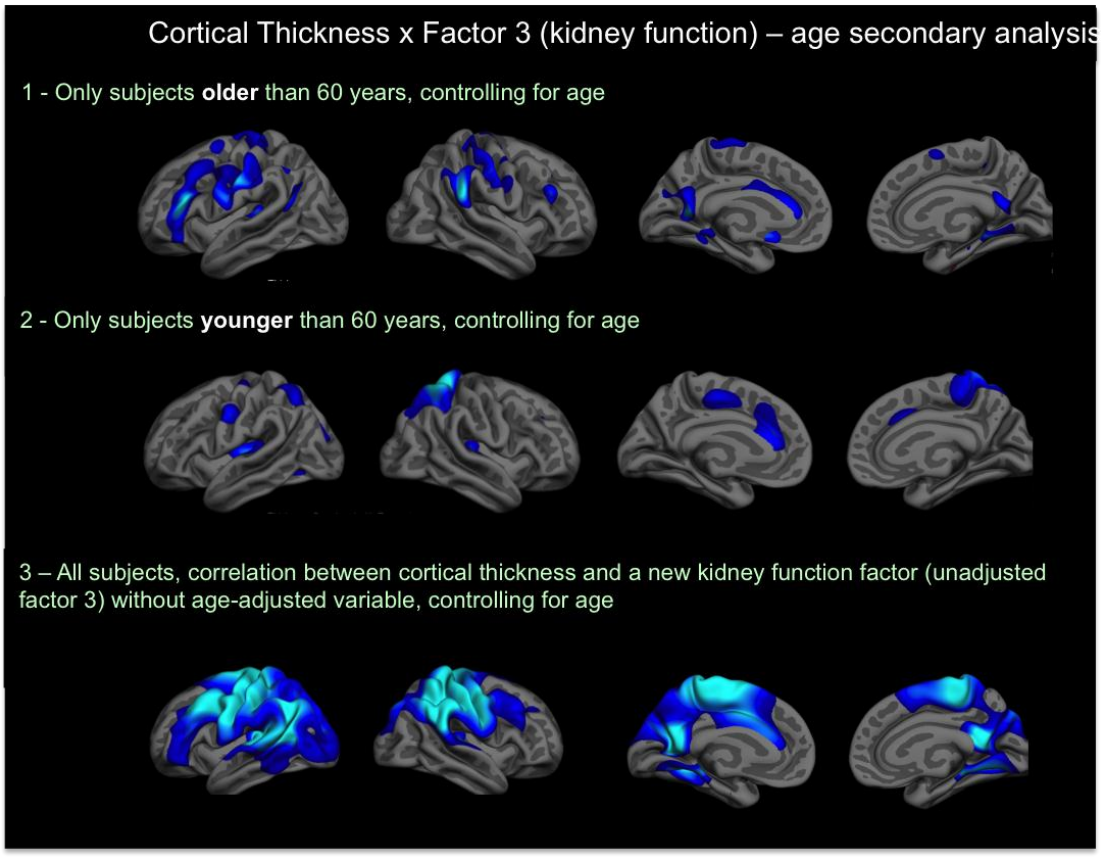
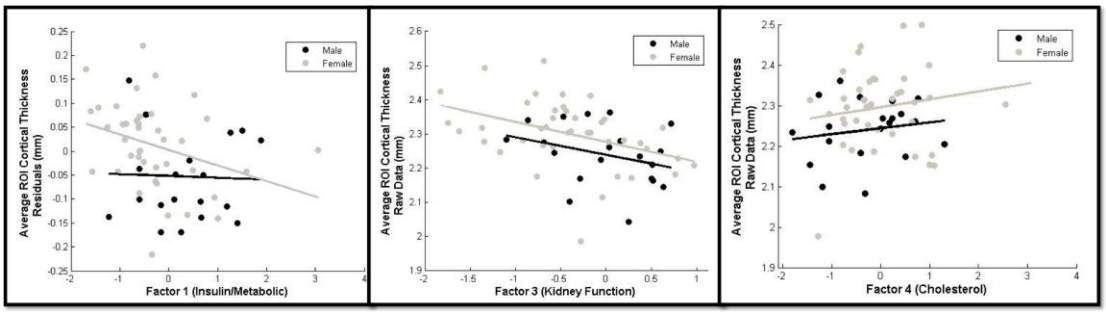


Supplementary figure 1.

