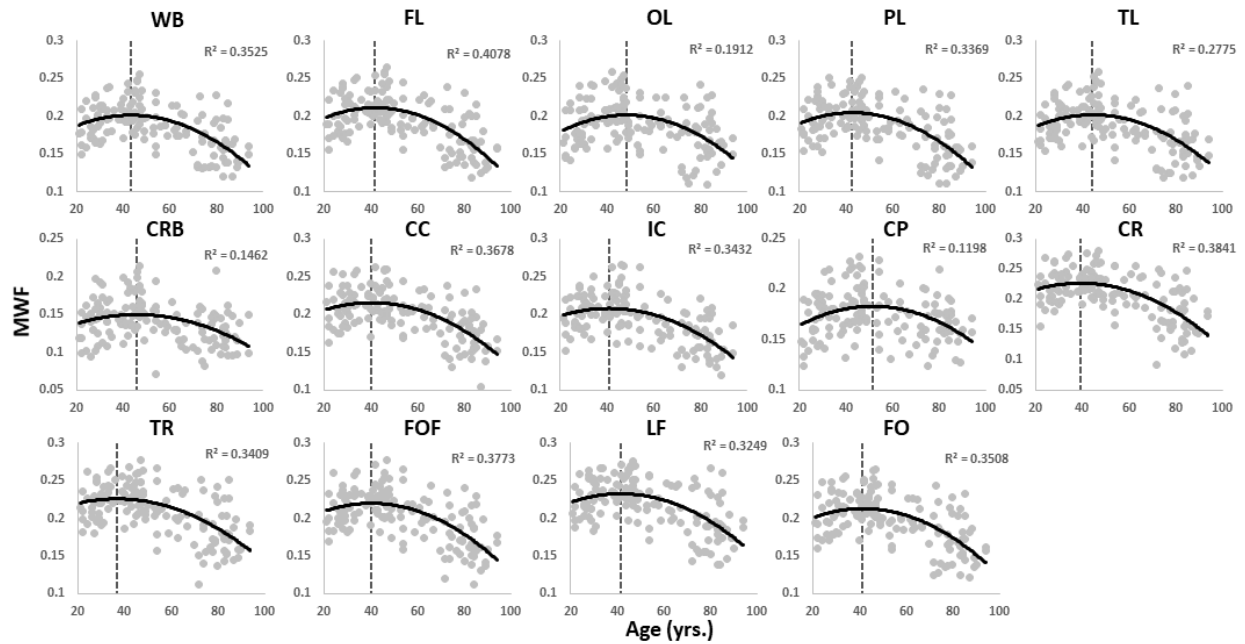**SUPPLEMENTARY MATERIAL**

Figure S1. *Plots illustrating regional MWF values as a function of age for all cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, corpus callosum (CC), internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). For each ROI, the coefficient of determination, R^2, is reported.*

Figure S2. *Plots illustrating regional FA values as a function of age for all cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, corpus callosum (CC), internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). For each ROI, the coefficient of determination, R^2, is reported.*
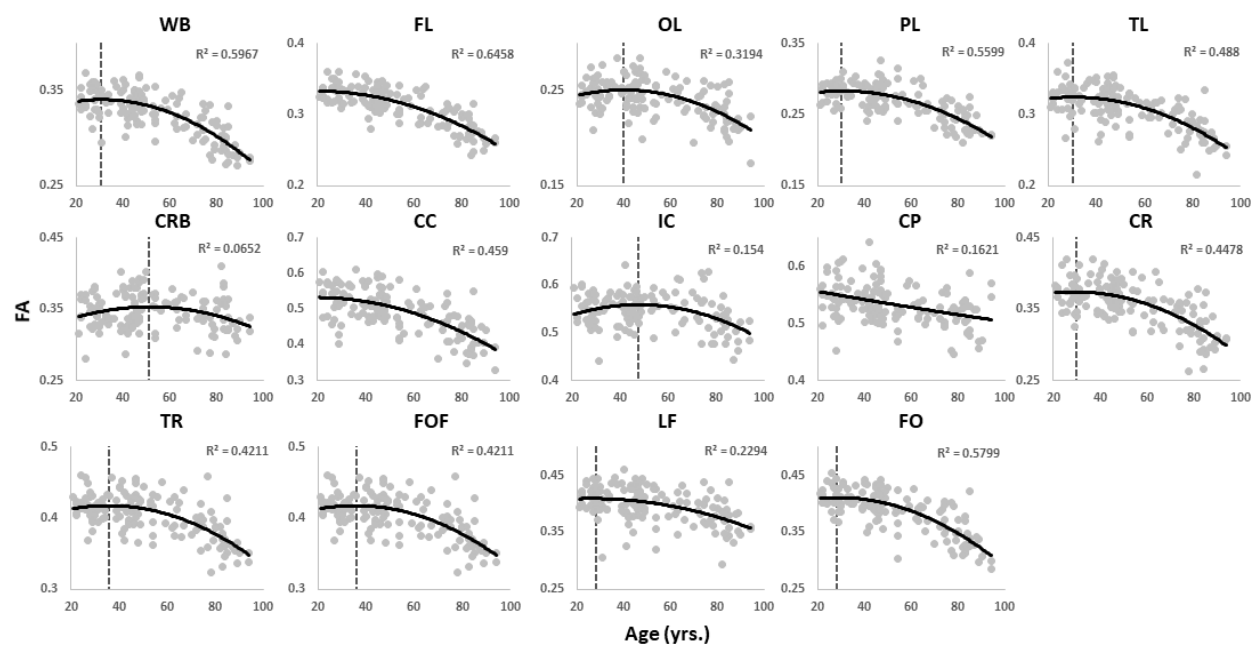
Figure S3. *Plots illustrating regional MD values as a function of age for all cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, corpus callosum (CC), internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). For each ROI, the coefficient of determination, R^2, is reported.*
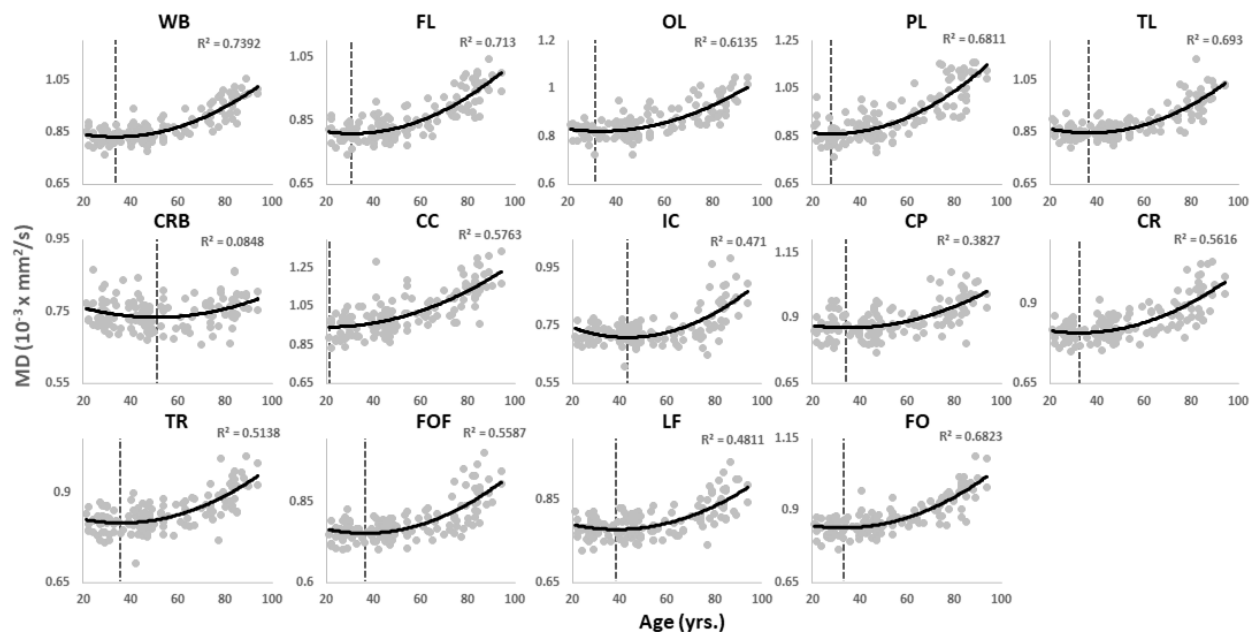
