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Supplementary Materials for

Neurite architecture of the planum temporale predicts neurophysiological processing of auditory speech

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Supplementary material

Supplementary tables

VOL = gray matter volume, INVF = intra-neurite volume fraction, ODI = orientation dispersion, ISO = isotropic diffusion, p-values are two-tailed and Bonferroni-corrected for multiple comparisons.

Table S1. Correlations between VOL of PT and N1 latency during dichotic condition.

	VOL left planum temporale	VOL right planum temporale
Left N1 latency dichotic (C5)	r = .19, p = .24	r = -.02, p = .99
Right N1 latency dichotic (C6)	r = -.05, p = .99	r = -.19, p = .24

Table S2. Correlations between ODI of PT and N1 latency during dichotic condition.

	ODI left planum temporale	ODI right planum temporale
Left N1 latency dichotic (C5)	r = .05, p = .99	r = .16, p = .48
Right N1 latency dichotic (C6)	r = .03, p = .99	r = .00, p = .99

Table S3. Correlations between ISO of PT and N1 latency during dichotic condition.

	ISO left planum temporale	ISO right planum temporale
Left N1 latency dichotic (C5)	r = .10, p = .99	r = .08, p = .99
Right N1 latency dichotic (C6)	r = -.02, p = .99	r = .00, p = .99

Table S4. Correlations between VOL of PT and N1 latency during noise condition.

	VOL left planum temporale	VOL right planum temporale
Left N1 latency noise (C5)	r = -.10, p = .99	r = -.18, p = .99
Right N1 latency noise (C6)	r = -.04, p = .99	r = -.03, p = .99

Table S5. Correlations between INVF of PT and N1 latency during noise condition.

	INVF left planum temporale	INVF right planum temporale
Left N1 latency noise (C5)	r = .01, p = .99	r = .19, p = .24
Right N1 latency noise (C6)	r = .10, p = .99	r = .04, p = .99

Table S6. Correlations between ODI of PT and N1 latency during noise condition.

	ODI left planum temporale	ODI right planum temporale
Left N1 latency noise (C5)	r = .03, p = .99	r = -.07, p = .48
Right N1 latency noise (C6)	r = -.02, p = .99	r = -.03, p = .99

Table S7. Correlations between ISO of PT and N1 latency during noise condition.

	ISO left planum temporale	ISO right planum temporale
Left N1 latency noise (C5)	r = .20, p = .20	r = -.17, p = .99
Right N1 latency noise (C6)	r = -.04, p = .99	r = -.15, p = .52

Table S8. Multiple regression analysis (alternative model 1) predicting left N1 latency during dichotic condition by structural predictors. INVF = intra-neurite volume fraction, ODI = orientation dispersion, ISO = isotropic diffusion, VOL = gray matter volume.

Predictors	*beta*	*t*	*p value*
Left PT INVF	-.23	-2.27	.03
Left PT ODI	.07	.71	.48
Left PT ISO	.14	1.44	.15
Left PT VOL	.08	.83	.41
Sex	-.20	-1.90	.06
Laterality quotient (EHI)	-.02	-.17	.87
Dependent variable: left N1 latency dichotic (C5)			R^2 = .15; p = .024

Table S9. Multiple regression analysis predicting left N1 latency during dichotic condition by structural predictors. INVF = intra-neurite volume fraction, ODI = orientation dispersion, ISO = isotropic diffusion, THICK = gray matter thickness.

Predictors	*beta*	*t*	*p value*
Left planum temporale INVF	-.24	-2.33	.02
Left planum temporale ODI	.13	1.28	.21
Left planum temporale ISO	.13	1.29	.20
Left planum temporale THIC	-.07	-0.69	.49
Dependent variable: left N1 latency dichotic (C5)			R^2 = .10; p = .044

Table S10. Correlations between VOL of AF and N1 latency during dichotic condition.

	VOL left AF	VOL right AF
Left N1 latency dichotic (C5)	r = -.05, p = .99	r = -.04, p = .99
Right N1 latency dichotic (C6)	r = -.02, p = .99	r = .16, p = .50

Table S11. Correlations between INVF of AF and N1 latency during dichotic condition.

	INVF left AF	INVF right AF
Left N1 latency dichotic (C5)	r = .16, p = .50	r = .06, p = .99
Right N1 latency dichotic (C6)	r = -.06, p = .99	r = -.16, p =. 50

Table S12. Correlations between ODI of AF and N1 latency during dichotic condition.

	ODI left AF	ODI right AF
Left N1 latency dichotic (C5)	r = -.04, p = .99	r = .05, p = .99
Right N1 latency dichotic (C6)	r = .03, p = .99	r = .13, p = .84

Table S13. Correlations between ISO of AF and N1 latency during dichotic condition.

	ISO left AF	ISO right AF
Left N1 latency dichotic (C5)	r = -.09, p = .99	r = -.10, p = .99
Right N1 latency dichotic (C6)	r = -.09, p = .99	r = -.07, p = .99

VOL = white matter volume, INVF = intra-neurite volume fraction, ODI = orientation dispersion, ISO = isotropic diffusion, p-values are two-tailed and Bonferroni-corrected for multiple comparisons.

Supplementary Figure captions

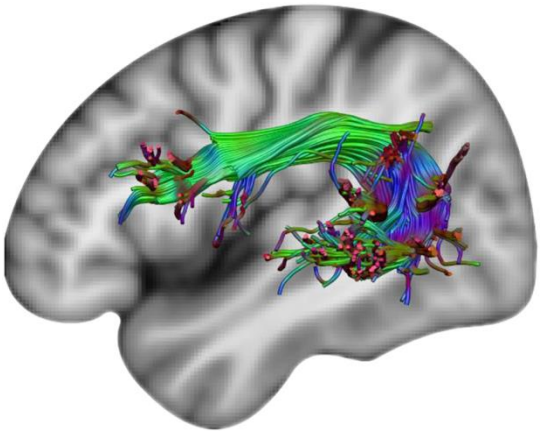

Fig. S1. Sagittal view of the left AF. The arcuate fasciculus was tracked by in vivo spherical deconvolution DTI fiber tractography and overlaid onto the anatomy of a representative individual. The colors represent fiber orientations in different directions: right-left (red), anterior-posterior (green) and superior-inferior (blue).