groups. For each group, we generated, separately, estimates of x_{ij}^{-}, x_{ij}^{+}. We then asked whether the elements of these matrices from the low-motion correlation group were similar to those generated from the full cohort. We found a strong correspondence in both cases, with matrix-wise correlations of $r^{+} = 0.85$ and $r^{-} = 0.75$ (Figure S4).

Discussion

In this report we focus on an aspect of dynamic functional connectivity that has so far been left relatively unexplored. We show that, when measured using Pearson's correlation coefficient, certain aspects of dynamic functional connectivity, namely the temporal mean and the range of dynamic fluctuations, can be partially predicted from the static connectivity alone. Our analyses indicate that this relationship is, in part, a mathematical consequence of time series dynamics and may therefore not implicate any underlying neurobiological process that actively drives dFC fluctuations. To account for this statistical relationship, we propose a measure that highlights fluctuations in functional connectivity that are unexpected given the underlying static connectivity. We use this method to identify time points when specific connections are unexpectedly strong or weak, and find that these connections tend to cluster temporally, resulting in mass excursions. We find that during these events, functional brain networks adopt highly modular topologies compared to other time periods. Furthermore, we show that such events tend to involve a disproportionately large number of connections associated with visual and somatomotor systems compared to higher-level association networks. We go on to show that, across participants, these events are not systematically related to participant head motion and include many long-range connections, suggesting that they cannot be explained as spatial artifacts.