

## Publication

### A prospective cohort study of adolescents' memory performance and individual brain dose of microwave radiation from wireless communication

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The potential impact of microwave radiofrequency electromagnetic fields (RF-EMF) emitted by wireless communication devices on neurocognitive functions of adolescents is controversial. In a previous analysis, we found changes in figural memory scores associated with a higher cumulative RF-EMF brain dose in adolescents.; We aimed to follow-up our previous results using a new study population, dose estimation, and approach to controlling for confounding from media usage itself.; RF-EMF brain dose for each participant was modeled. Multivariable linear regression models were fitted on verbal and figural memory score changes over 1 y and on estimated cumulative brain dose and RF-EMF related and unrelated media usage (; n; =669-676). Because of the hemispheric lateralization of memory, we conducted a laterality analysis for phone call ear preference. To control for the confounding of media use behaviors, a stratified analysis for different media usage groups was also conducted.; We found decreased figural memory scores in association with an interquartile range (IQR) increase in estimated cumulative RF-EMF brain dose scores: -0.22 (95% CI: -0.47, 0.03; IQR: 953/kg) in the whole sample, -0.39 (95% CI: -0.67, -0.10; IQR: 953/kg) in right-side users (; n; =532), and -0.26 (95% CI: -0.42, -0.10; IQR: 341/kg) when recorded network operator data were used for RF-EMF dose estimation (; n; =274). Media usage unrelated to RF-EMF did not show significant associations or consistent patterns, with the exception of consistent (nonsignificant) positive associations between data traffic duration and verbal memory.; Our findings for a cohort of Swiss adolescents require confirmation in other populations but suggest a potential adverse effect of RF-EMF brain dose on cognitive functions that involve brain regions mostly exposed during mobile phone use. <https://doi.org/10.1289/EHP2427>.

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