Supplemental Table 1. *T*-matrix for the interaction between task (pantomiming > picture matching) and epoch (stimulus-driven functional connectivity > pre-stimulus functional connectivity) using functional connectivity with the global mean regressed. All edges survive FDR (q < .05) correction. Two edges (LDO-with-RHWM and LDO-with-LLOC) were statistically significant (p < .05) but did not survive FDR correction; all other edges in the network maintain the same pattern of connectivity increase as is presented in Table 2. Values in yellow are significant for global mean regressed data only. Abbreviations. PMd, Left dorsal premotor cortex; PMv, left ventral premotor cortex; LIPL, left inferior parietal lobule; LMFG, left medial fusiform gyrus; LMTG, left posterior middle/inferior temporal gyrus; LDO, left dorsal occipital cortex; RHWM, right wrist motor representation; LLOC, left lateral occipital cortex.

	PMd	PMv	LIPL	LMFG	LMTG	LDO	RHWM	LLOC
PMd	-							
PMv	-	-						
LIPL	-	-	-					
LMFG	-	-	-	-				
LMTG	-	-	-	-4.09	-			
LDO	-	-	-	-3.52	-	-		
RHWM	3.30	<mark>4.21</mark>	8.11	4.80	3.97	-	-	
LLOC	-	-	-	-6.84	-	-	4.71	-

Supplemental Figure 2. *T*-matrix for the contrast of Stimulus-driven tool pantomiming > Prestimulus tool pantomiming using functional connectivity with the global mean regressed. All edges survive FDR (q < .05) correction. All edges that are significant in Table 3 are significant here; values in yellow are significant for global mean regressed data only. Abbreviations. PMd, Left dorsal premotor cortex; PMv, left ventral premotor cortex; LIPL, left inferior parietal lobule; LMFG, left medial fusiform gyrus; LMTG, left posterior middle/inferior temporal gyrus; LDO, left dorsal occipital cortex; RHWM, right wrist motor representation; LLOC, left lateral occipital cortex.

	PMd	PMv	LIPL	LMFG	LMTG	LDO	RHWM	LLOC
PMd	-							
PMv	-	-						
LIPL	4.98	<mark>6.28</mark>	-					
LMFG	4.63	<mark>3.78</mark>	<mark>5.14</mark>	-				
LMTG	3.29	-	4.20	<mark>2.54</mark>	-			
LDO	2.82	2.82	-	-	-	-		
RHWM	4.14	<mark>4.88</mark>	9.53	<mark>5.55</mark>	4.06	-	-	
LLOC	3.55	4.61	5.69	<mark>3.29</mark>	3.45	-	5.84	-

Supplemental Table 3. *T*-matrix for the contrast of Stimulus-driven tool picture matching > Prestimulus tool picture matching using functional connectivity with the global mean regressed. All edges survive FDR (q < .05) correction. One edge (LMTG-with-LDO) did not replicate the pattern in Table 4; all other edges in the network maintain the same pattern of connectivity increase as is presented in Table 4. Values in yellow are significant for global mean regressed data only. Abbreviations. PMd, Left dorsal premotor cortex; PMv, left ventral premotor cortex; LIPL, left inferior parietal lobule; LMFG, left medial fusiform gyrus; LMTG, left posterior middle/inferior temporal gyrus; LDO, left dorsal occipital cortex; RHWM, right wrist motor representation; LLOC, left lateral occipital cortex.

