Supplementary Table 1. Accuracies for 1-back behavioral data at age 5. We investigated whether the age 5 participants were attending the fMRI task (and importantly, whether the PSC differences between readers vs. pre-readers were due to attentional confounds). We found that accuracies were high and that there were no significant differences between readers vs. pre-readers for any condition (two-tailed t-tests: letters: P = 0.56; T = 0.59; false fonts: P = 0.68; T = 0.41; faces: P = 0.80; T = 0.26).

	Letters	Faces	False Fonts
Pre-readers	0.902 ± 0.03	0.883 ± 0.03	0.874 ± 0.03
Readers	0.927 ± 0.02	0.896 ± 0.03	0.893 ± 0.03

Supplementary Table 2. Correlation coefficients for DWI and fMRI motion measures. None of the fMRI motion measures (total vector motion, root mean squared motion, between time-point translation, and rotation) were correlated with any of the DWI motion measures (all P>0.05; average translation, rotation, percentage bad slices, and average drop-out score).

	Total vector motion	Root mean squared rotation	Translation	Rotation
Translation	0.10	0.14	0.47	0.05
Rotation	–0.18	0.03	0.35	0.21
Percent bad slices	–0.38	–0.18	–0.32	–0.12
Average drop-out	–0.40	–0.19	0.22	–0.14

Supplementary Table 3. fMRI selectivity in longitudinal DWI cohort. The main fMRI selectivity results (**Figure 1**) are based on the full set of 14 subjects for maximal statistical power. The fMRI results are qualitatively unchanged with the same 11 subjects used in the DWI predictions. At age 8, the VWFA and IFFA showed a significant difference in their responses (2-way repeated measures ANOVA of ROI x condition); repeated measures ANOVAs by condition revealed that both the VWFA and IFFA responded significantly differently across stimulus conditions. However, at age 5, the VWFA did not show any differential response by condition whereas the IFFA already did. These data again provide no evidence of functional differentiation of the VWFA at age 5.

Age 8	VWFA vs. IFFA	$F_{3,60} = 19.83$; $P = 4.74 \times 10^{-9}$
	VWFA	$F_{3,30} = 12.70$; $P = 1.57 \times 10^{-5}$
	IFFA	$F_{3,30} = 21.07$; $P = 1.54 \times 10^{-7}$
Age 5	VWFA vs. IFFA	$F_{2,32} = 6.07$; $P = 5.80 \times 10^{-3}$
	VWFA	$F_{2,16} = 1.72$; $P = 0.21$
	IFFA	$F_{2,16} = 5.08$; $P = 1.95 \times 10^{-2}$