Figure S4. *Plots illustrating regional RD values as a function of age for all cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, corpus callosum (CC), internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). For each ROI, the coefficient of determination, R^2, is reported.*
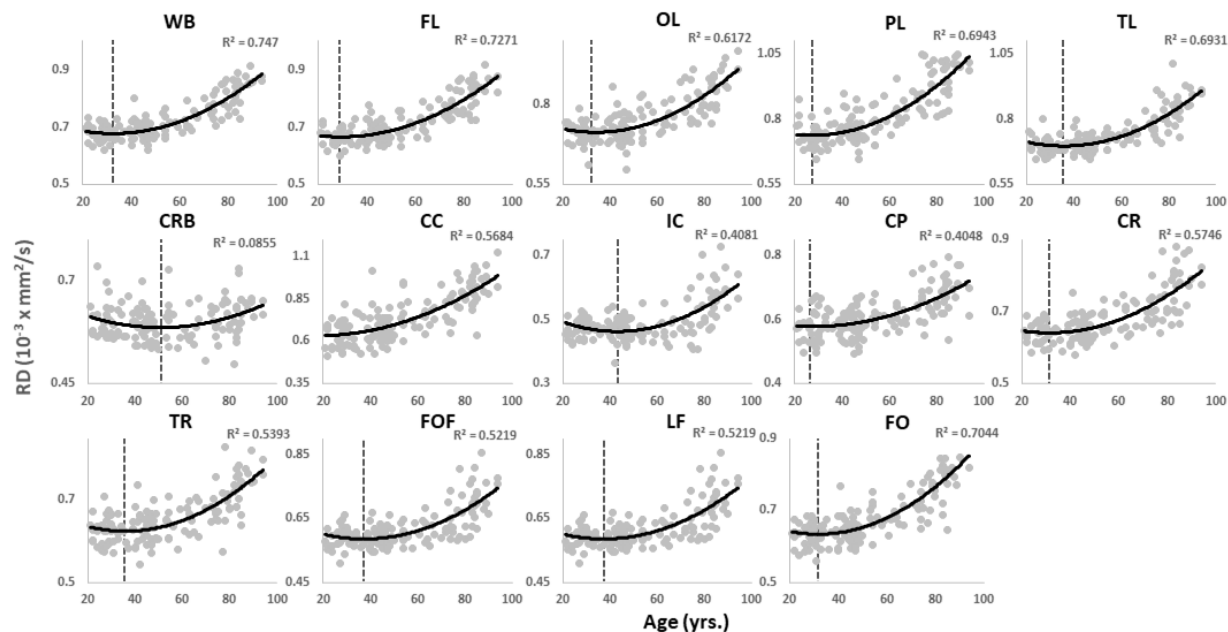
***Figure* S5**. *Plots illustrating regional AxD values as a function of age for all cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, corpus callosum (CC), internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). For each ROI, the coefficient of determination, R^2, is reported.*
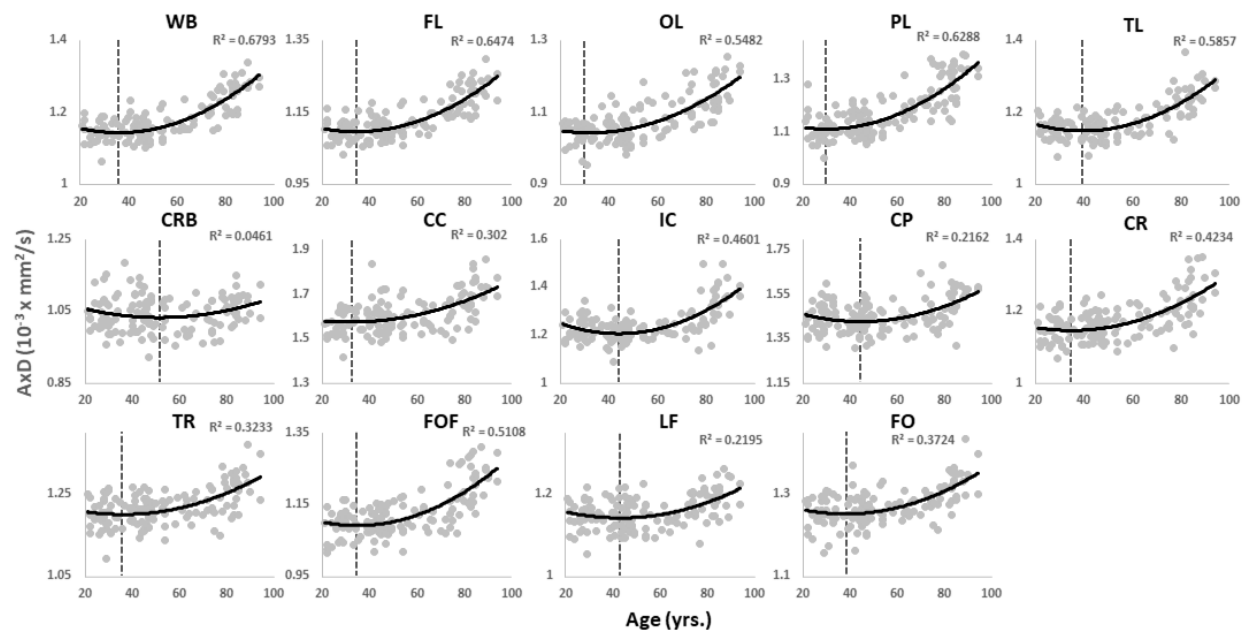
***Figure S6**. Plots illustrating regional Pearson correlations between FA and MWF for all cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, corpus callosum (CC), internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). For each ROI, the coefficient of determination, R^2, is reported.*
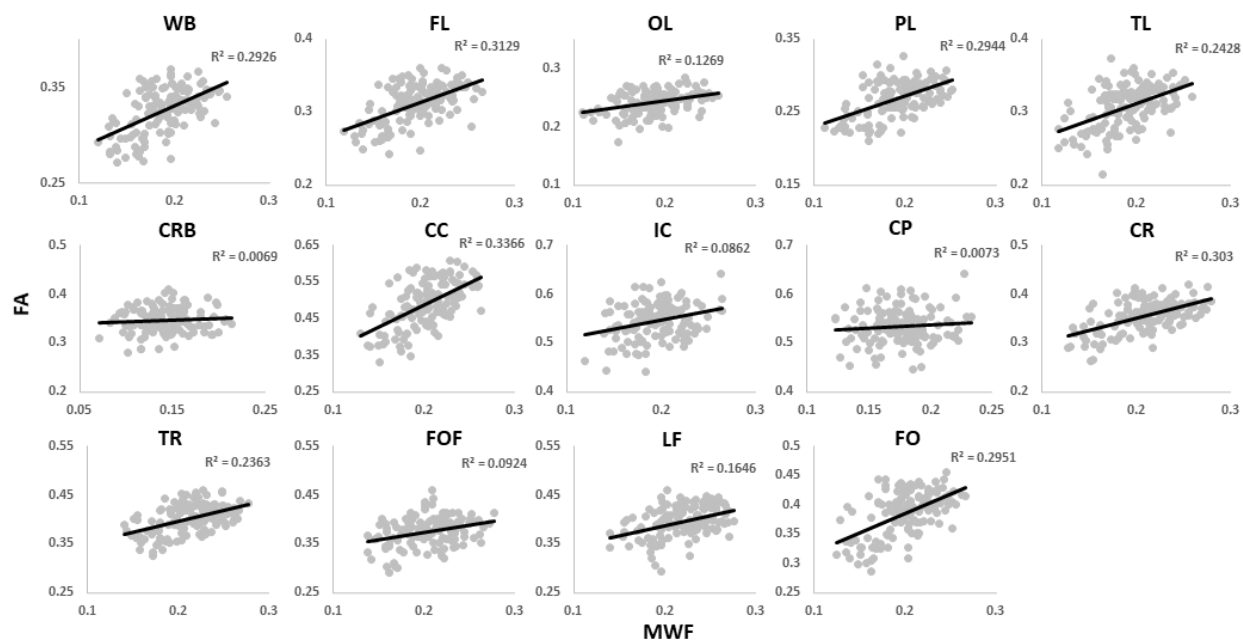
