

Supplementary Material A: Figures

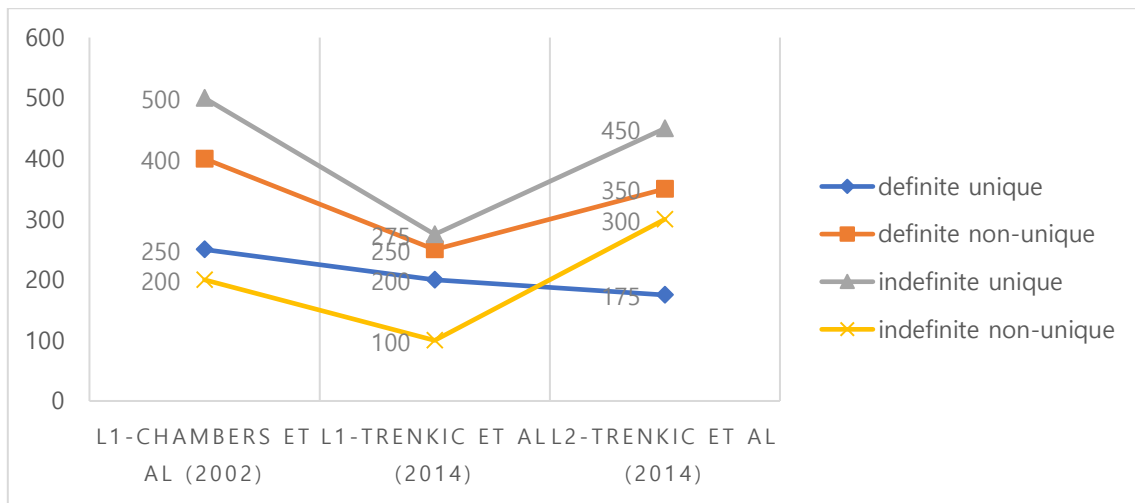


Figure S1. Comparison of the earliest fixation times to target between L1 and L2 groups in Chambers et al (2002) and Trenkic et al (2014).

