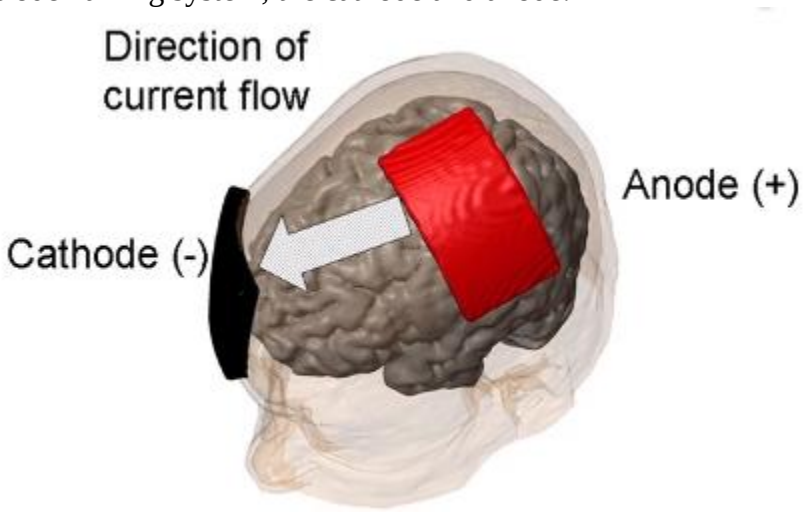
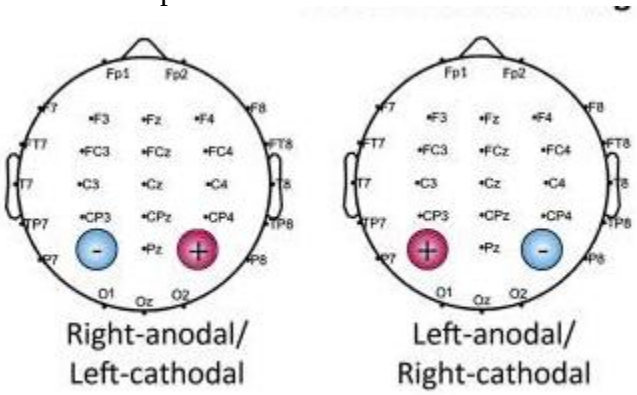
Electrode naming system, the cathode and anode:



Math Stim Setup:



Summary:
*RightSide Anode(+) LeftSide Cathode(-) showed increased math skills.

RightSide Cathode(-) LeftSide Anode(+) group showed an abnormal effect that mirrored the performance of children at the age of 6 years.

Modulating Neuronal Activity Produces Specific and Long-Lasting Changes in Numerical Competence
Sponsored Article

Roi Cohen Kadosh[1], , , Sonja Soskic[2], Teresa Iuculano[1,3], Ryota Kanai[3] and Vincent Walsh[3]

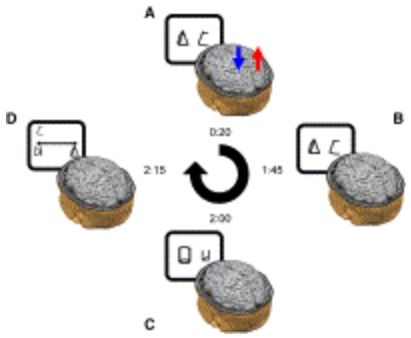


Figure 1.

A Schematic Outline of the Experimental Design in a Typical Daily Session

(A) TDCS was delivered for 20 min from the start of the training. In this case, anodal stimulation(+) was applied to the right parietal lobe (red arrow), whereas cathodal stimulation (-) was delivered to the left parietal lobe (blue arrow). The skulls are facing away from us in these drawings.

(B) The training continued after the termination of the stimulation.

(C and D) Once the training ended, the subjects performed the numerical Stroop task (C) and the number-to-space task (D). The time next to each image reflects the elapsed time from the beginning of the daily session until its termination in a cumulative fashion.

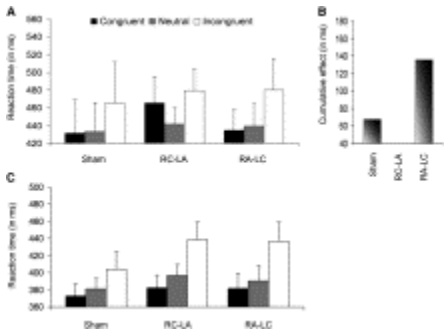


Figure 2.

The Congruity Effect for the Artificial Digits, the Cumulative Congruity Effect over Training, and the Congruity Effect for Everyday Digits for the Sham, RC-LA, and RA-LC Groups in the Numerical Stroop Task

The data of the artificial digits for each group are averaged across the sessions that showed a significant congruity effect (three sessions for the RA-LC group, two sessions for the sham

group, and five sessions for the RC-LA group; note that the latter group showed an abnormal congruity effect that was not changed as a function of learning), and the raw data, which includes RTs in each session for each group, are presented in Table S1.

(A) Whereas the RA-LC group and the sham group showed a typical congruity effect, the RC-LA group showed an abnormal effect that mirrored the performance of children at the age of 6 years and might reflect perceptual rather than semantic interference [22].

(B) The cumulative congruity effect demonstrates the emergence of a consistent automatic numerical processing already from the fourth day for the RA-LC group ($p = 0.005$, Table S1), whereas it occurred only later for the sham group ($p = 0.049$, Table S1) and did not appear for the RC-LA group.

(C) All groups showed a consistent and typical congruity effect for everyday digits ($p = 0.00009$; group x congruity interaction, $p = 0.46$), as reflected by slower RTs for the incongruent condition versus the congruent condition. Data are mean ± standard error (SE) of the mean. Note the different scaling in each panel. For a description of the task, see Figure S2.

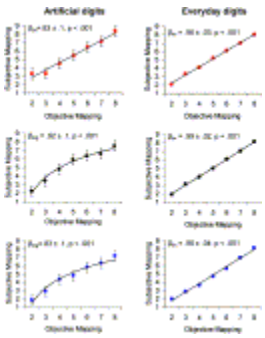


Figure 3.

Average Location of Artificial Digits on the Horizontal Segment, Shown Separately for Artificial Digits in the Left Column, Everyday Digits in the Right Column, and Type of Stimulation

β represents the selection of the best weight, whether it was logarithmic (β_{log}) or linear (β_{lin}), in stepwise regression analysis with linear and logarithmic predictors. Data are mean ± SE of the mean. The first row reflects the performance of the RA-LC group (red circles), the middle row reflects the performance of the sham group (black circles), and the bottom row presents the performance of the RC-LA group (blue circles). Whereas the performance with artificial digits was affected by the type of brain stimulation and showed a linear fit only for the RA-LC group, the performance with everyday digits was independent of the type of brain stimulation and showed a linear fit for all the groups. For a description of the task, see Figure S3.

Document S1. Supplemental Experimental Procedures, Supplemental Discussion, One Table, and Three Figures.