Reply:

We thank Dr Hasan for his comments on our study.[1]

Brain development and aging are complex processes. During brain maturation, the mean diffusivity (MD) decreases and the fractional anisotropy (FA) increases with age.[2-4] Decreases of MD and increases of FA occur rapidly at young ages, then slow and gradually reach a plateau.[3] In most structures, including the genu and splenium of the corpus callosum, the basal ganglia, and so forth, the plateau is reached during the late teens or twenties.[3] From young-to-old adults, the diffusivity in the brain presents in a different way from brain maturation. MD increases and FA decreases with age in some structures of the brain.[5-7] Thus the linear regression is obviously not appropriate for studying the diffusivity of the brain across the whole lifespan. In our study, all volunteers were adults. We did not include children. For studying age-related alterations in the human brain of young and old adults with diffusion tensor imaging, the Pearson correlation analysis may be simple, but it is acceptable. The trend toward diffusion tensor imaging metric changes with age is not altered just because of the simple model used.[6-8]

We noticed that the finding of decreased MD with age in the putamen was contradictory to several previous reports.[5-7] However, in our study, the results of MD in the prefrontal white matter and the genu of the corpus callosum are consistent with the above-mentioned reports. Many factors may relate to this kind of discrepancy, such as different imaging protocols, imaging planes, the region of interest, and, most of all, the exclusion criteria of the healthy volunteers.

In this article,[1] we did not state that the diffusion tensor eigenvalues can be used as surrogate neuroimaging markers of human brain aging. The information from axial (λ_1) and radial (λ_{23}) diffusivity was the direct contributor to the FA. The availability of this information would yield insight into the microstructural changes of human brain aging.

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