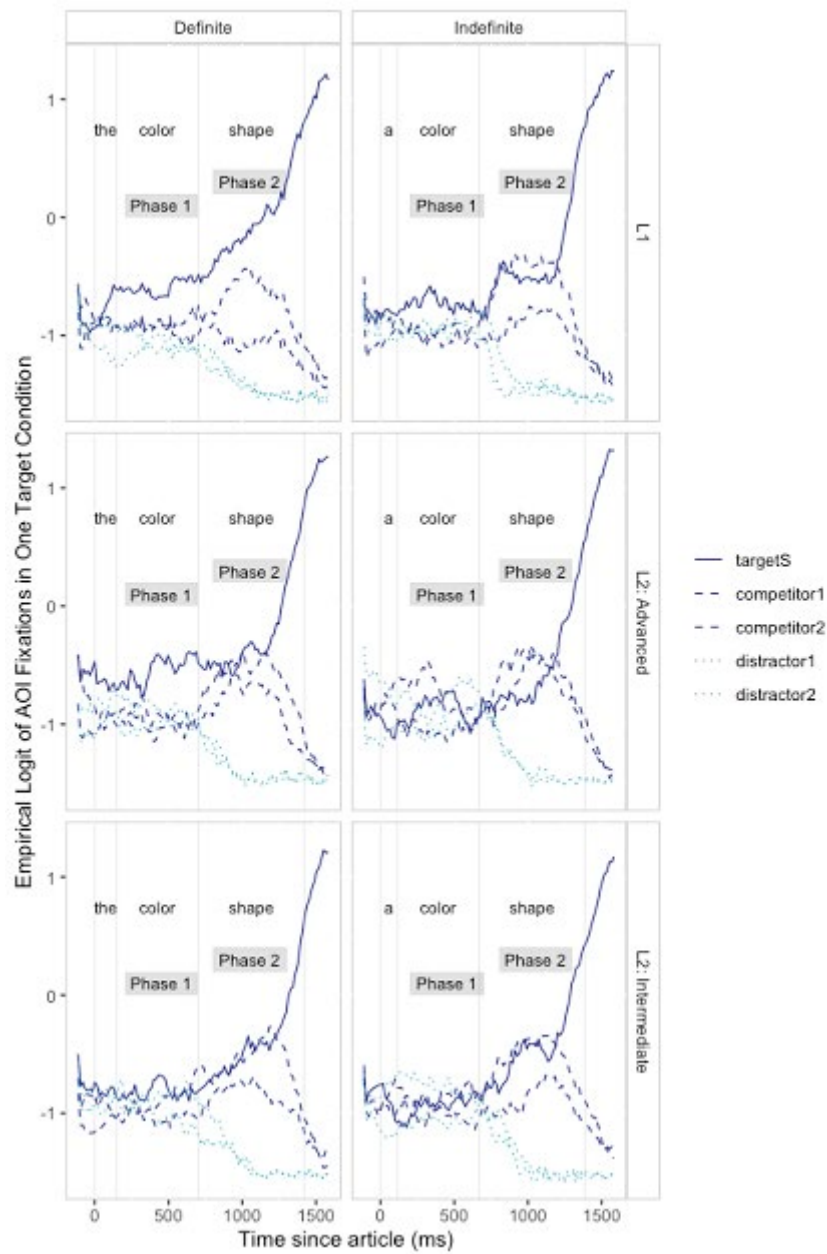


Figure S2. Empirical logits of fixation rates in the one-target condition.

Note. targetS = selected target (solid). Although there was only one target in the one-target condition, the term targetS was used to maintain consistency with the two-target condition.

