Age-related changes in “cortical” 1/f dynamics are linked to cardiac activity

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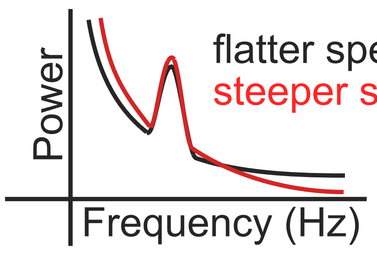
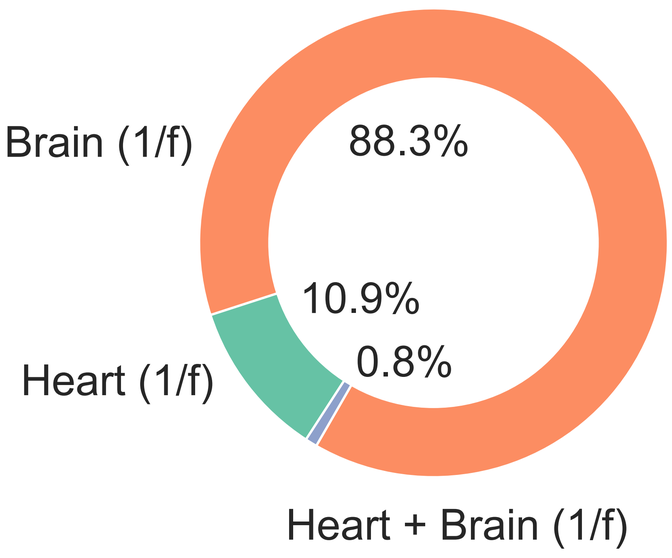
1 Cortical and cardiac changes in 1/f dynamics are related to similar traits & states ...



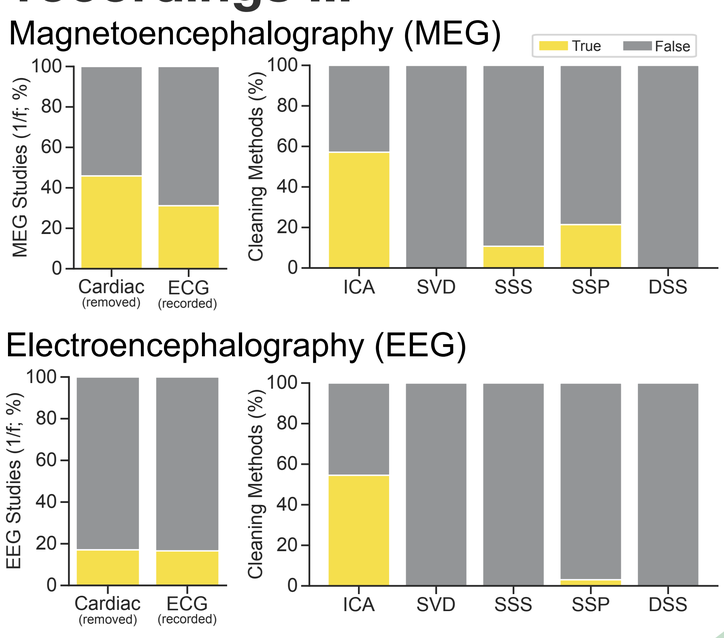
	Age	Sleep	ADHD	Stroke	Autism	Epilepsy	Dementia	Parkinson	Heart failure	Schizophrenia	Multiple Sclerosis
Heart (1/f)	17	5	0	2	1	1	0	1	6	0	3
Brain (1/f)	64	48	12	5	8	29	15	7	1	9	22

number indicates the amount of related articles on PubMed

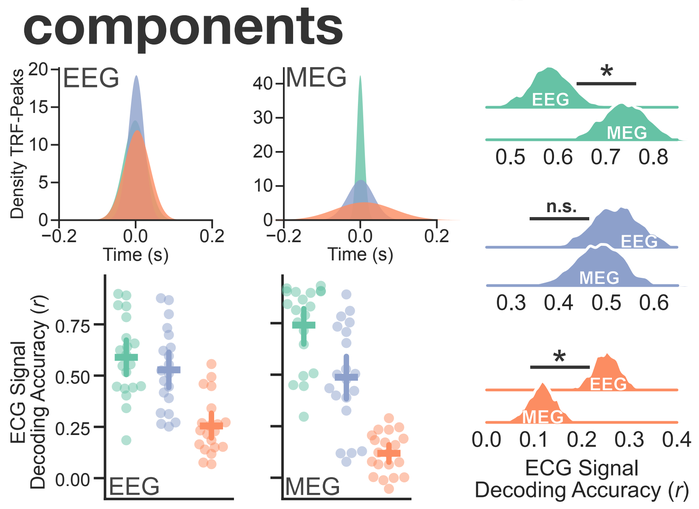
2 ... but are usually investigated independently



