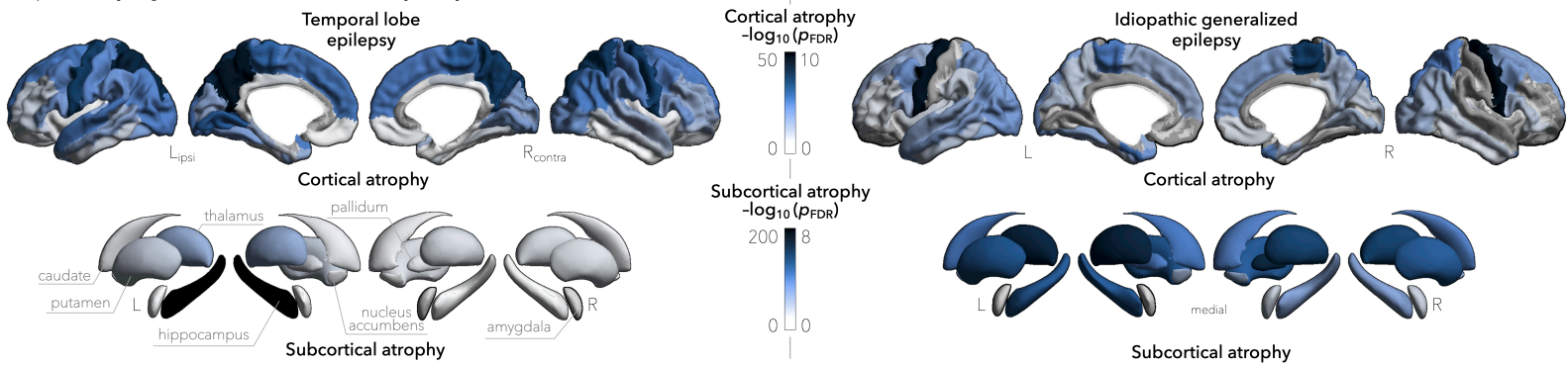
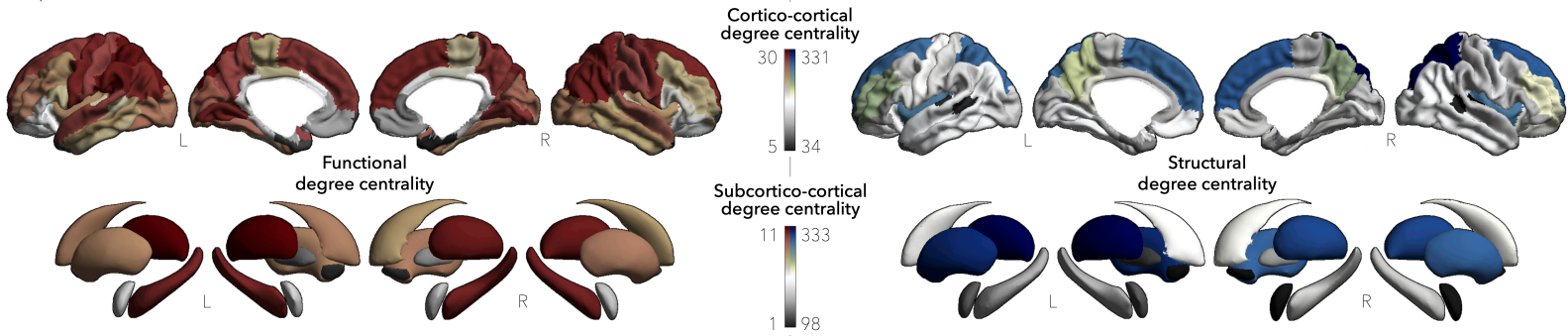