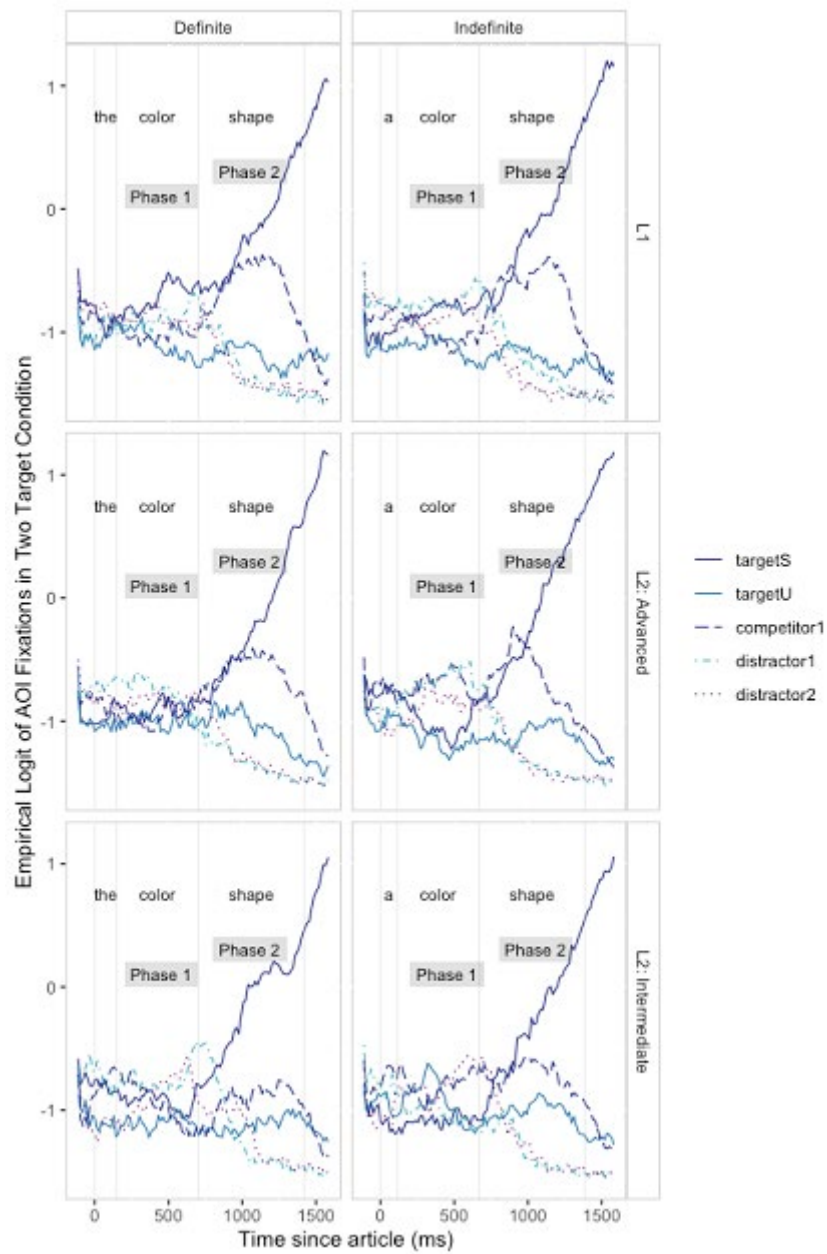


Figure S3. Empirical logits of fixation rates in the two-target condition.

Note. targetS and targetU were of the same color in visual stimuli; the solid lines for the two targets were shaded differently to distinguish targetS from targetU.

Supplementary Material B: List of Critical Stimuli

One-target visual condition					item #	Two target visual condition				
Region1	Region2	Region3	Region4	Region5		Region1	Region2	Region3	Region4	Region5
<i>black circle</i>	black heart	black heart	green square	green square	1	<i>black circle</i>	<i>black circle</i>	black heart	green square	pink star
grey star	<i>blue heart</i>	blue square	blue square	grey star	2	purple triangle	<i>blue heart</i>	<i>blue heart</i>	blue square	grey star
pink triangle	pink triangle	<i>brown square</i>	brown star	brown star	3	pink triangle	red circle	<i>brown square</i>	<i>brown square</i>	brown star
green triangle	purple circle	purple circle	<i>green star</i>	green triangle	4	green triangle	purple circle	white heart	<i>green star</i>	<i>green star</i>
grey circle	grey circle	red heart	red heart	<i>grey triangle</i>	5	<i>grey triangle</i>	grey circle	red heart	yellow square	<i>grey triangle</i>
<i>pink circle</i>	pink heart	pink heart	white square	white square	6	<i>pink circle</i>	<i>pink circle</i>	pink heart	white square	blue star
yellow star	<i>purple heart</i>	purple square	purple square	yellow star	7	brown triangle	<i>purple heart</i>	<i>purple heart</i>	purple square	yellow star
blue triangle	blue triangle	<i>red square</i>	red star	red star	8	blue triangle	green circle	<i>red square</i>	<i>red square</i>	red star
white triangle	brown circle	brown circle	<i>white star</i>	white triangle	9	white triangle	brown circle	grey heart	<i>white star</i>	<i>white star</i>
yellow circle	yellow circle	green heart	green heart	<i>yellow triangle</i>	10	<i>yellow triangle</i>	yellow circle	green heart	pink square	<i>yellow triangle</i>
<i>blue circle</i>	blue heart	blue heart	grey square	grey square	11	<i>blue circle</i>	<i>blue circle</i>	blue heart	grey square	purple star
pink star	<i>brown heart</i>	brown square	brown square	pink star	12	red triangle	<i>brown heart</i>	<i>brown heart</i>	brown square	pink star
purple triangle	purple triangle	<i>green square</i>	green star	green star	13	purple triangle	white circle	<i>green square</i>	<i>green square</i>	green star
grey triangle	red circle	red circle	<i>grey star</i>	grey triangle	14	grey triangle	red circle	yellow heart	<i>grey star</i>	<i>grey star</i>
pink circle	pink circle	white heart	white heart	<i>pink triangle</i>	15	<i>pink triangle</i>	pink circle	white heart	black square	<i>pink triangle</i>
<i>purple circle</i>	purple heart	purple heart	yellow square	yellow square	16	<i>purple circle</i>	<i>purple circle</i>	purple heart	yellow square	black star
black star	<i>red heart</i>	red square	red square	black star	17	blue triangle	<i>red heart</i>	<i>red heart</i>	red square	black star
black triangle	black triangle	<i>white square</i>	white star	white star	18	black triangle	brown circle	<i>white square</i>	<i>white square</i>	white star
yellow triangle	blue circle	blue circle	<i>yellow star</i>	yellow triangle	19	yellow triangle	blue circle	green heart	<i>yellow star</i>	<i>yellow star</i>
black circle	black circle	brown heart	brown heart	<i>black triangle</i>	20	<i>black triangle</i>	black circle	brown heart	grey square	<i>black triangle</i>
<i>brown circle</i>	brown heart	brown heart	purple square	purple square	21	<i>brown circle</i>	<i>brown circle</i>	brown heart	purple square	red star
red star	<i>green heart</i>	green square	green square	red star	22	white triangle	<i>green heart</i>	<i>green heart</i>	green square	red star
white triangle	white triangle	<i>grey square</i>	grey star	grey star	23	white triangle	yellow circle	<i>grey square</i>	<i>grey square</i>	grey star
pink triangle	yellow circle	yellow circle	<i>pink star</i>	pink triangle	24	pink triangle	yellow circle	black heart	<i>pink star</i>	<i>pink star</i>