	PMd	PMv	LIPL	LMFG	LMTG	LDO	RHWM	LLOC
PMd	-							
PMv	-	-						
LIPL	-	<mark>2.91</mark>	-					
LMFG	-	6.51	5.93	-				
LMTG	-	-	<mark>2.76</mark>	4.26	-			
LDO	<mark>3.60</mark>	3.95	3.12	4.26	-	-		
RHWM	-	-	-	-	-	-	-	
LLOC	-	4.65	5.90	10.66	3.44	3.30	-	-

Supplemental Table 4. *T*-matrix for the interaction between task (pantomiming > picture matching) and epoch (stimulus-driven functional connectivity > pre-stimulus functional connectivity) when the analysis was restricted to two tool stimuli for each participant (iterating over every possible combination of two tools). This procedure was iterated over every

combination of two tool stimuli—this puts the analysis of the tool stimuli on the same footing as for animal stimuli (since there were 2 animals but 6 tools). Edges are reported that survive FDR q < .05 for each of three separate analyses: when the contrast was computed over all runs of data, and even runs only, and odd runs only (i.e., split-half analysis). Abbreviations. PMd, Left dorsal premotor cortex; PMv, left ventral premotor cortex; LIPL, left inferior parietal lobule; LMFG, left medial fusiform gyrus; LMTG, left posterior middle/inferior temporal gyrus; LDO, left dorsal occipital cortex; RHWM, right hand/wrist motor representation; LLOC, left lateral occipital cortex.

	PMd	PMv	LIPL	LMFG	LMTG	LDO	RHWM	LLOC
PMd	-							
PMv	-	-						
LIPL	-	-	-					
LMFG	-	-	-	-				
LMTG	-	-	-	-5.32	-			
LDO	-	-	-	-4.82	-	-		
RHWM	4.16	-	4.70	3.43	9.48	3.86	-	
LLOC	-	-	-	-6.48	-	-4.61	5.43	-

Supplemental Table 5. *T*-matrix for the contrast of Stimulus-driven tool pantomiming > Prestimulus tool pantomiming, when the analysis was restricted to two tool stimuli for each participant (iterating over every possible combination of two tools). Edges are reported that meet the strict criteria of surviving FDR-corrected alpha levels (q < .05) when the contrast was computed over all runs of data, and even and odd runs only (split-half analysis). Abbreviations. PMd, Left dorsal premotor cortex; PMv, left ventral premotor cortex; LIPL, left inferior parietal lobule; LMFG, left medial fusiform gyrus; LMTG, left posterior middle/inferior temporal gyrus; LDO, left dorsal occipital cortex; RHWM, right hand/wrist motor representation; LLOC, left lateral occipital cortex.

	PMd PMd	PMv PMv	LIPL LIPL	LMFG LMFG	LMTG LMTG	LDO LDO	RHWM RHWM	LLOC LLOC
PMd	-							
PMv	-	-						
LIPL	6.50	-	-					
LMFG	7.72	-	-	-				
LMTG	3.87	-	4.88	-	-			
LDO	4.46	4.85	-	-	-	-		
RHWM	4.07	-	5.99	-	9.12	-	-	
LLOC	4.40	4.26	5.38	-	6.94	-	4.75	-

Supplemental Table 6. *T*-matrix for the contrast of Stimulus-driven tool picture matching > Prestimulus tool picture matching, when the analysis was restricted to two tool stimuli for each participant (iterating over every possible combination of two tools). Edges are reported that meet the strict criteria of surviving FDR-corrected alpha levels (q < .05) when the contrast was computed over all runs of data, and even and odd runs only (split-half analysis). Abbreviations. PMd, Left dorsal premotor cortex; PMv, left ventral premotor cortex; LIPL, left inferior parietal lobule; LMFG, left medial fusiform gyrus; LMTG, left posterior middle/inferior temporal gyrus; LDO, left dorsal occipital cortex; RHWM, right hand/wrist motor representation; LLOC, left lateral occipital cortex.

PMd	-							
PMv	-	-						
LIPL	-	-	-					
LMFG	-	4.79	5.38	-				
LMTG	-	-	-	7.06	-			
LDO	-	4.19	5.25	7.39	5.10	-		
RHWM	-	-	-	-	-	-	-	
LLOC	_	3.70	4.52	8.16	7.45	5.72	-	-

Supplemental Table 7. Edge and vertex betweenness centrality during tool pantomiming. Betweenness centrality was computed among edges that exhibited increased functional connectivity for tool pantomiming (FDR q < .05; tool pantomiming functional connectivity > pre-stimulus functional connectivity). Abbreviations. PMd, Left dorsal premotor cortex; PMv, left ventral premotor cortex; LIPL, left inferior parietal lobule; LMFG, left medial fusiform gyrus; LMTG, left posterior middle/inferior temporal gyrus; LDO, left dorsal occipital cortex; RHWM, right hand/wrist motor representation; LLOC, left lateral occipital cortex.

