INTRODUCTION
The third trimester of gestation is characterized by a rapid brain growth, neurogenesis, synaptogenesis, myelination and structural network organization. Prematurity disrupts brain maturation during a critical period of development, leading to structural brain alterations that Mightunderlie the observed later neurodevelopmental impairments in preterm children. Using diffusion MRI based whole-brain anatomically constrained tractography, we constructed structural connectomes to study the impact of prematurity on neonatal brain network organization at term-equivalent age. We found that, globally, in comparison to full-term infants, VPT-TEA infants have a significantly lower modularity index, higher characteristic path length and lower global efficiency in FA-weighted networks. Furthermore, we found that VPT-TEA infants presented 10 nodes with lower nodal strength in the SC-weighted networks. These nodes comprise the right posterior cingulate gyrus (Cingulate_Post_R), right caudate, the thalamus bilaterally and 6 frontal subnetworks localized mainly in frontal and also limbic and para-limbic regions.

RESULTS AND DISCUSSION
Overall, we reveal that hallmark organization of the adult human brain connectome is present in both FT and VPT-TEA infants. However, VPT-TEA infants presented a significantly larger number of intra-connections, but lower number of inter-connections between modules in VPT-TEA infants. These results reveal that differences in the structural network organization between groups, but a significantly higher modularity index (p=0.037) in VPT-TEA infants, when compared to FT infants, supporting a different organization in preterm infants when compared to full-term infants. These differences are due to a larger number of intra-connections, but lower number of inter-connections between modules in VPT-TEA infants. These results reveal that differences in the structural network organization between groups, but a significantly higher modularity index (p=0.037) in VPT-TEA infants, when compared to FT infants, supporting a different organization in preterm infants when compared to full-term infants. These differences are due to a larger number of intra-connections, but lower number of inter-connections between modules in VPT-TEA infants.

CONCLUSION
In conclusion, our findings support the hypothesis that structural network organization at term-equivalent age is present in both FT and VPT infants. However, VPT infants present a significantly higher number of intra-connections, but lower number of inter-connections between modules compared to FT infants, supporting a different organization in preterm infants when compared to full-term infants. These differences are due to a larger number of intra-connections, but lower number of inter-connections between modules in VPT infants. These results reveal that differences in the structural network organization between groups, but a significantly higher modularity index (p=0.037) in VPT infants, when compared to FT infants, supporting a different organization in preterm infants when compared to full-term infants. These differences are due to a larger number of intra-connections, but lower number of inter-connections between modules in VPT infants.