The top left spot in Figure 3 is Region 1, and the regions were placed counter-clockwise with Region 5 being the top right spot in Figure 3. In each item, the critical NP was preceded by either *the* or *a*. The two auditory stimuli (*the* vs. *a*) and the two visual stimuli (one target vs. two targets) created four conditions for each item. Four lists were created Latin-squaring items and conditions.

Supplementary Material C

Table S1. Type III ANOVA summary of the lmer models of the one-target condition by L1 (Satterthwaite method)

targetS	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	13982.5	4660.8	3	60291	2777.951	0.0000	***
definiteness	372.5	372.5	1	60314	221.998	0.0000	***
L1	7	7	1	125	4.192	0.0427	*
time:definiteness	94.7	31.6	3	60259	18.811	0.0000	***
time:L1	27	9	3	60292	5.357	0.0011	**
definiteness:L1	0.3	0.3	1	60315	0.171	0.6795	
time:definiteness:L1	93.4	31.1	3	60261	18.548	0.0000	***
competitor1	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	2140.83	713.61	3	60292	481.2426	0.0000	***
definiteness	67.58	67.58	1	60317	45.5764	0.0000	***
L1	0.1	0.1	1	126	0.0671	0.7960	
time:definiteness	26.37	8.79	3	60263	5.9288	0.0005	***
time:L1	30.34	10.11	3	60293	6.8206	0.0001	***
definiteness:L1	1.84	1.84	1	60318	1.2427	0.2650	
time:definiteness:L1	83.52	27.84	3	60265	18.7742	0.0000	***
competitor2	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	753.79	251.264	3	60293	201.8854	0.0000	***
definiteness	18.83	18.83	1	60316	15.1293	0.0001	***
L1	1.48	1.477	1	129	1.1871	0.2780	
time:definiteness	34.28	11.427	3	60261	9.1817	0.0000	***
time:L1	189.77	63.257	3	60293	50.8255	0.0000	***
definiteness:L1	6.01	6.013	1	60316	4.8313	0.0280	*
time:definiteness:L1	33.81	11.27	3	60263	9.055	0.0000	***

Note. time = third order polynomials of time; L1 = first language of participants (English vs. Korean)