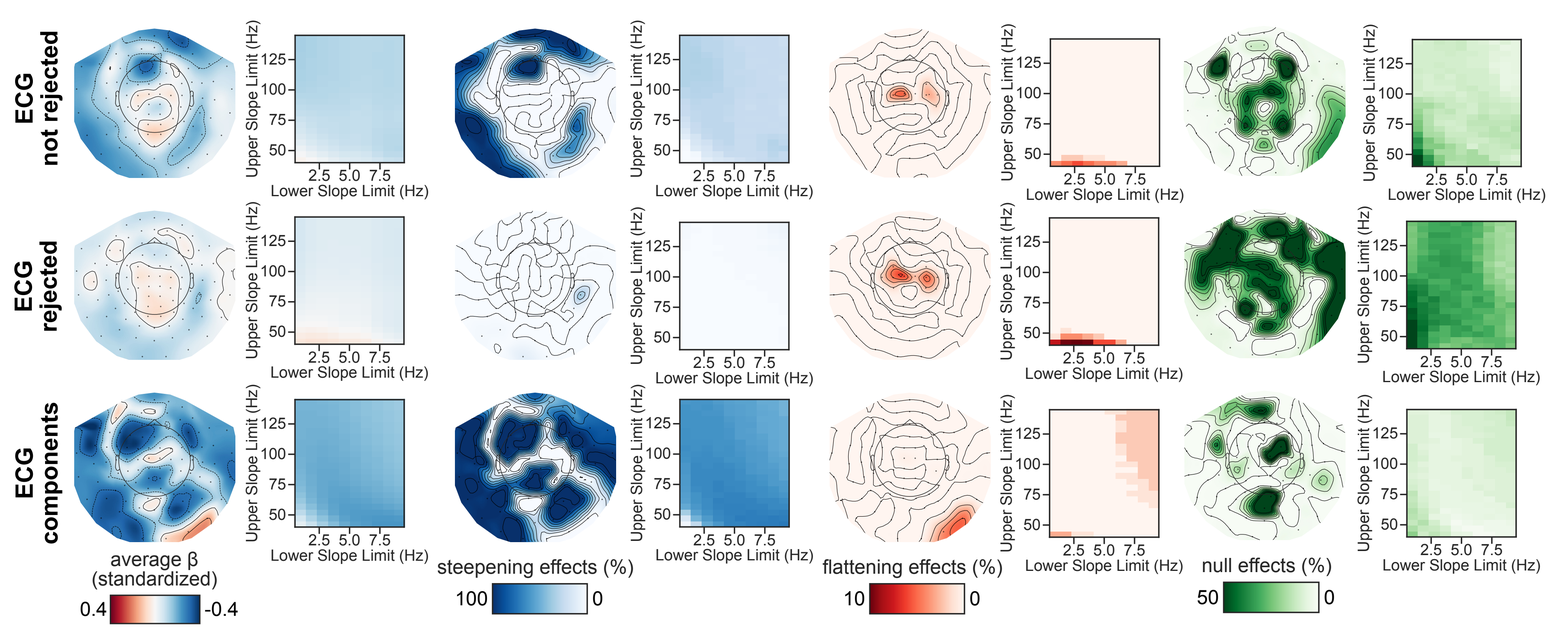
3 Cardiac activity is rarely removed from EEG recordings ...

