	(0.38, 20.90)	(-0.45, 0.32)	(-5.66, 9.67)	(-9.27, 14.53)	(-6.70, 5.40)
	p-value	0.085	0.042	0.749	0.608	0.664	0.833
WMLV <sup>23</sup>	β Estimate	-0.37	-1.99	-0.02	0.76	-2.28	0.02
	(CI)	(-1.65, 0.90)	(-4.61, 0.62)	(-0.15, 0.11)	(-1.21, 2.72)	(-4.75, 0.20)	(-1.67, 1.70)
	p-value	0.567	0.136	0.757	0.450	0.072	0.984
GMV <sup>2</sup>	β Estimate	2.46	4.43	-0.07	3.21	0.90	1.76
	(CI)	(0.14, 4.78)	(-0.89, 9.75)	(-0.26, 0.11)	(0.67, 5.75)	(-2.52, 4.32)	(-0.54, 4.07)
	p-value	0.038	0.102	0.442	0.013	0.604	0.134
WMV <sup>23</sup>	β Estimate	-0.70	-1.41	0.04	-3.06	0.52	-2.44
	(CI)	(-3.50, 2.11)	(-7.85, 5.02)	(-0.17, 0.25)	(-6.70, 0.57)	(-3.62, 4.67)	(-5.01, 0.13)
	p-value	0.627	0.667	0.737	0.099	0.805	0.063
WMFA <sup>2</sup>	β Estimate		5.13				
	(CI)	1.39 (0.53, 2.25)	(2.04, 8.21)	-0.12 (-0.23,-0.02)	0.43 (-1.27, 2.12)	2.13 (-0.56, 4.81)	1.45 (-0.30, 3.21)
	p-value	1.5 x 10 <sup>-3</sup>	<b>1.1 x 10<sup>-3</sup></b>	0.022	0.621	0.121	0.105
GMCBF <sup>23</sup>	β Estimate	-0.94	4.55	-0.05	1.77	0.89	0.92
	(CI)	(-2.29, 0.41)	(1.76, 7.35)	(-0.15, 0.06)	(-0.32, 3.87)	(-1.33, 3.11)	(-0.57, 2.42)
	p-value	0.173	1.4 x 10 <sup>-3</sup>	0.386	0.097	0.431	0.225

<sup>1</sup> All models adjusted for age, gender, educational attainment, hypertension, and coronary calcified plaque; TBV, WMLV, GMV, and WMV additionally adjusted for intracranial volume

<sup>2</sup> 3MSE: Modified Mini Mental State Exam; DSST: Digit Symbol Substitution; RAVLT: Rey Auditory-Verbal Learning Task; TBV: Total brain volume; WMLV: Total white matter lesion volume; GMV: Gray matter volume; WMV: White matter volume; WMFA: Fractional anisotropy white matter; GMCBF: Gray matter cerebral blood flow

<sup>3</sup> Stroop, coronary calcified plaque, TBV, WMLV, and WMV are log transformed. GMCBF is squared root transformed.