Table S2. Type III ANOVA summary of the lmer models of the two-target condition by L1 (Satterthwaite method)

targetS	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	16670.7	5556.9	3	56653	3257.234	0.0000	***
definiteness	9.8	9.8	1	56680	5.730	0.0167	*
L1	7.4	7.4	1	126	4.336	0.0394	*
time:definiteness	176.9	59	3	56610	34.558	0.0000	***
time:L1	140.7	46.9	3	56651	27.488	0.0000	***
definiteness:L1	3.2	3.2	1	56687	1.871	0.1714	
time:definiteness:L1	0.2	0.1	3	56609	0.033	0.9919	
targetU	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	132.063	44.021	3	56649	45.003	0.0000	***
definiteness	0.019	0.019	1	56673	0.019	0.8904	
L1	3.954	3.954	1	122	4.042	0.0466	*
time:definiteness	3.953	1.318	3	56604	1.347	0.2570	
time:L1	47.888	15.963	3	56648	16.319	0.0000	***
definiteness:L1	17.086	17.086	1	56682	17.467	0.0000	***
time:definiteness:L1	19.663	6.554	3	56604	6.701	0.0002	***
competitor1	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	1335.99	445.33	3	56649	305.507	0.0000	***
definiteness	12.16	12.16	1	56683	8.345	0.0039	**
L1	1.08	1.08	1	126	0.742	0.3906	
time:definiteness	126.81	42.27	3	56619	28.997	0.0000	***
time:L1	271.36	90.45	3	56648	62.054	0.0000	***
definiteness:L1	55.84	55.84	1	56684	38.307	0.0000	***
time:definiteness:L1	31.94	10.65	3	56619	7.305	0.0001	***

Note. time = third order polynomials of time; L1 = first language of participants (English vs. Korean)

Table S3. Type III ANOVA summary of the L2-only lmer models of the one-target condition by proficiency (Satterthwaite method)

targetS	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	81.314	27.105	3	38195	17.126	0.0000	***
definiteness	33	33	1	38222	20.852	0.0000	***
proficiency	0.633	0.633	1	82	0.400	0.5287	
time:definitenss	5.849	1.95	3	38162	1.232	0.2963	
time:proficiency	103.633	34.544	3	38196	21.827	0.0000	***
definiteness:proficiency	64.564	64.564	1	38222	40.795	0.0000	***
time: definiteness:proficiency	8.742	2.914	3	38164	1.841	0.1373	
competitor1	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	51.061	17.0203	3	38201	11.609	0.0000	***
definiteness	3.474	3.4737	1	38229	2.369	0.1238	
proficiency	0.115	0.1147	1	84	0.078	0.7804	
time:definitenss	33.472	11.1573	3	38169	7.610	0.0000	***
time:proficiency	34.572	11.524	3	38202	7.860	0.0000	***
definiteness:proficiency	9.062	9.0625	1	38229	6.181	0.0129	*
time: definiteness:proficiency	45.84	15.2801	3	38171	10.422	0.0000	***
competitor2	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	36.716	12.239	3	38199	9.894	0.0000	***
definiteness	13.54	13.54	1	38229	10.946	0.0009	***
proficiency	0.031	0.031	1	85	0.025	0.8753	
time:definitenss	7.64	2.547	3	38166	2.059	0.1033	
time:proficiency	103.362	34.454	3	38200	27.854	0.0000	***
definiteness:proficiency	19.85	19.85	1	38229	16.048	0.0001	***
time: definiteness:proficiency	7.898	2.633	3	38168	2.128	0.0943	.

Note. time = third order polynomials of time

Table S4. Type III ANOVA summary of the L2-only lmer models of the two-target condition by proficiency (Satterthwaite method)