Figure S7*. Plots illustrating regional Pearson correlations between MD and MWF for all cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, corpus callosum (CC), internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). For each ROI, the coefficient of determination, R^2, is reported.*
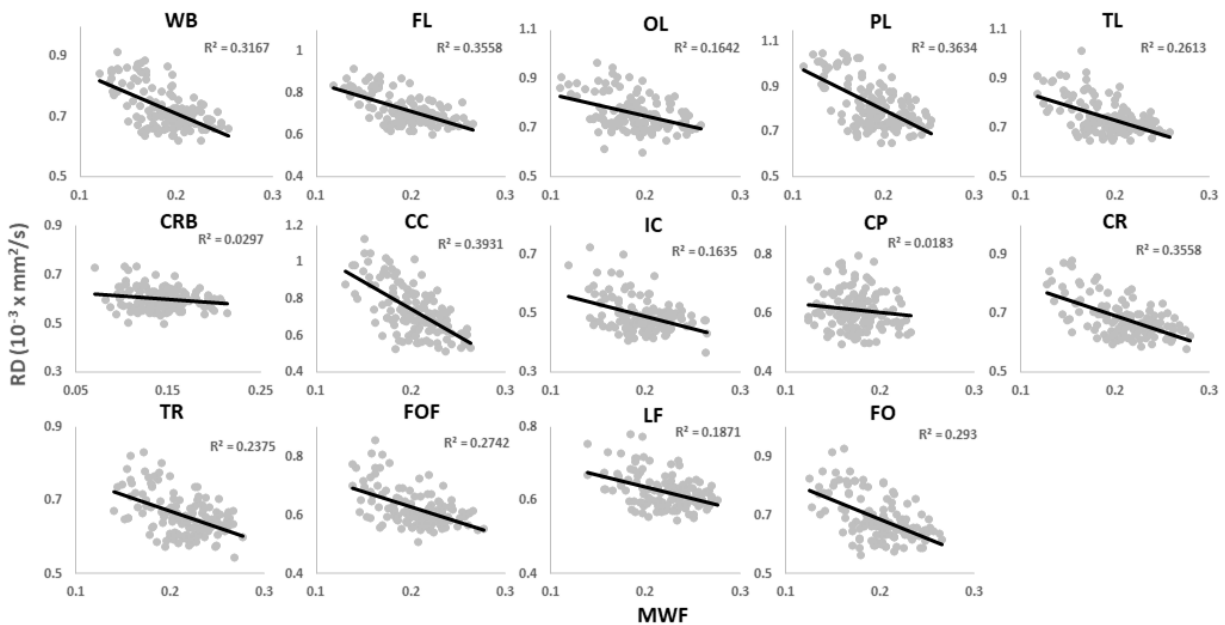
Figure S8*. Plots illustrating regional Pearson correlations between RD and MWF for all cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, corpus callosum (CC), internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). For each ROI, the coefficient of determination, R^2, is reported.*
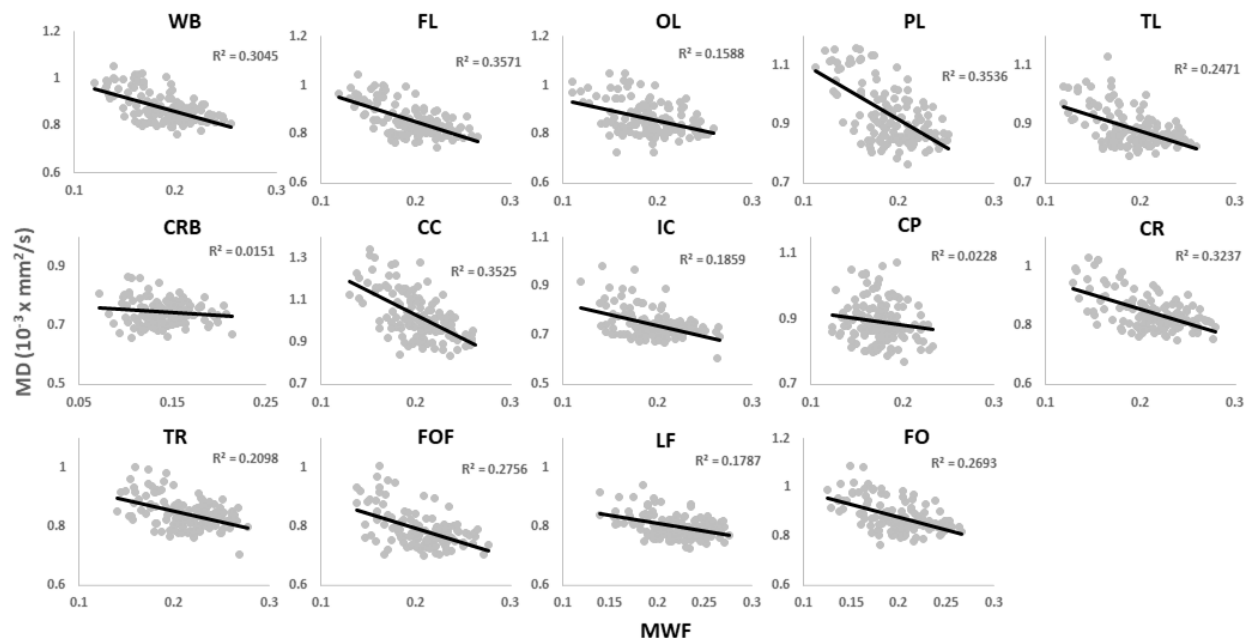
Figure S9. *Plots illustrating regional Pearson correlations between AxD and MWF for all cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, corpus callosum (CC), internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). For each ROI, the coefficient of determination, R^2, is reported.*
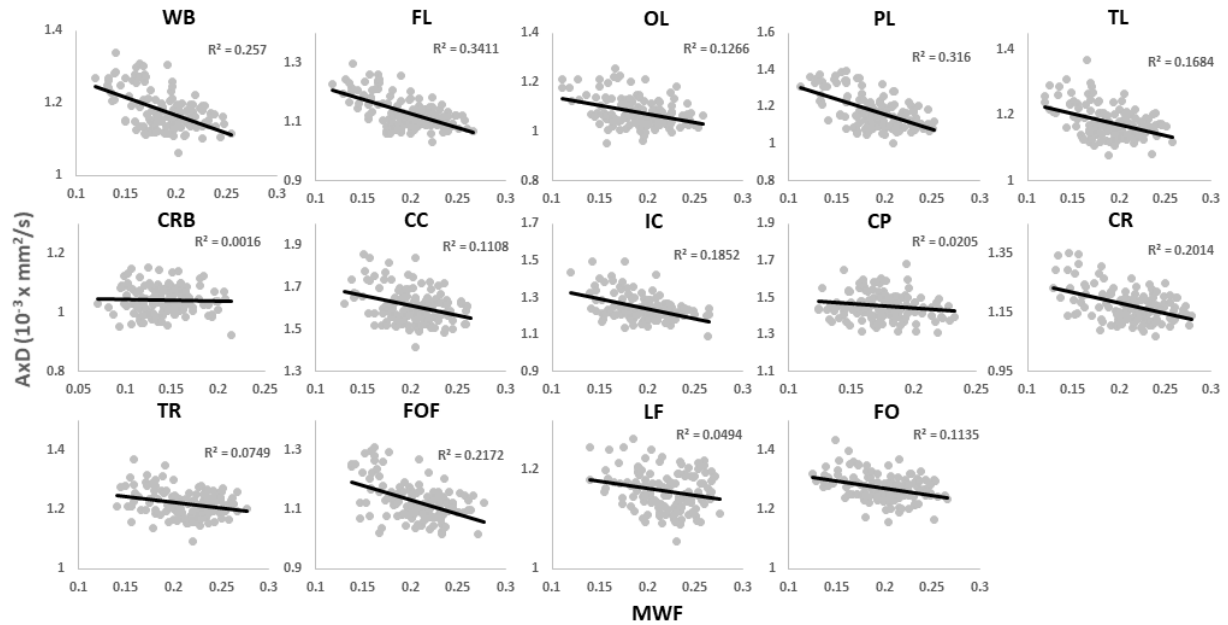
Figure S10. *Plots illustrating the piecewise linear fits of the maturation and degeneration phases as a function of age for MWF in all cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, corpus