Supplementary Material

Supplemental Results

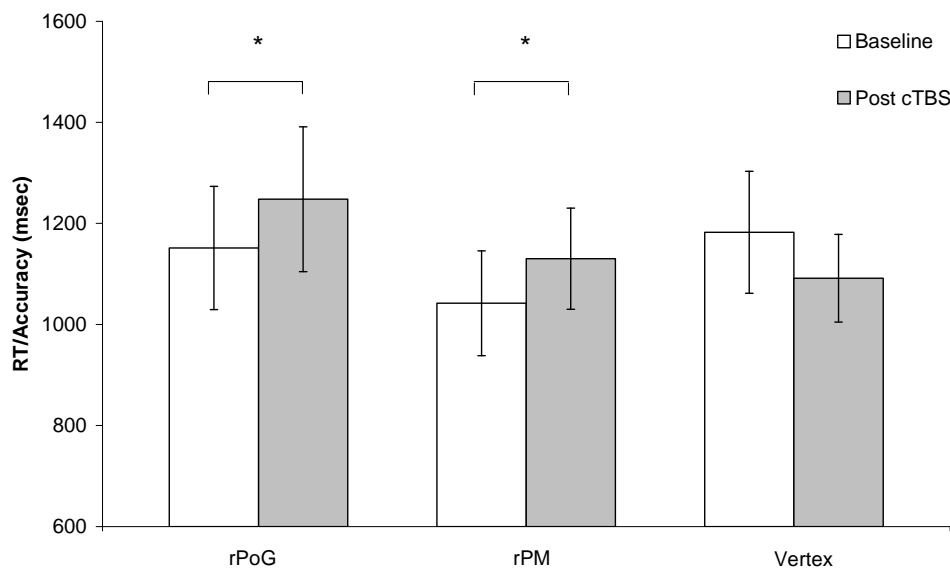|	Site		
Emotion Type	rPoG	rPM	Vertex
Amusement	-70.7 (± 54.83)	-35.6 (± 57.23)	47.15 (± 49.08)
Disgust	-62.8 (± 50.09)	-85.87 (± 63.35)	142.46 (± 105.43)
Fear	-147.91 (± 99.18)	-61.11 (± 58.36)	-7.90 (± 85.95)
Sadness	-89.47 (±59.53)	-165.85 (± 66.24)	215.77 (± 117.54)

Supplemental Table 1. Magnitude of disruption or facilitation (mean ± s.e.m) in milliseconds across emotion types following cTBS targeted at rPoG, rPM, or the Vertex for the emotion discrimination task group. To clarify whether the overall disruption of auditory emotion discrimination observed following stimulation of sensorimotor cortices in experiment 1 was linked to a greater impairment for specific emotions or was expression-general, we compared the effects of cTBS (corrected baseline RT minus corrected post cTBS RT) in the emotion task group for each emotion type (amusement, disgust, fear, sadness) using a 3 (TMS Site) x 4 (Emotion-Type) repeated measures ANOVA. This revealed a main effect of TMS Site, [$F_{(2, 18)}$ = 4.97, p = <.05], due to the overall impairment in auditory expression matching following cTBS targeted at rPoG and rPM relative to the vertex noted in the main text, but no significant interaction [$F_{(6, 54)}$ = 1.32, nsig] or main effect of emotion-type [$F_{(3, 27)}$ = .812, nsig]. Trials were categorized according to the prime stimulus. A disruption in reaction times following stimulation is shown by a negative value and facilitation by a positive value.

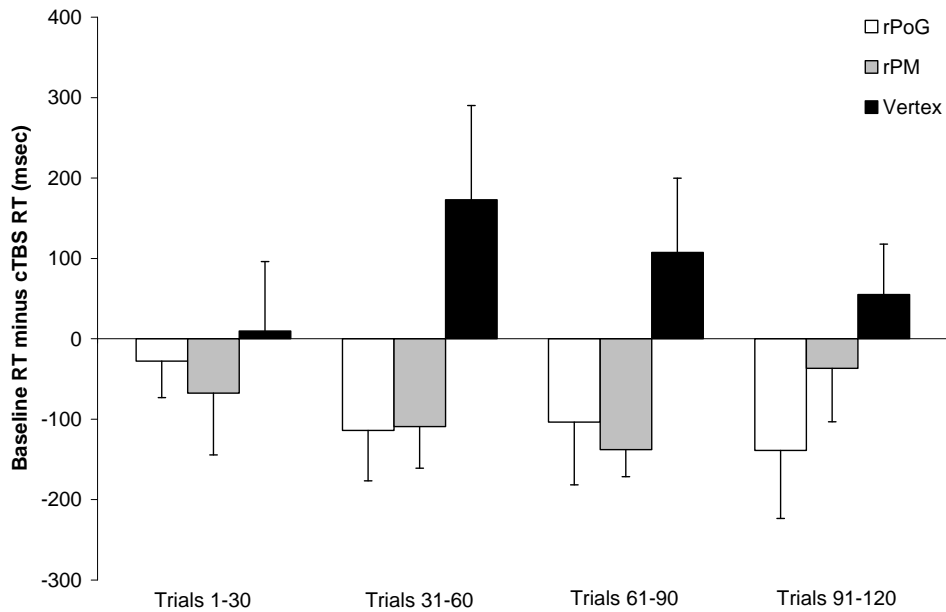|	Site		
Condition	rPoG	rPM	Vertex
Emotion Matching	-1.20% (± 1.62 %)	-0.33% (± 1.08%)	0.41% (± 1%)
Identity Matching	-0.59% (± 2%)	-0.44% (± 1.01%)	-1.65% (± 0.64%)

