

SUPPLEMENTARY MATERIALS

Outliers

A-priori any analyses, four items were removed to account for the consistency within the dataset: three adjectives ('cold', 'fat', 'cold'), and a hyphenated compound noun ('merry-go-round'), leaving 116 items referring to objects (60) and actions (56) only. Outliers were further identified as: (i) any participant with an accuracy below 3SD or with RT above 3SD from the mean; (ii) any item with an accuracy below chance level (50%) or Reaction Time (RT) above 3SD from the mean; (iii) any trial with RTs greater than 3SD from the mean of all trials; (iv) any trials which had video loading issues signaled by Gorilla.

Analysis 1

For the Congruent dataset, three items and two participants were removed due to RTs longer than 3SD from the mean; one participant was removed due to the accuracy scores below 3SD from the mean; three trials were removed due to loading issues, and 38 trials across participants and items were removed due to the RTs above 3SD from the mean. For the Incongruent dataset, two items and two participants were removed due to the RTs being above 3SD from the mean; one participant performed below 3SD from the accuracy mean; 26 trials were removed due to video loading issues and another 23 trials were removed due to RT longer than 3SD from the mean across all trials. All items were well above chance level (>65%). This left us with 50 participants and 113 items for the Congruent analysis, and 48 participants and 114 items for the Incongruent analysis.

Analysis 2

The outliers were recalculated based on the combined Congruent and Incongruent datasets for the trials in which the gesture was always present. Two items and two participants were above 3SD from the mean based on the RT, and three additional participants scored below 3SD from the mean based on accuracy. Those were subsequently removed from further analysis.

Additionally, 37 trials were excluded due to being 3SD above the RT mean based on all the trials across participants. The trials with video-loading issues, as noted above, were also removed, leaving us with a total of 99 participants, 114 items, and 5608 trials to analyze.

Full results**Analysis 1****Table 1**

Regression results of Accuracy and Reaction Times (RTs) for the Congruent (A) and Incongruent (B) Gestures.

A.

MIXED-EFFECT REGRESSION RESULTS – CONGRUENT GESTURES

Dependent variable:	Accuracy				Reaction Time				
Model fit:	Maximum likelihood (Laplace Approximation)				Restricted maximum likelihood (Satterthwaite Approximation)				
Conditional R ²	0.134				0.594				
RANDOM EFFECTS									
	Variance	SD			Variance	SD			
<i>Item (Intercept)</i>	1.555	1.247			0.009	0.095			
Gesture Presence	0.710	0.843			0.003	0.058			
Speech Clarity	0.688	0.829			0.000	0.018			
<i>ParticipantID (Intercept)</i>	0.404	0.635			0.026	0.161			
Gesture Presence	0.052	0.229			0.000	0.019			
Speech Clarity	0.114	0.338			0.000	0.006			
FIXED EFFECTS									
	Estimate	SE	z value	Pr(> z)	Estimate	SE	DF	t value	Pr(> z)
<i>(Intercept)</i>	4.707	0.257	18.312	< 2e-16 ***	7.493	0.024	64.220	303.528	< 2e-16 ***
Gesture Presence	-0.389	0.190	-2.048	0.040 *	0.031	0.006	122.500	4.737	0.000 ***
Speech Clarity	0.644	0.204	3.156	0.001 **	-0.035	0.003	56.460	-11.391	0.000 ***
Mouth Informativeness	0.841	1.246	0.675	0.499	0.098	0.069	106.800	1.411	0.161
Gesture Presence:Speech Clarity	-0.114	0.123	-0.930	0.352	-0.008	0.002	4995.00	-3.645	0.000 ***
Gesture Presence:Mouth Informativeness	0.771	0.969	0.796	0.426	0.082	0.044	109.300	1.870	0.064
Speech Clarity:Mouth Informativeness	0.317	0.966	0.329	0.742	0.010	0.022	103.900	0.481	0.631
Gesture Presence:Speech Clarity: Mouth Informativeness	0.530	0.732	0.724	0.469	0.030	0.017	4895.00	1.724	0.084
CONTROL VARIABLES									
	Estimate	SE	z value	Pr(> z)	Estimate	SE	DF	t value	Pr(> z)
Age of Acquisition	-0.200	0.126	-1.588	0.112	0.013	0.007	107.600	1.875	0.063
Frequency	0.011	0.240	0.047	0.962	-0.008	0.014	106.300	-0.609	0.543
Number of Syllables	0.233	0.329	0.708	0.479	0.037	0.018	106.500	2.100	0.038 *
Semantic Category	-0.450	0.174	-2.581	0.009 **	-0.011	0.010	106.600	-1.090	0.278

