

Response

In response to Ding's comments regarding the age-dependent curve fitting, we agree that a biexponential might be better suited to fit T2 data extending into the second decade of life. However, our age range was limited to 4 years, 5 months and as clearly stated in the text, "...insufficient data from older subjects may impede the detection of a second exponential term." In addition, it is clear from Table 2 that in some regions of interest the biexponential did indeed slightly increase the quality of fit (adjusted R² value). However, because the fitting failed to converge in the two regions of the corpus callosum and the thalamus, for the sake of consistency we chose to use a mono-exponential fit. We also believe that different regions of interest might exhibit different age-dependent behaviors, as shown by the diffusion tensor imaging study referred to by Ding, where the genu of the corpus callosum showed a mono- rather than a biexponential decay with age (1). Another point to consider is the significant variability in T2 values for very young subjects, particularly in frontal white matter. This variability, combined with a generally low number of subjects for this age group, can limit the detection of subtle features in the fits. In any case, these are empirical fitting attempts with no theoretical underpinnings. Many other mathematical functions could have fitted the data well. These are purely descriptive functions and no theory about development depends on their validity. With regard to the acquisition method, it is well known that there are multiple components of T2 and that a two-echo calculation of T2 has limitations, in particular when done with a multislice sequence on a clinical scanner. It is unclear whether a triple-echo sequence provides significantly more accurate T2 estimates than two dual-echo sequences. In any event, because of the extensive protocol of the full study (2), the time limitations often did not even permit the second dual-echo data to be acquired. We also stress that these acquisitions, in fact, only provide pseudo-T2 values since they are based on fast spin-echo sequences. The important point is that these pseudo-T2 measurements are reproducible and reflect developmental changes in brain tissue. We believe these acquisition differences would not significantly affect the overall behavior of estimated T2 with age, particularly when considering the large change in T2 values for the age range considered.

Ilana R. Leppert, MEng
 Montreal Neurological Institute
 McGill University
 Montreal, Quebec, Canada
 E-mail: ilana@bic.mni.mcgill.ca

C. Robert Almli, PhD
 Developmental Neuropsychobiology Laboratory
 Departments of Neurology, Psychology,
 Programs in Neuroscience, Occupational Therapy
 Washington University School of Medicine
 St. Louis, Missouri, USA

Robert C. McKinstry, MD, PhD
 Mallinckrodt Institute of Radiology and
 St. Louis Children's Hospital
 Washington University Medical Center
 St. Louis, Missouri, USA

Robert V. Mulkern, PhD
 Department of Radiology
 Children's Hospital
 Harvard Medical School
 Boston, Massachusetts, USA

Carlo Pierpaoli, MD, PhD
 National Institute of Child Health and Human
 Development
 National Institutes of Health
 Bethesda, Maryland, USA

Micheal J. Rivkin, MD
 Department of Neurology, Psychiatry and Radiology
 Children's Hospital
 Harvard Medical School
 Boston, Massachusetts, USA

G. Bruce Pike, PhD
 Montreal Neurological Institute
 McGill University
 Montreal, Quebec, Canada

The Brain Development Cooperative Group

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