	PMd PMd	PMv PMv	LIPL LIPL	LMFG LMFG	LMTG LMTG	LDO LDO	RHWM RHWM	LLOC LLOC	Vertex Centrality Vertex Centrality
PMd									10 17
1 IVIU									17.17
PMv	-	-							0.83
LIPL	3.00	-	-						0.50
LMFG	7.00	-	-	-					-
LMTG	3.25	-	2.08	-	-				3.67
LDO	5.92	1.75	-	-	-	-			0.67
RHWM	3.00	-	1.25	-	0.75	-	-		0.67
LLOC	4.00	6.08	1.17	-	4.58	-	2.67	-	11.50

Supplemental Table 8. Edge and vertex betweenness centrality during tool picture matching. Betweenness centrality was computed among edges that exhibited increased functional connectivity for tool picture matching (FDR q < .05; tool picture matching functional connectivity > pre-stimulus functional connectivity). Abbreviations. PMd, Left dorsal premotor cortex; PMv, left ventral premotor cortex; LIPL, left inferior parietal lobule; LMFG, left medial fusiform gyrus; LMTG, left posterior middle/inferior temporal gyrus; LDO, left dorsal occipital cortex; RHWM, right hand/wrist motor representation; LLOC, left lateral occipital cortex.

PMd	-								-
PMv	-	-							-
LIPL	-	-	-						-
LMFG	-	1.58	1.83	-					2.83
LMTG	-	-	-	2.25	-				1.67
LDO	-	0.92	0.75	1.08	1.58	-			1.33
RHWM	-	-	-	-	-	-	-		-
LLOC	-	2.50	2.42	1.08	2.84	2	-	-	5.83

Supplemental Figure 1. Modulation of stimulus-driven functional connectivity during animal pantomiming and animal picture matching.



Animal Pantomiming FC > Pre-Stimulus FC

A.ii. T-values for the Contrast of

B. Animal Picture Matching > Pre-stimulus Functional Connectivity B.i. ROI-based







B.ii. T-values for the Contrast of Animal Picture Matching FC > Pre-Stimulus FC



Supplemental Figure 1. Modulation of stimulus-driven functional connectivity during animal pantomiming and animal picture matching. A. Relative to the pre-stimulus condition, animal pantomiming elicited increased functional connectivity among frontal-parietal structures (PMd, PMv, RHWM, LIPL) and left lateral occipital cortex (see panel i). In panel A, ii are the tvalues associated with the simple effects plotted as a heatmap. Note that an 'X' in a cell in the heatmap corresponds to a non-significant t-score associated with the simple effect of Animal Pantomiming; a '/' in a cell represents a t-score that is significant but does not survive FDRcorrected alpha. B. During animal picture matching we observed increased functional connectivity, relative to the pre-stimulus condition, among left dorsal occipital cortex, left lateral occipital cortex, ventral temporal tool areas (LMFG, LMTG), and the left ventral and dorsal premotor cortex (see panel i). The *t*-values associated with the simple effects are plotted as a heatmap in panel B.ii. Similar to the symbols in the heatmap of A.ii, an 'X' in a cell in the heatmap corresponds to a non-significant t-score associated with the simple effect of Animal picture matching; a '/' in a cell represents a t-score that is significant but does not survive FDRcorrected alpha. PMd = left dorsal premotor cortex; PMv, left ventral premotor cortex; RHWM =

right hand/wrist motor; LIPL = left inferior parietal lobule; LMFG = left medial fusiform gyrus; LMTG = left middle temporal gyrus.