targetS	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	185.724	61.908	3	35373	37.869	0.0000	***
definiteness	62.655	62.655	1	35378	38.326	0.0000	***
proficiency	1.773	1.773	1	82	1.085	0.3008	
time:definitenss	58.517	19.506	3	35345	11.931	0.0000	***
time:proficiency	12.865	4.288	3	35371	2.623	0.0488	*
definiteness:proficiency	56.059	56.059	1	35380	34.291	0.0000	***
time: definiteness:proficiency	54.834	18.278	3	35343	11.180	0.0000	***
targetU	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	18.757	6.252	3	35367	6.187	0.0003	***
definiteness	52.155	52.155	1	35408	51.606	0.0000	***
proficiency	1.06	1.06	1	79	1.049	0.3090	
time:definitenss	46.797	15.599	3	35338	15.435	0.0000	***
time:proficiency	20.52	6.84	3	35366	6.768	0.0001	***
definiteness:proficiency	47.201	47.201	1	35409	46.704	0.0000	***
time: definiteness:proficiency	51.66	17.22	3	35337	17.039	0.0000	***
competitor1	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	45.658	15.219	3	35378	10.825	0.0000	***
definiteness	64.1	64.1	1	35373	45.591	0.0000	***
proficiency	0.097	0.097	1	83	0.069	0.7933	
time:definitenss	9.941	3.314	3	35352	2.357	0.0697	.
time:proficiency	72.883	24.294	3	35377	17.279	0.0000	***
definiteness:proficiency	48.811	48.811	1	35376	34.717	0.0000	***
time: definiteness:proficiency	17.72	5.907	3	35350	4.201	0.0056	**

Note. time = third order polynomials of time

Table S5. Type III ANOVA summary of the Phase 1 lmer models of the one-target condition by group (Satterthwaite method)

targetS	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	6.93	2.31	3	15457.4	1.629	0.1804	
definiteness	192.47	192.47	1	15551	135.653	0.0000	***
group	4.54	2.27	2	116.6	1.601	0.2062	
time:definiteness	20.78	6.93	3	15447.1	4.881	0.0022	**
time:group	7.27	1.21	6	15456.7	0.854	0.5284	
definiteness:group	32.11	16.05	2	15558.6	11.314	0.0000	***
time:definiteness:group	25.52	4.25	6	15447.3	2.997	0.0063	**
competitor1	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	1.31	0.44	3	15446.4	0.374	0.7718	
definiteness	51.25	51.25	1	15540.5	44.017	0.0000	***
group	1.26	0.63	2	113.6	0.542	0.5832	
time:definiteness	0.46	0.15	3	15436.8	0.133	0.9407	
time:group	51.28	8.55	6	15445.9	7.341	0.0000	***
definiteness:group	64.26	32.13	2	15548.8	27.599	0.0000	***
time:definiteness:group	27.33	4.56	6	15436.9	3.912	0.0007	***
competitor2	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	5.56	1.85	3	15454.5	1.781	0.1483	
definiteness	4.84	4.84	1	15546.4	4.653	0.0310	*
group	0.28	0.14	2	120.3	0.137	0.8725	
time:definiteness	2.55	0.85	3	15445.1	0.817	0.4841	
time:group	14.79	2.46	6	15453.8	2.371	0.0273	*
definiteness:group	14.43	7.22	2	15555	6.941	0.0010	***
time:definiteness:group	10.40	1.73	6	15445.2	1.667	0.1247	

Table S6. Type III ANOVA summary of the Phase 2 lmer models of the one-target condition by group (Satterthwaite method)

targetS	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	533.27	177.76	3	22226.9	105.848	0.0000	***
definiteness	131.44	131.44	1	22293	78.266	0.0000	***
group	7.73	3.86	2	126.6	2.300	0.1044	
time:definiteness	36.38	12.13	3	22217.3	7.221	0.0001	***
time:group	23.39	3.90	6	22227.4	2.322	0.0305	*
definiteness:group	77.06	38.53	2	22303.3	22.942	0.0000	***
time:definiteness:group	66.23	11.04	6	22216.5	6.573	0.0000	***
competitor1	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	119.35	39.78	3	22232.7	24.618	0.0000	***
definiteness	40.40	40.40	1	22305.7	25.002	0.0000	***
group	0.13	0.07	2	124.7	0.041	0.9597	
time:definiteness	24.78	8.26	3	22222.1	5.111	0.0016	**
time:group	24.86	4.14	6	22233.4	2.564	0.0175	*
definiteness:group	24.21	12.10	2	22314.3	7.490	0.0006	***
time:definiteness:group	59.22	9.87	6	22221.1	6.107	0.0000	***
competitor2	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	64.58	21.53	3	22230.5	15.771	0.0000	***
definiteness	26.97	26.97	1	22298.6	19.755	0.0000	***
group	14.18	7.09	2	128.5	5.195	0.0068	**
time:definiteness	4.08	1.36	3	22220.5	0.995	0.3939	
time:group	29.27	4.88	6	22230.8	3.574	0.0015	**
definiteness:group	63.96	31.98	2	22310.3	23.430	0.0000	***
time:definiteness:group	62.07	10.35	6	22219.6	7.579	0.0000	***