callosum (CC), internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). The blue solid lines indicate the actual age range of our cohort, the dashed red lines indicate the peak ages, while the green lines indicate the age at a symmetrical age interval between the minimum age of our cohort and the peak.*

Figure S11. *Plots illustrating the piecewise linear fits of the maturation and degeneration phases as a function of age for FA in 10 cerebral white matter ROIs studied: whole brain (WB) WM, occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, internal capsule (IC), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), and forceps (FO). The blue solid lines indicate the actual age range of our cohort, the dashed red lines indicate the peak ages, while the green lines indicate the age at a symmetrical age interval between the minimum age of our cohort and the peak.*
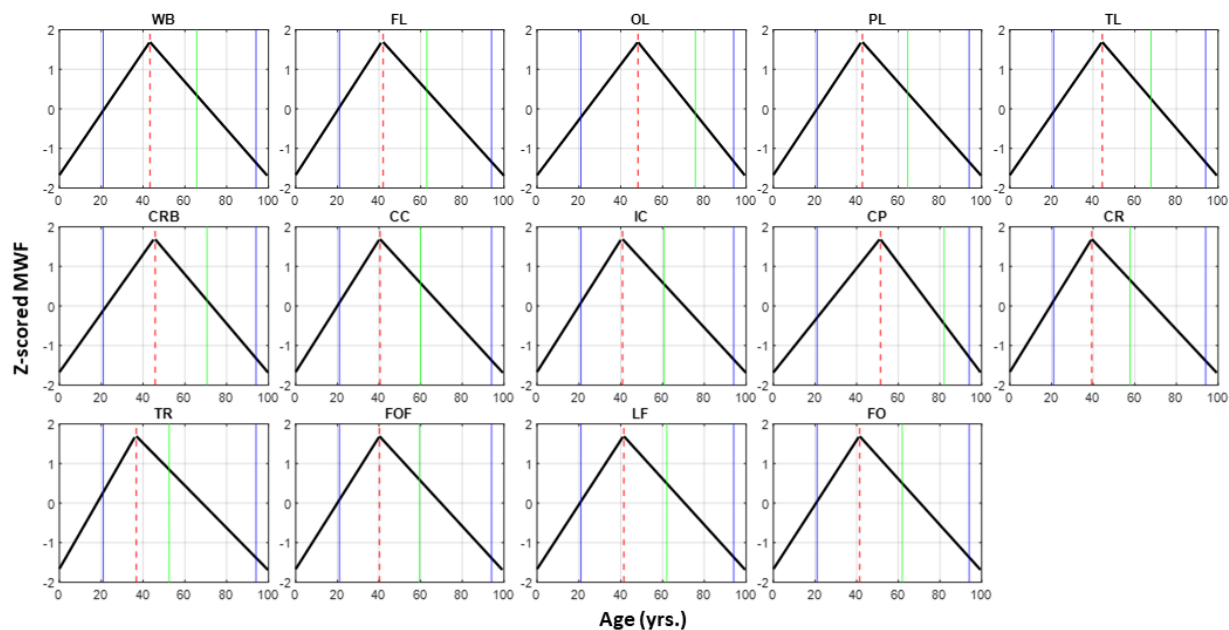
