*Supplementary S9. Post-hoc analysis*

The effect in FA could be global, since whole-brain FA differs between groups. Therefore, we re-run the analysis with the whole-brain FA effect regressed out. We found that the effect remained significant in the left SLF (p=.037, *uncorrected*), the posterior limb of the left internal capsule (p=.037, *uncorrected*) and the rentrolenticular part of the left internal capsule (p=.044, *uncorrected*), suggesting that the effects are not fully attributable to the global effect.

Also, both groups contained patients that switch from IQ test type between the two time points (i.e. from the Wechsler children scale (WISC) to Wechsler adult scale (WAIS)). The distribution of switchers and no-switchers is depicted in supplementary material S10. The groups did not significantly differ in the distribution of switchers and no-switchers (((1)=2.835, p=.092). However, to ensure that the effects are not confounded by switching from IQ test type, we reanalyzed the FA data with ‘switch’ as an extra nuisance regressor. All original FA effects remained significant at uncorrected p<.01, however, the right SLF is significant at p=.03. Whole-brain FA also remained significantly different (p=.024).

Both groups in the contrast ΔVIQ contained patients already diagnosed with a psychotic disorder. To exclude possible confounding effects in FA, analyses were re-run with these patients excluded, the effects remained significant at (uncorrected) p<.01 (except for the right SLF, this region remained significant at p<.03; see supplementary S9.1 for p-values).

In addition, we investigated which component (MD/AD/RD) drives the FA effect with a *post-hoc* explorative analysis. We found that MD was significantly lower in the posterior limb of the left internal capsule (p=.042, *uncorrected*) in patients with cognitive decline compared to patients without cognitive decline. RD was significantly lowered in the anterior, posterior and rentrolenticular part of the left internal capsule (respectively p=.021, p=.010, p=.048, *uncorrected*), the left and right cingulum bundle (respectively, p=.018, p=.038, *uncorrected*), the left and right superior longitudinal fasciculus (respectively, p=.046, p=.036, *uncorrected*). AD was significantly higher in the left cingulum bundle (p=.032, *uncorrected*). For all p-values see supplementary S2. The pattern of increased FA and altered MD/RD/AD can be linked to an increased density of axons, size of the axons or WM myelination1–3. However, caution is warranted when interpreting these results. For example, differences can arise from mathematical complications in crossing fibers4, therefore based on these diffusivity measures we cannot draw inferences on the neurobiological basis of our findings.

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| S9.1 Comparisons of FA after psychosis exclusion | | | |
| WM Region | t | df | Sig. (2-tailed) |
| ALIC L | -4,023 | 26 | ,0004 |
| PLIC L | -3,707 | 26 | ,001 |
| RLIC L | -2,924 | 26 | ,007 |
| CGC R | -3,006 | 26 | ,006 |
| CGC L | -3,252 | 26 | ,003 |
| SLF R | -2,343 | 26 | ,027 |
| SLF L | -3,013 | 26 | ,006 |
| SFO L | -3,111 | 26 | ,004 |
| Sig= significant value; ALIC\_L= anterior limb of the internal capsule, left; PLIC\_L= posterior limb of the internal capsule, left; RLIC\_L= rentrolenticular part of the internal capsule, left; CGC\_R; cingulum bundle, around cingulate gyrus, right; CGC\_L= cingulum bundle, around cingulate gyrus, left; SLF\_R= superior longitudinal fasciculus, right; SLF\_L= superior longitudinal fasciculus, left; SFO\_L= superior fronto-occipital gyrus, left; df = degrees of freedom | | | |

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