Supporting Information

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SI Materials and Methods

Participants. To ensure stable effects of hydrocortisone over all participants, women were excluded from participation. Women are known to display HPA axis reactivity different from that in men, exhibiting smaller and more variable cortisol responses to stress (1), depending on menstrual cycle phase and use of hormonal contraceptives (2, 3). Furthermore, individuals who met any of the following criteria were excluded from participation: history of head injury; autonomic failure; history of or current psychiatric, neurological, or endocrine disorders; current periodontitis, acute inflammatory disease, acute peptic or duodenal ulcers; regular use of corticosteroids; treatment with psychotropic medications, narcotics, β-blockers, steroids, or any other medication that affects central nervous system or endocrine systems; medical illness within the 3 weeks before testing; self-reported mental or substance use disorder; daily tobacco or alcohol use; regular night shift work; or current stressful episode or major life event. Moreover, volunteers with high scores on depression [score >8 on the Beck Depression Inventory (4)] were excluded from participation.

Procedure. ***Before arrival.*** Before inclusion all eligible participants received an extensive information brochure, listing all inclusion and exclusion criteria and roughly explaining the setup of the experiment. If criteria were met (according to the participant's own insights), an appointment was made. To minimize differences in baseline cortisol levels, participants were instructed not to use any recreational drugs for 3 days, and to refrain from drinking alcohol, exercising, and smoking for 24 h, before the appointment. Furthermore, participants were requested not to brush their teeth, floss, or eat and drink anything but water for 1 h before the session, enabling adequate saliva sampling for cortisol assessment. They were asked to take a light lunch and do so no later than 1 h before arrival; their lunch could not contain any citrus products, coffee, tea, milk, or sweets (5). Throughout the entire study period, participants were given only water to drink, except for a scheduled lunch at 150 min before scanning. ***Scanning.*** At ∼4.5 h after arrival, participants were taken to the scanner room and the procedures were explained. Participants lay supine in the scanner and viewed the screen through a mirror positioned on the head coil. They were asked to lie as still as possible, to keep their eyes open, and to look directly and continuously at the center of the screen in front of them.

fMRI Data Preprocessing. The first five EPI volumes were discarded to allow for T1 equilibration. Before fMRI analysis, the images were motion corrected using rigid body transformations and least sum of squares minimization. Subsequently, the images were temporally adjusted to account for differences in sampling times across different slices. All functional images were then coregistered with the high-resolution T1-weighted structural image using normalized mutual information maximization. The anatomical image was subsequently used to normalize all scans into MNI152 (Montreal Neurological Institute) space. All functional images were resampled with a voxel size of 2 mm isotropic. Finally, all images were smoothed with an isotropic 8-mm, full-width-at-half-maximum Gaussian kernel to accommodate residual functional/anatomical variance among subjects.

Salivary Cortisol Measure. Saliva was collected using a commercially available collection device (Salivette, Sarstedt). For each sample, the participant first placed the cotton swab provided in each Salivette tube in his mouth and chewed gently on it for 1 min to produce saliva. The swab was then placed back in the Salivette tube, and the samples were stored in a freezer at −25 °C until assayed. Laboratory analyses were performed at the Department of Biopsychology, Technical University, Dresden, Germany. After thawing, salivettes were centrifuged at 3,000 rpm for 5 min, which resulted in a clear supernatant of low viscosity. Salivary free cortisol concentrations were subsequently measured using a commercially available chemiluminescence immunoassay with high sensitivity of 0.16 ng/mL (IBL).

Brain Activation Maps. Visualizations of activations were created using MRIcroN (http://www.sph.sc.edu/comd/rorden/mricron/) by superimposing statistical parametric maps thresholded at $P < 0.001$ uncorrected (unless specified otherwise) onto a canonical T1-weighted image in standard MNI152 space.

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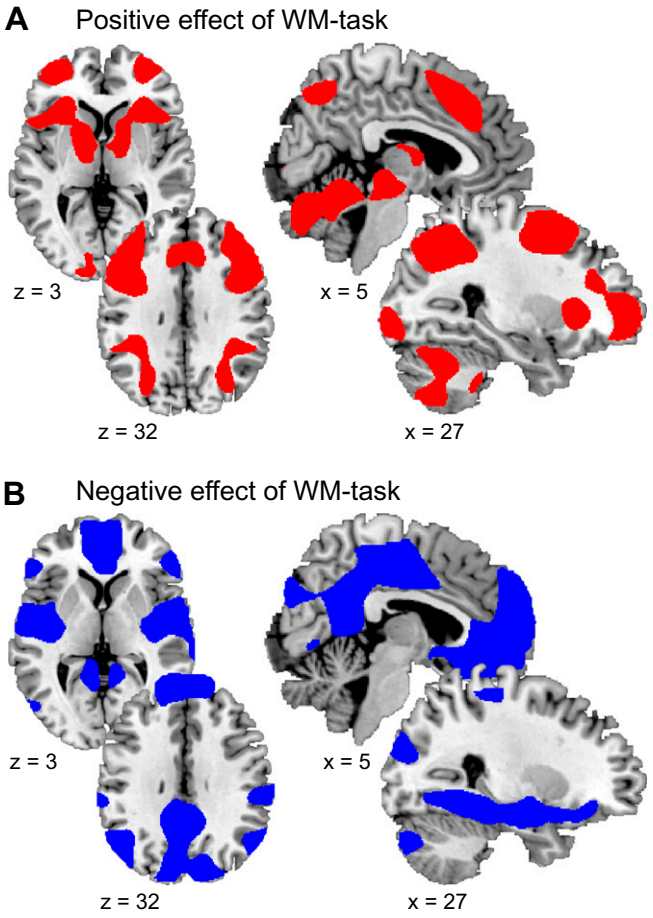

Fig. S1. Brain activation related to WM processing. (*A*) The n-back task activated a widespread set of brain regions in the bilateral prefrontal cortex (including the DLPFC), bilateral inferior parietal cortex, inferior occipital lobe, and cerebellum. (*B*) Regions deactivated by WM processing were the default mode network, including the posterior cingulate cortex, ventral medial PFC extending into the orbitofrontal cortex, and medial temporal lobe. Statistical parametric maps are familywise error corrected. Table 2 provides exact coordinates and values.

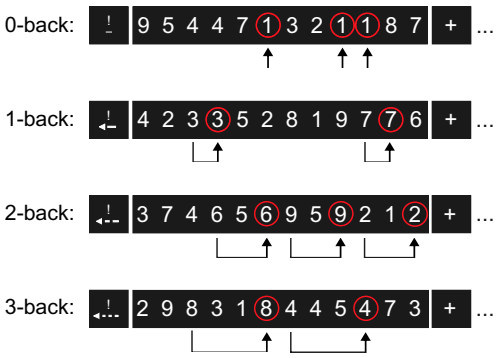

Fig. S2. n-Back task containing a 0-, 1-, 2-, and 3-back condition. Participants were instructed to press a button when the currently viewed number was identical to the one that they had seen n numbers before. For the 0-back condition, they were asked to press whenever they saw a numeral 1. All participants completed eight blocks of each condition, with every sequence consisting of 12 digits with either two or three targets.