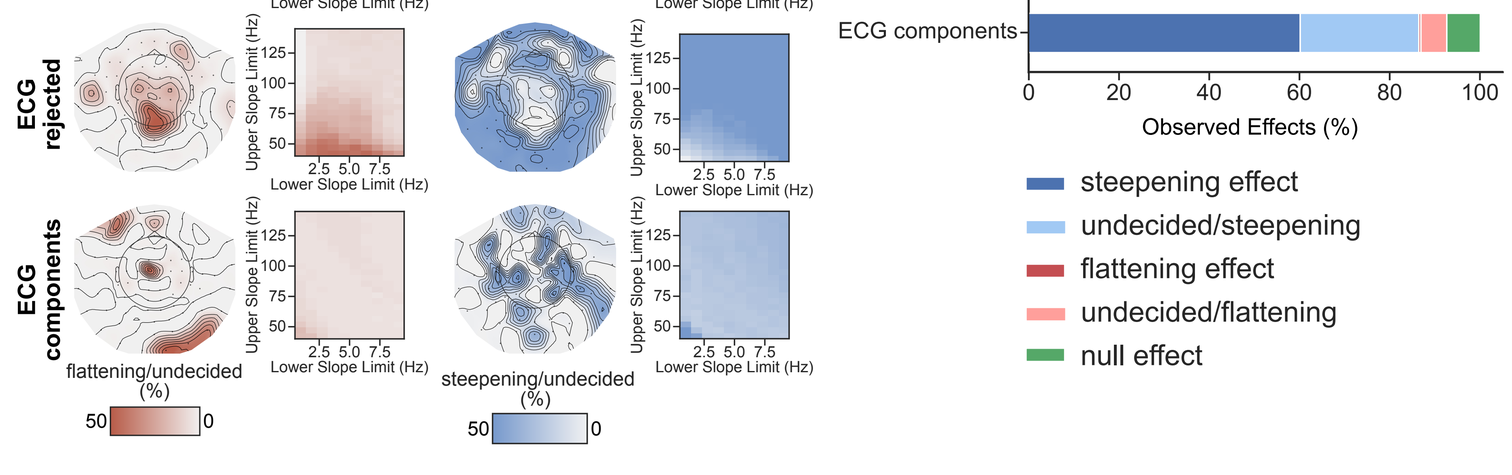


4 ... and remains in the data even after removing cardiac components

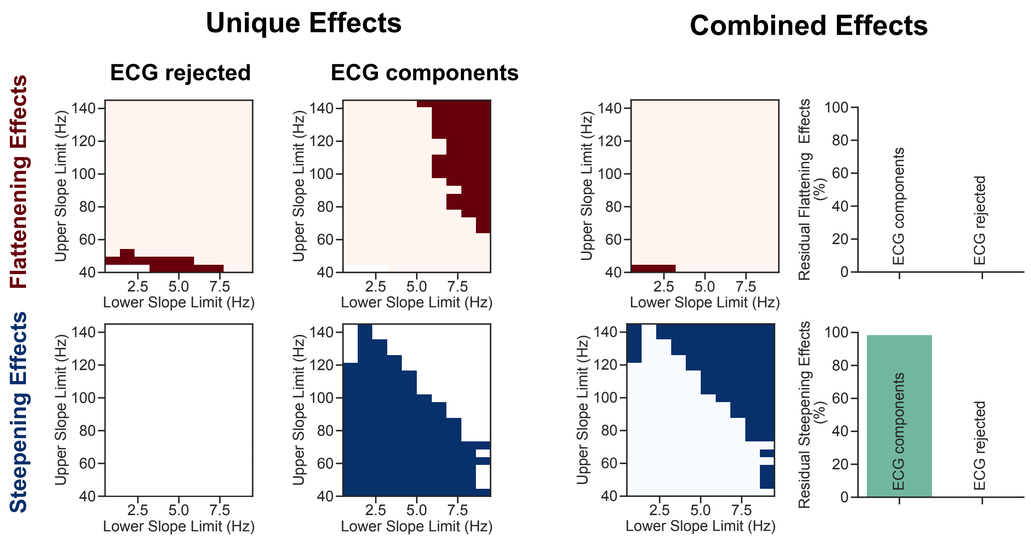


5 Age-related changes in 1/f dynamics are most pronounced in cardiac components





6 Linking between cortical and cardiac 1/f dynamics is frequency dependent



7 Conclusions

Cardiac activity explains a large proportion of (age-related) changes in 1/f dynamics (5), but unique/shared cortical effects remain (6)

Functional changes in 1/f dynamics are dependent on the frequency range and the recording site (5,6)

Our results raise concerns to the interpretation of 1/f dynamics as “cortical” without considering physiological influences

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