Table S7. Type III ANOVA summary of the Phase 1 lmer models of the two-target condition by group (Satterthwaite method)

targetS	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	17.36	5.79	3	14958.1	4.733	0.0027	**
definiteness	83.43	83.43	1	15047.5	68.262	0.0000	***
group	8.90	4.45	2	115.1	3.640	0.0293	*
time:definiteness	5.50	1.83	3	14951.8	1.500	0.2123	
time:group	11.16	1.86	6	14958.1	1.521	0.1666	
definiteness:group	8.47	4.23	2	15045.8	3.463	0.0314	*
time:definiteness:group	12.76	2.13	6	14950.2	1.740	0.1074	
targetU	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	53.09	17.70	3	14947.8	19.095	0.0000	***
definiteness	0.36	0.36	1	15041.7	0.384	0.5353	
group	2.18	1.09	2	110.5	1.178	0.3117	
time:definiteness	14.71	4.90	3	14942.1	5.289	0.0012	**
time:group	13.73	2.29	6	14947.9	2.470	0.0218	*
definiteness:group	34.47	17.24	2	15044.4	18.600	0.0000	***
time:definiteness:group	32.29	5.38	6	14940.7	5.806	0.0000	***
competitor1	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	5.88	1.96	3	14955.4	1.669	0.1712	
definiteness	52.21	52.21	1	15045.5	44.479	0.0000	***
group	5.37	2.68	2	107.4	2.286	0.1067	
time:definiteness	10.90	3.63	3	14948.2	3.096	0.0257	*
time:group	11.31	1.89	6	14955.2	1.606	0.1410	
definiteness:group	66.22	33.11	2	15040.7	28.210	0.0000	***
time:definiteness:group	92.47	15.41	6	14946.5	13.131	0.0000	***

Table S8. Type III ANOVA summary of the Phase 2 lmer models of the two-target condition by group (Satterthwaite method)

targetS	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	1432.84	477.61	3	20354.2	254.788	0.0000	***
definiteness	0.05	0.05	1	20423.5	0.026	0.8714	
group	1.39	0.70	2	123.5	0.371	0.6909	
time:definiteness	22.80	7.60	3	20333.9	4.055	0.0069	**
time:group	30.09	5.01	6	20350.1	2.675	0.0135	*
definiteness:group	70.80	35.40	2	20428.3	18.884	0.0000	***
time:definiteness:group	21.38	3.56	6	20333	1.901	0.0767	.
targetU	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	17.56	5.85	3	20360.6	6.300	0.0003	***
definiteness	9.19	9.18	1	20431.9	9.888	0.0017	**
group	6.83	3.41	2	123.1	3.675	0.0282	*
time:definiteness	4.35	1.45	3	20338.9	1.562	0.1962	
time:group	31.71	5.28	6	20356	5.689	0.0000	***
definiteness:group	37.14	18.57	2	20436.9	19.991	0.0000	***
time:definiteness:group	26.13	4.35	6	20337.8	4.688	0.0001	***
competitor1	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)	
time	41.45	13.82	3	20357.2	8.957	0.0000	***
definiteness	3.40	3.40	1	20426.6	2.202	0.1379	
group	9.04	4.52	2	119.4	2.930	0.0572	.
time:definiteness	65.03	21.68	3	20334.7	14.052	0.0000	***
time:group	49.84	8.31	6	20353.3	5.385	0.0000	***
definiteness:group	47.52	23.76	2	20428.7	15.403	0.0000	***
time:definiteness:group	39.47	6.58	6	20333.6	4.265	0.0003	***