Figure S12. *Plots illustrating the piecewise linear fits of the maturation and degeneration phases as a function of age for MD in 13 cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). The blue solid lines indicate the actual age range of our cohort, the dashed red lines indicate the peak ages, while the green lines indicate the age at a symmetrical age interval between the minimum age of our cohort and the peak.*
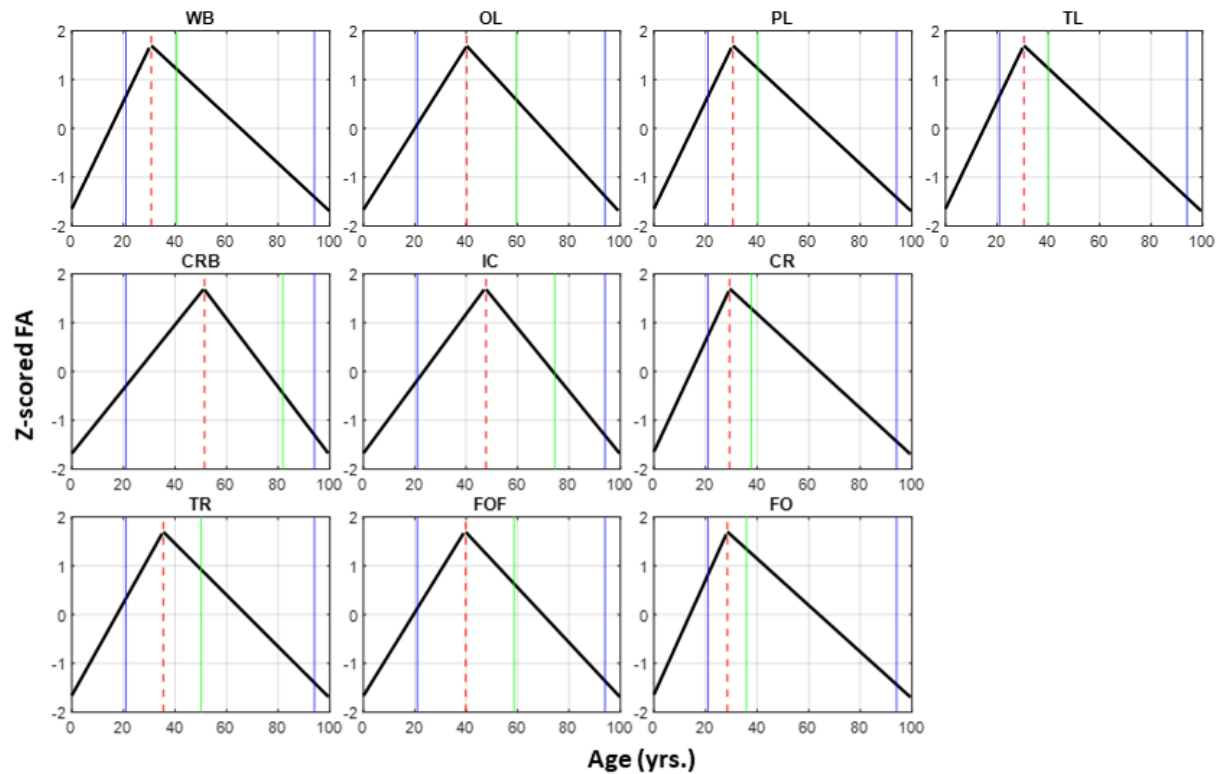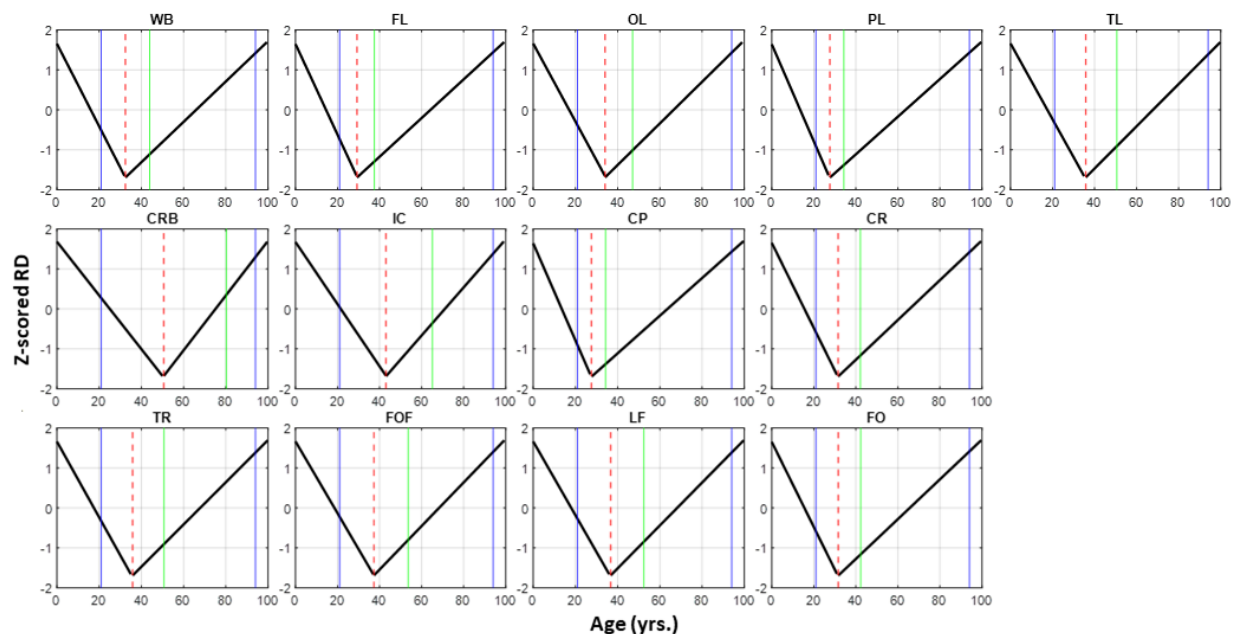
Figure S13. *Plots illustrating the piecewise linear fits of the maturation and degeneration phases as a function of age for RD in 13 cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). The blue solid lines indicate the actual age range of our cohort, the dashed red lines indicate the peak ages, while the green lines indicate the age at a symmetrical age interval between the minimum age of our cohort and the peak.*
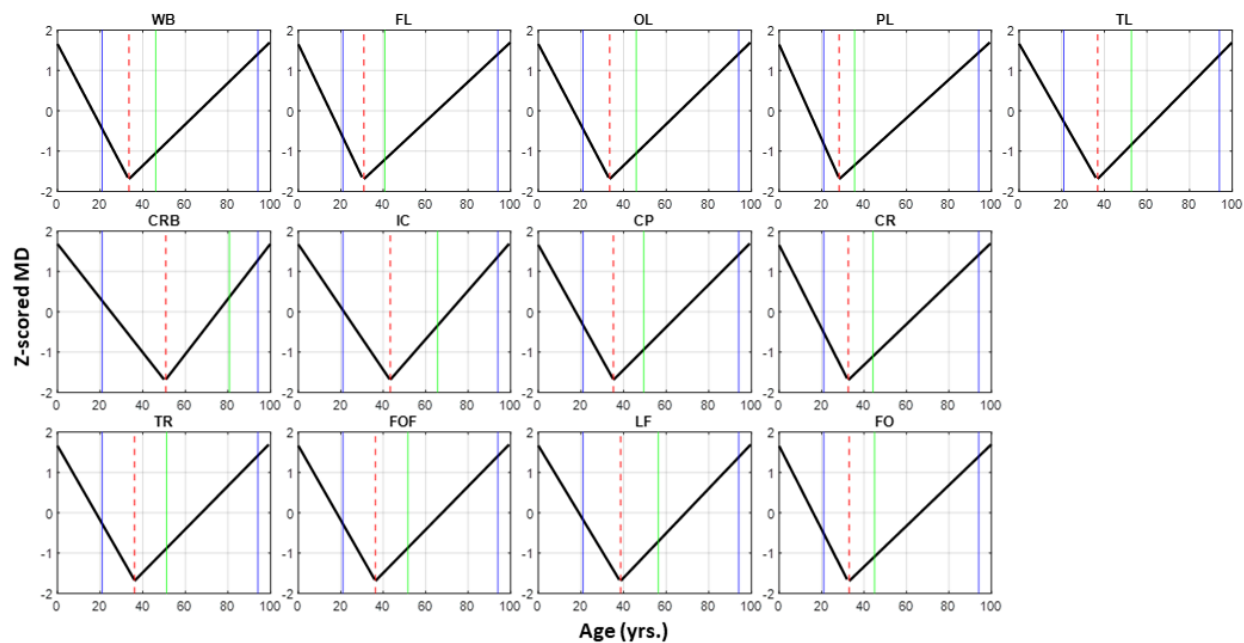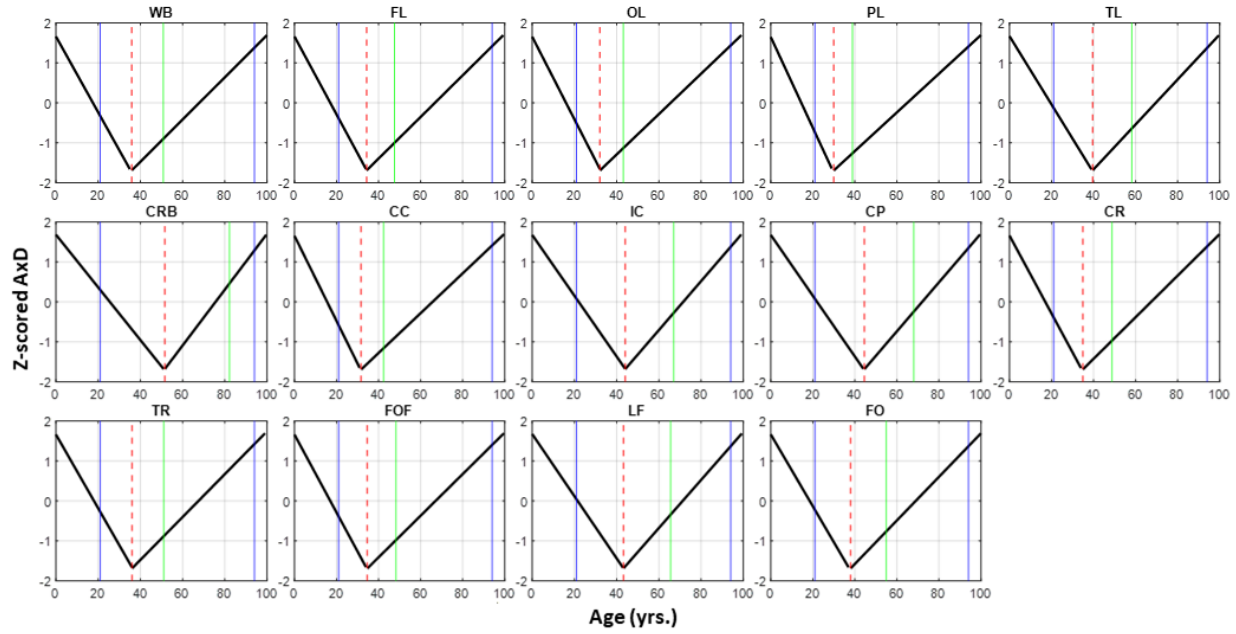
Figure S14. *Plots illustrating the piecewise linear fits of the maturation and degeneration phases as a function of age for AxD in all cerebral white matter ROIs studied: