

BOLD variability, which measures moment-to-moment fluctuations in brain signal, is sensitive to age differences in cognitive performance. However, the effect of aging on BOLD variability in the context of different cognitive demands is still unclear. The current study examined how **aging** affects brain variability across cognitive loads and the contribution of BOLD variability to **working memory** abilities. Participants (N = 149, ages 20–86) completed an fMRI n-back paradigm with 3 loads and 10-minute resting state scan. Rieck et al. found that BOLD variability was greater during **rest** compared to **task** and decreased even further as n-back load increased. Older age was associated with smaller load-related modulations of BOLD variability in default mode and fronto-parietal control networks. Increased variability in default mode, fronto-parietal control, and limbic regions and decreased variability in sensori-motor regions during the n-back task was associated with better working memory performance, regardless of age. Our findings suggest that working memory reductions in older ages are related to failure of core cognitive control and default mode regions to modulate dynamic range of activity in the face of increased demands ¹⁾.

Zhang Q, Cramer SR, Ma Z, Turner KL, Gheres KW, Liu Y, Drew PJ, Zhang N. Brain-wide ongoing activity is responsible for significant cross-trial **BOLD variability**. *Cereb Cortex*. 2022 Feb 18:bhac016. doi: 10.1093/cercor/bhac016. Epub ahead of print. PMID: 35179203.

¹⁾

Rieck JR, DeSouza B, Baracchini G, Grady CL. Reduced modulation of BOLD variability as a function of cognitive load in healthy aging. *Neurobiol Aging*. 2022 Feb 5;112:215-230. doi: 10.1016/j.neurobiolaging.2022.01.010. Epub ahead of print. PMID: 35240490.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

https://neurosurgerywiki.com/wiki/doku.php?id=bold_variability

Last update: **2024/06/07 02:55**