Factor 4 – cholesterol

An increase in total cholesterol and LDL values was associated with increased cortical thickness bilaterally in the prefrontal cortex, superior parietal (including right precuneus) and frontoparietal areas, but also in some bilateral parietooccipital and lateraloccipital areas. The areas with a higher consistency of this association were in the prefrontal cortices. These effects persisted after correction for multiple comparisons ($p<0.05$) and were not influenced by age, sex and other covariates. Two areas of association in the left superiorfrontal ($p = 0.0004$) and lateral occipital giri ($p = 0.0002$) also survived multiple comparisons at the 0.01 threshold level.

covariate. The correlation between thickness and all the three factors remained significant in this analysis and are shown in the Supplementary figure 3(Factor 1 – R= -0,2687 / p = 0,0379; Factor 3 – R = -0.3665 / 0.004; Factor 4 – R = 0,2592 / p = 0,0455).



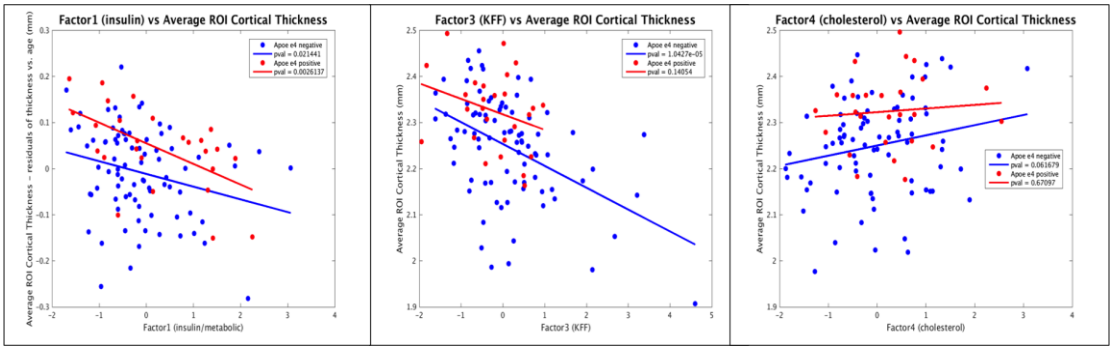
Supplementary figure 2 - *showing the relationship between cortical thickness and factors of subjects after excluding those with diabetes, hypertension and dyslipidemia.*

3.6 Surface-based associations between factors and cortical thickness considering ApoE e4 status.

Additional plots and analyses were generated to investigate the potential influence of APOE genotype on factor by thickness associations using thickness measures from the ROIs shown in figure 2 for factors 1, 3, and 4. For Factor 1 we used the residuals of the regression between cortical thickness and age, since age acted a confounder in this case. In total, 109 individuals had information on ApoE e4 status. Individuals in the two subgroups (ApoE e4 positive, n = 26/ ApoE e4 negative, n = 83) did not differ in age and sex.

Analyses demonstrated that ApoE e4 status did not seem to influence the associations between blood factors and thickness (supplementary figure 3). This was confirmed by comparing the correlation coefficient obtained for both

subgroups using a Fisher's r-to-z transformation, which showed no differences between the slopes of the subgroups for the three factors. However, we emphasize that the subanalyses performed has reduced statistical power relative to the primary analyses of this work.



Supplementary figure 3, *showing the relationship between cortical thickness and factors of subjects with and without ApoE E4.*.

4 Discussion

In this cross-sectional study, we assessed the relationship between brain cortical thickness and inter-individual variation across a diverse collection of standard physiological blood markers commonly used to monitor systemic health in clinical medicine. Some of these associations are described here for the first time, especially for participants in the middle-age range. All participants were cognitively healthy and represented a sample of what is expected to be within 'typically' or even 'optimally' healthy adulthood for the given age. By exploring this, we address an underexplored issue of physiological processes that may contribute to normative cortical variation as well as conditions that may contribute to variation in trajectories of brain aging.