whole brain (WB) WM, frontal (FL), occipital (OL), parietal (PL), and temporal (TL) lobes WM, cerebellum (CRB) WM, corpus callosum (CC), internal capsule (IC), cerebral peduncle (CP), corona radiata (CR), thalamic radiation (TR), fronto-occipital fasciculus (FOF), longitudinal fasciculus (LF), and forceps (FO). The blue solid lines indicate the actual age range of our cohort, the dashed red lines indicate the peak ages, while the green lines indicate the age at a symmetrical age interval between the minimum age of our cohort and the peak.*

Insights into human cerebral white matter maturation and degeneration across the adult lifespan

Table S1. *Regression p-values, after FDR correction, corresponding with Table 2 for all ROIs and for each MR parameter studied. Sex results were not reported as it exhibited nonsignificant effect.*

	MWF		FA		MD		RD		AxD	
	Age	**Age²**	**Age**	**Age²**	**Age**	**Age²**	**Age**	**Age²**	**Age**	**Age²**
Whole Brain	4.43×10^{-10}	2.73×10^{-5}	$<1 \times 10^{-15}$	8.65×10^{-5}	$<1 \times 10^{-15}$	3.81×10^{-10}	$<1 \times 10^{-15}$	1.04×10^{-9}	$<1 \times 10^{-15}$	4.63×10^{-9}
