Crossed cortical-neostriatal white matter connections are concordant with asymmetrical cerebral blood flow predictors of speech rate

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Tractography derived from diffusion tensor imaging (DTI) was used to study the contribution of white matter connections between the inferior frontal regions and the caudate nuclei in normal motor-speech control. The connection between the right caudate and the left inferior frontal region was positively correlated with jitter, relative average perturbation, and amplitude stability, and negatively correlated with the harmonic-to-noise ratio. None of the other connections were correlated with speech measures. Normal variability in brain morphology may be an intrinsic element in the functional anatomy of the neurogenic control of speech.