Supplemental Table 2. Magnitude of disruption or facilitation in accuracy (mean ± s.e.m) across sites in Experiments 1 (emotion matching) and 2 (identity matching). No significant differences were found across sites in either the emotion task [$F_{(2, 18)}$ = .468, nsig] or the identity task group [$F_{(2, 18)}$ = .266, nsig].

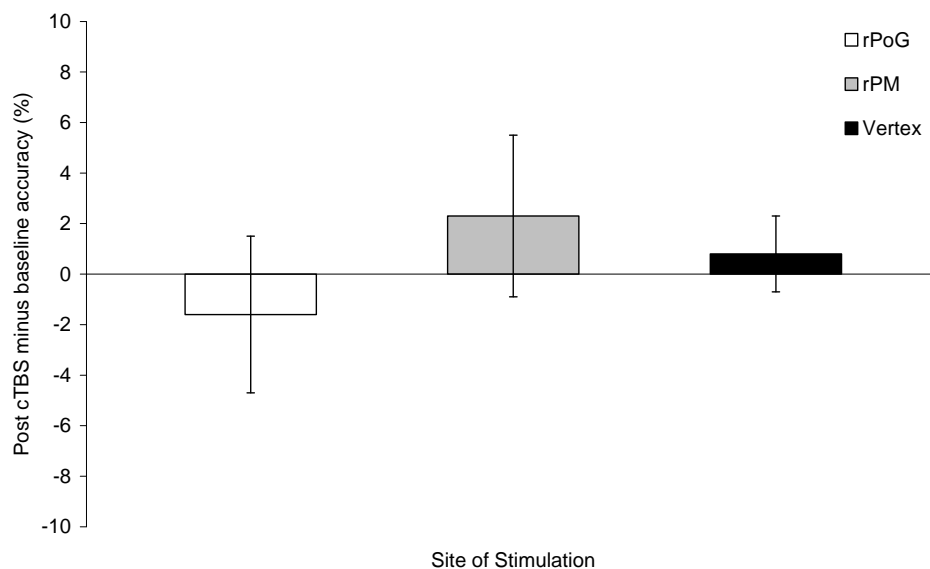|	Site		
Condition	rPoG	rPM	Vertex
Emotion Matching Baseline	89.25% (± 1.73%)	92.32% (± 1.66%)	87.83% (± 2.30%)
Emotion Matching Post cTBS	88.05% (± 2.48%)	91.99% (± 1.64%)	88.25% (± 2.31%)
Identity Matching Baseline	63.82% (± 1.59%)	64.18% (± 1.2%)	66.19% (± 1.15%)
Identity Matching Post cTBS	63.23% (± 1.66%)	63.74% (± 1.31%)	64.54% (± 1.40%)

Supplemental Table 3. Percentage of correct responses (mean± s.e.m) at baseline and following cTBS in Experiments 1 (emotion matching) and 2 (identity matching). For the emotion matching group, no significant differences were found on accuracy levels following stimulation at rPoG [t(9) = .743, n.sig], rPM [t(9) = .303, n.sig], or the vertex [t(9) = .418, n.sig]. This was also the case for the identity matching group (rPoG: [t(9) = .291, n.sig]; rPM: [t(9) = .436, n.sig]), except that the percentage of correct responses significantly differed following stimulation of the vertex relative to baseline [t(9) = 2.56, p = .031].

Supplemental Figure 1. Reaction time (corrected for accuracy) performance at baseline and following cTBS for each site stimulated when participants discriminated auditory emotion (Experiment 1). A disruption in participants' abilities to discriminate auditory emotions was found following cTBS stimulation to rPoG and rPM, but not the vertex. * = p ≤ .05.

Supplemental Figure 2. Baseline reaction time (corrected for accuracy) minus cTBS condition reaction time (corrected for accuracy) for each site stimulated in the emotion discrimination task across 30 trial blocks. A negative value indicates a disruption from the baseline condition. Note, that a five minute post-TBS rest period was implemented prior to the first trial.

Supplemental Figure 3. The role of sensorimotor cortex activity in discriminating vocal identity from noise vocoded speech (Experiment 3). To assess accuracy performance across sites, we calculated the difference between accuracy in the baseline condition relative to the post-cTBS condition for each site stimulated. A disruption in accuracy following stimulation is shown by a negative value and facilitation by a positive value. The effects of cTBS targeted at rPoG, rPM and the vertex did not significantly differ between the sites stimulated.