Frontal	5.53×10^{-12}	2.54×10^{-5}	$<1 \times 10^{-15}$	5.55×10^{-4}	$<1 \times 10^{-15}$	3.98×10^{-8}	$<1 \times 10^{-15}$	9.10×10^{-8}	$<1 \times 10^{-15}$	9.11×10^{-8}
Occipital	4.24×10^{-4}	6.16×10^{-5}	2.36×10^{-10}	5.55×10^{-4}	$<1 \times 10^{-15}$	9.08×10^{-7}	$<1 \times 10^{-15}$	5.83×10^{-7}	$<1 \times 10^{-15}$	5.44×10^{-5}
Parietal	5.24×10^{-10}	4.30×10^{-5}	$<1 \times 10^{-15}$	2.32×10^{-4}	$<1 \times 10^{-15}$	1.88×10^{-6}	$<1 \times 10^{-15}$	1.51×10^{-6}	$<1 \times 10^{-15}$	1.07×10^{-5}
Temporal	1.57×10^{-7}	6.16×10^{-5}	$<1 \times 10^{-15}$	5.55×10^{-4}	$<1 \times 10^{-15}$	3.81×10^{-10}	$<1 \times 10^{-15}$	1.04×10^{-9}	$<1 \times 10^{-15}$	1.18×10^{-8}
Cerebellum	4.32×10^{-4}	1.49×10^{-3}	0.120	8.32×10^{-3}	0.0473	1.64×10^{-3}	0.0385	1.84×10^{-3}	0.200	0.0186
Corpus Callosum	5.30×10^{-11}	9.95×10^{-5}	$<1 \times 10^{-15}$	0.0180	$<1 \times 10^{-15}$	1.27×10^{-3}	$<1 \times 10^{-15}$	3.26×10^{-3}	2.41×10^{-11}	7.64×10^{-3}
