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Supplemental Information

**Functional Plasticity in Somatosensory Cortex
Supports Motor Learning by Observing**

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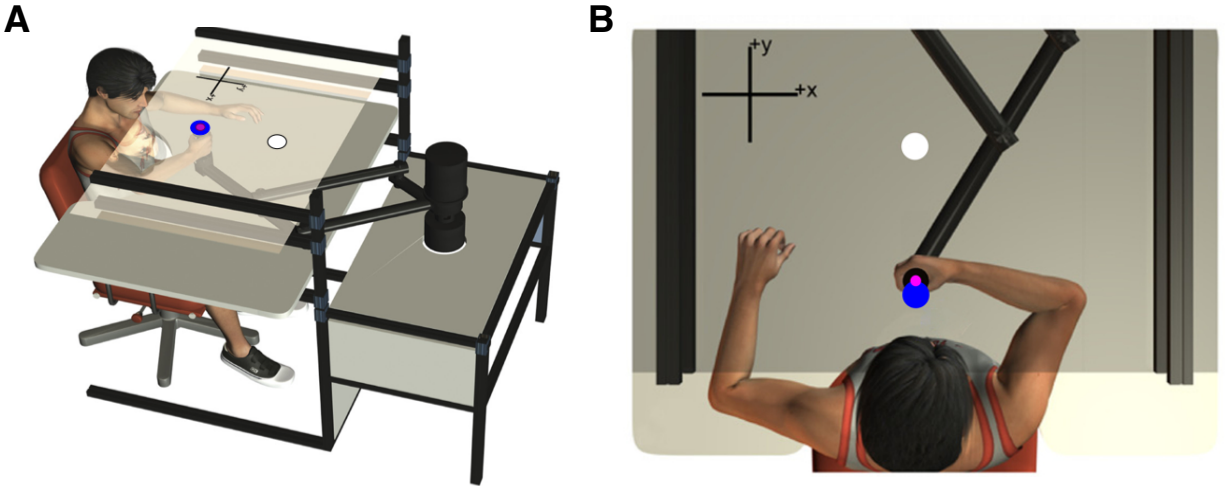


Figure S1. Robotic arm setup and reaching task. **A)** Participants grasped the handle of a robotic arm with their right hand. A LCD TV (not shown) projected visual feedback onto a semi-silvered mirror surface mounted just above the robotic arm. **B)** Participants performed straight reaches in the horizontal plane from the start position (blue circle) to a target (white circle).

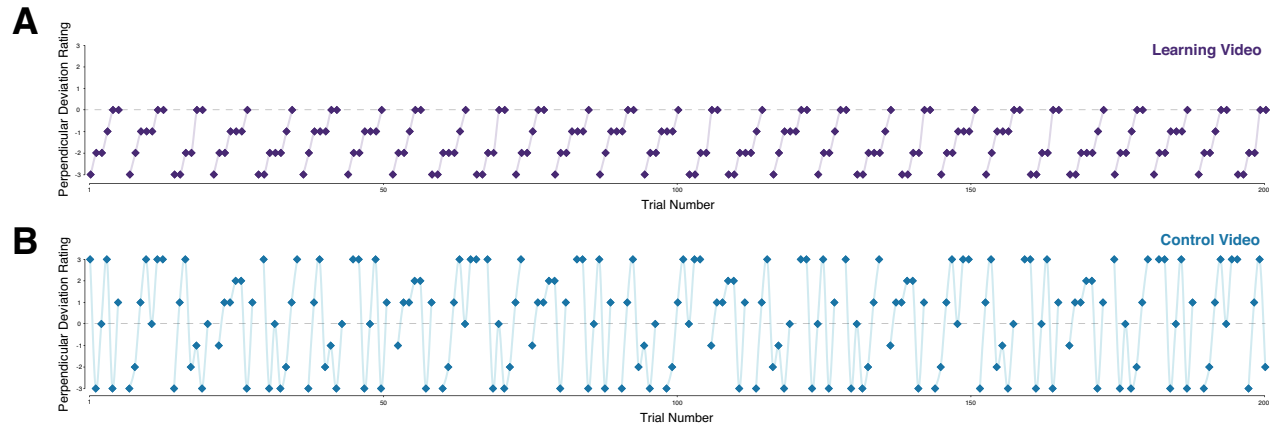


Figure S2. Curvature of the tutors' movements. Values on the y-axis represent ratings of the perpendicular deviation (from 0-3) of reaches in each video. 0 indicates that the movement was straight (indistinguishable from a null field movement). 3 indicates a highly curved movement. Positive and negative values indicate rightward and leftward movement deviation, respectively. A) The learning video depicted a series of 30-second clips showing a tutor adapting her reaches to a leftward force field (left FF), progressing from leftward curved to straight movements. B) The control video depicted a series of 30-second clips showing a tutor performing reaches in an unlearnable FF, which varied randomly from trial to trial between a left FF, a right FF or null field.

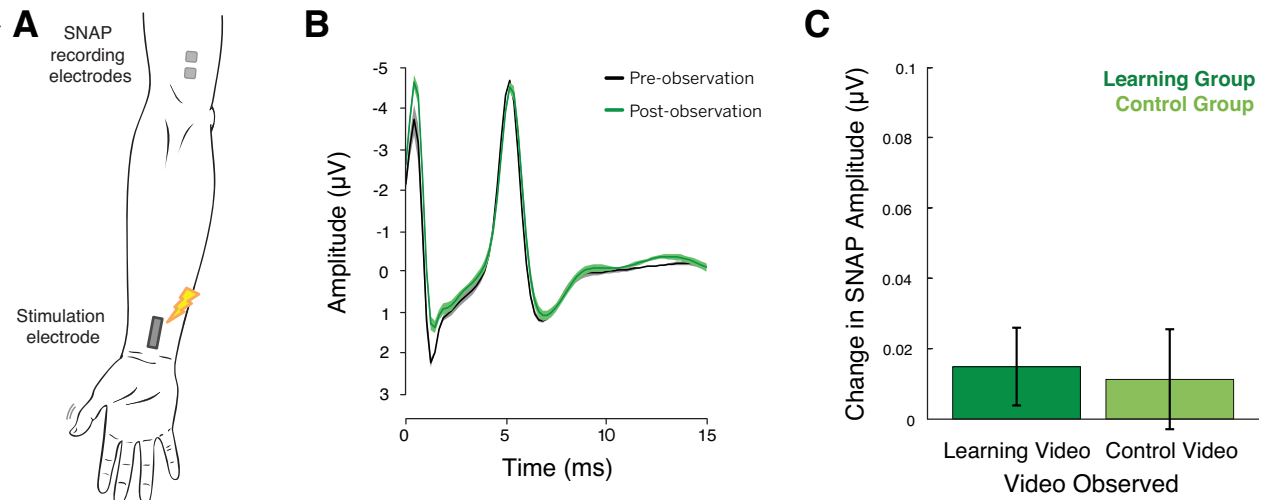


Figure S3. Sensory nerve action potentials (SNAPs). **A)** SNAPs were acquired during each SEP recording to ensure consistent stimulation was applied to the median nerve across recordings. Stimulation was applied to the right wrist. SNAPs were recorded using a pair of recording electrodes on the anterior surface of the right arm just above the right elbow. **B)** Representative SNAPs acquired from a single participant during pre-observation (black) SEP recordings and during post-observation SEP recordings (green). Each trace is the average of approximately 1500 stimulations. Stimulations were delivered at 0 ms. Shaded error bars represent SEM. **C)** Mean change in SNAP amplitude from pre- to post-observation for the learning group (dark green) and the control group (light green). Error bars represent SEM.