Note: Reference levels: 'Clear' for Speech Clarity, 'Absent' for Gesture Presence, and 'Action' for Semantic Category. *0.05; **p<0.01; ***p<0.001

B.**MIXED-EFFECT REGRESSION RESULTS – INCONGRUENT GESTURES**

Dependent variable:	Accuracy		Reaction Time						
Model fit:	Maximum likelihood (Laplace Approximation)		Restricted maximum likelihood (Satterthwaite Approximation)						
Conditional R ²	0.154		0.500						
RANDOM EFFECTS									
	Variance	SD	Variance	SD					
<i>Item (Intercept)</i>	0.813	0.901	0.012	0.109					
Gesture Presence	n/a due to singularity		0.005	0.071					
Speech Clarity	0.063	0.251	0.000	0.012					
<i>ParticipantID (Intercept)</i>	0.753	0.868	0.030	0.173					
Gesture Presence	n/a due to singularity		n/a due to singularity						
Speech Clarity	0.143	0.379	0.000	0.021					
FIXED EFFECTS									
	Estimate	SE	z value	Pr(> z)	Estimate	SE	DF	t value	Pr(> z)
<i>(Intercept)</i>	3.454	0.194	17.824	< 2e-16 ***	7.567	0.027	61.860	277.558	< 2e-16 ***
Gesture Presence	0.297	0.069	4.322	0.000 ***	-0.012	0.007	110.000	-1.685	0.095
Speech Clarity	0.911	0.133	6.832	0.000 ***	-0.041	0.005	42.930	-8.832	0.000 ***
Mouth Informativeness	-0.698	0.871	-0.802	0.432	0.153	0.081	107.800	1.871	0.064
Gesture Presence:Speech Clarity	-0.046	0.068	-0.668	0.504	0.003	0.003	4677.00	0.808	0.419
Gesture Presence:Mouth Informativeness	0.542	0.548	0.989	0.323	0.094	0.055	110.600	1.692	0.094
Speech Clarity:Mouth Informativeness	0.345	0.584	-0.517	0.554	-0.034	0.026	103.900	-1.315	0.191
Gesture Presence:Speech Clarity: Mouth Informativeness	-0.282	0.545	-0.517	0.605	0.044	0.025	4722.00	1.804	0.071
CONTROL VARIABLES									
	Estimate	SE	z value	Pr(> z)	Estimate	SE	DF	t value	Pr(> z)
Age of Acquisition	-0.229	0.093	-2.456	0.014 *	0.004	0.009	108.000	0.485	0.629
Frequency	-0.298	0.182	-1.634	0.102	-0.018	0.018	107.500	-0.973	0.333
Number of Syllables	0.227	0.220	1.031	0.303	0.044	0.022	107.200	2.050	0.043 *
Semantic Category	-0.297	0.124	-2.390	0.017 *	-0.009	0.012	107.200	-0.734	0.465

Note: Reference levels: 'Clear' for Speech Clarity, 'Absent' for Gesture Presence, and 'Action' for

Semantic Category. *0.05; **p<0.01; ***p<0.001

Analysis 2

Table 2

Regression results of Accuracy and Reaction Times (RTs) for the combined Congruent and Incongruent Gestures.