Internal Capsule	1.11×10^{-10}	6.16×10^{-5}	5.59×10^{-4}	5.55×10^{-4}	1×10^{-15}	2.44×10^{-8}	3.60×10^{-13}	5.83×10^{-7}	1.6×10^{-14}	1.85×10^{-8}
Cerebral Peduncle	0.0685	3.86×10^{-4}	3.83×10^{-7}	0.930	4.0×10^{-14}	6.30×10^{-4}	1×10^{-15}	4.84×10^{-3}	4.04×10^{-6}	6.08×10^{-4}
Corona Radiata	5.53×10^{-12}	6.16×10^{-5}	$<1 \times 10^{-15}$	0.00146	$<1 \times 10^{-15}$	1.10×10^{-5}	$<1 \times 10^{-15}$	1.30×10^{-5}	1×10^{-15}	3.78×10^{-4}
Thalamic Radiation	3.18×10^{-11}	5.91×10^{-4}	$<1 \times 10^{-15}$	2.32×10^{-4}	$<1 \times 10^{-15}$	5.26×10^{-6}	$<1 \times 10^{-15}$	2.18×10^{-6}	2.61×10^{-11}	2.48×10^{-3}
Fronto Occipital Fasciculus	8.54×10^{-12}	6.16×10^{-5}	1.65×10^{-5}	0.0180	$<1 \times 10^{-15}$	9.08×10^{-7}	$<1 \times 10^{-15}$	1.51×10^{-6}	$<1 \times 10^{-15}$	3.42×10^{-5}
Longitudinal Fasciculus	5.24×10^{-10}	6.16×10^{-5}	9.43×10^{-9}	0.0675	$<1 \times 10^{-15}$	2.62×10^{-6}	$<1 \times 10^{-15}$	1.39×10^{-5}	1.87×10^{-6}	1.17×10^{-3}
Forceps	1.53×10^{-10}	6.16×10^{-5}	$<1 \times 10^{-15}$	2.32×10^{-4}	$<1 \times 10^{-15}$	3.98×10^{-8}	$<1 \times 10^{-15}$	6.03×10^{-8}	5.44×10^{-13}	3.17×10^{-4}