**MATERIALS AND METHODS**

- **Participants**: (249) are a subset of the Aberdeen Children of the Nineteen Fifties cohort.
- **IQ-like score**: was extracted on functional connectivity ROI-to-ROI analyses were used to assess the networks associated with an IQ-like score at age 11 and at the current age (60-65). The target ROIs are selected from FSL Harvard Oxford and AAL (cerebellar areas only) atlases.
- **The results were thresholded at FDR-corrected p<.05 for a one-sided (positive) inference.**

**RESULTS**

**Effect of cognitive scores at age 11 on brain connectivity in late-midlife**

![Effect of IQ-like score (extracted from the above tests) at age 11 on connectivity in late-midlife](image)

- **Verbal reasoning tests at age 11 are correlated with the strength of many connections seen in a late-midlife scan. These are spread over the whole brain.**
- **The correlations between verbal fluency and the strength of connections in late-midlife involve less connections. The network is better represented in the left hemisphere.**

**Effect of IQ-like score (extracted from the below tests) at age 60-65 on connectivity at the same age (late-midlife)**

- **The IQ-like score was extracted using principal component analysis. The effects of these IQs at age 11 and at age 60-65 on functional connectivity acquired in late-midlife describe the networks shown in figures.**
- **The patterns of circulo-opercular, cerebelar and fronto-parietal connections are similar for both ages.**

**Effect of cognitive scores at age 60-65 on connectivity at the same age (late-midlife)**

- **The second logical memory test administrated 30 min later than the first ones shows clear by how few connections have been lost.**

**CONCLUSION**

- **Assessing the effect of each cognitive test in childhood and later on in late-midlife on the functional brain connectivity from a late-midlife scan, we found that there are differences between ages. The strength of and many of the connections are lost with age. This might be interpreted through an obtained “efficiency” for a specific task in term of the connections and might be the effect of life experience (practice). The loss of connections can be attributed to ageing process too.**

- **Extracting the main features of these cognitive tests from childhood and late-midlife in an IQ-like score we found that their effects on connectivity are similar, suggesting sustained networks linked to IQ throughout life.**

**REFERENCES**