MIXED-EFFECT REGRESSION RESULTS – CONGRUENT & INCONGRUENT GESTURES

Dependent variable:	Accuracy					Reaction Time					
Model fit:	Maximum likelihood (Laplace Approximation)					Restricted maximum likelihood (Satterthwaite Approximation)					
Conditional R ²	0.137					0.466					
RANDOM EFFECTS											
	Variance	SD				Variance	SD				
<i>Item (Intercept)</i>	1.299	1.401				0.007	0.081				
Speech Clarity	0.425	0.652				0.000	0.011				
<i>ParticipantID (Intercept)</i>	0.322	0.567				0.034	0.184				
Speech Clarity	n/a due to singularity					0.000	0.020				
FIXED EFFECTS											
	Estimate	SE	z value	Pr(> z)		Estimate	SE	DF	z value	Pr(> z)	
<i>(Intercept)</i>	3.985	0.193	20.682	< 2e-16	***	7.525	0.020	126.50	370.685	< 2e-16	***
Congruency	-0.412	0.097	-4.234	0.000	***	0.035	0.019	96.890	1.834	0.070	
Speech Clarity	0.765	0.153	4.994	0.000	***	-0.032	0.004	70.010	-8.232	0.000	***
Mouth Informativeness	-0.514	1.110	-0.463	0.643		0.053	0.062	103.90	0.859	0.392	
Gesture Informativeness	-0.059	0.131	-0.447	0.655		-0.005	0.007	107.00	-0.727	0.469	
Congruency:Speech Clarity	0.484	0.076	6.369	0.000	***	-0.010	0.004	94.000	-2.800	0.006	**
Congruency:Mouth Informativeness	-1.068	0.632	-1.690	0.091		0.013	0.023	4898.0	0.557	0.577	
Speech Clarity:Mouth Informativeness	0.675	0.859	0.786	0.432		-0.066	0.025	109.10	-2.621	0.010	*
Congruency:Gesture Informativeness	0.015	0.072	0.205	0.838		0.008	0.003	4971.0	3.147	0.002	**
Speech Clarity:Gesture Informativeness	-0.071	0.099	-0.724	0.469		-0.001	0.003	108.10	-0.284	0.777	
Mouth Informativeness:Gesture Informativeness	-1.099	0.919	-1.196	0.232		-0.068	0.050	104.00	-1.360	0.177	
Congruency:Speech Clarity:Mouth Informativeness	0.157	0.632	0.249	0.804		-0.027	0.024	4934.0	-1.121	0.262	
Congruency:Speech Clarity:Gesture Informativeness	0.145	0.072	2.025	0.043	*	-0.001	0.003	4830.0	-0.447	0.655	
Congruency:Mouth Informativeness:Gesture Informativeness	0.386	0.483	0.799	0.424		0.033	0.019	5007.0	1.746	0.081	
Speech Clarity:Mouth Informativeness:Gesture Informativeness	0.241	0.716	0.336	0.737		-0.029	0.020	105.30	-1.439	0.153	
CONTROL VARIABLES											
	Estimate	SE	z value	Pr(> z)		Estimate	SE	DF	z value	Pr(> z)	
Age of Acquisition	-0.278	0.104	-2.664	0.008	**	0.013	0.007	105.10	1.809	0.073	
Frequency	-0.214	0.207	-1.035	0.301		0.005	0.014	104.00	0.345	0.731	
Number of Syllables	0.157	0.250	0.628	0.530		0.038	0.017	103.70	2.269	0.025	*
Semantic Category	-0.333	0.142	-2.345	0.019	*	-0.004	0.010	103.70	-0.440	0.661	

Note: Reference levels: 'Clear' for Speech Clarity, 'Incongruent' for Congruency, and 'Action' for Semantic Category. *0.05; **p<0.01; ***p<0.001