a | Atrophy in the common epilepsies



b | Functional and structural hubs



c | Spatial relationships between hub regions and grey matter atrophy

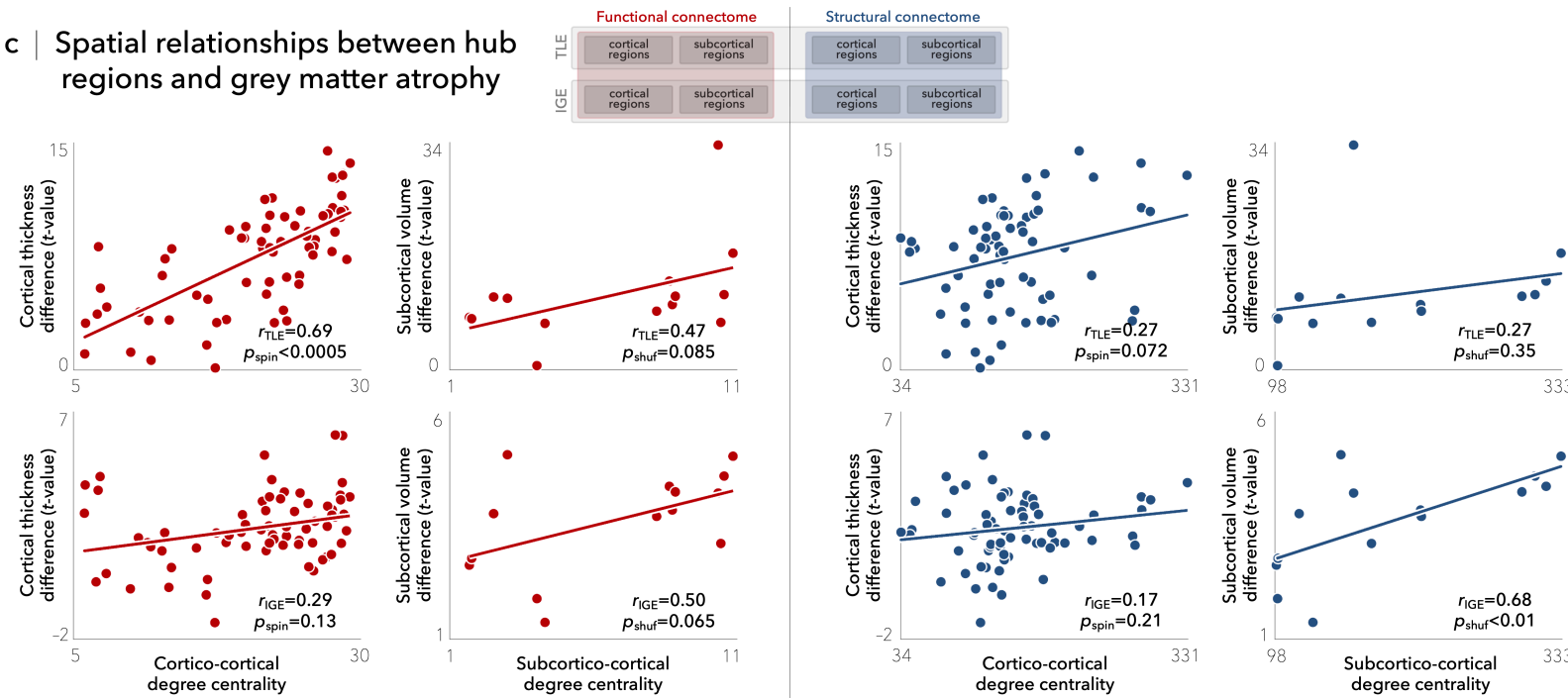


FIGURE 1. Atrophy in the common epilepsies relates to hub organization. a | Cortical thickness and subcortical volume reductions in temporal lobe epilepsy (TLE) spanned bilateral temporo-parietal cortices and ipsilateral hippocampus and thalamus ($p_{FDR}<3\times10^{-14}$). In idiopathic generalized epilepsy (IGE), atrophy predominantly affected bilateral precentral gyri and thalamus ($p_{FDR}<3\times10^{-6}$). Negative \log_{10} -transformed false discovery rate-corrected (FDR) p -values are shown. b | Normative functional and structural network organization, derived from the HCP dataset, was used to identify hubs (i.e., regions with high degree centrality). c | Grey matter atrophy related to node-level functional (left) and structural (right) maps of degree centrality, with greater atrophy in hub compared to non-hub regions. Stratifying findings across temporal lobe and idiopathic generalized epilepsies, we observed stronger associations between cortico-cortical functional hubs and cortical atrophy patterns in TLE ($p_{spin}<0.0005$) and between subcortical volume loss and subcortico-cortical structural hubs in IGE ($p_{shuf}<0.01$). Statistical significance was assessed using spin permutation (p_{spin}) or permutation tests (p_{shuf}).