

## Supplementary Material

Table 1. The schedule for participants to learn new words.

		160 New words			
		Group A (80) =A1 (40) + A2 (40)	Group B (80) =B1 (40) + B2 (40)		
Participants	Group C	C1	A1 was early-acquired A2 was late acquired	————	
		C2	A2 was early-acquired A1 was late acquired	————	
		Group D	D1	————	B1 was early-acquired B2 was late acquired
			D2	————	B2 was early-acquired B1 was late acquired

*Note:* “—” represents that participants did not learn this group of words.

Table 2. Exposure schedule for early and late learned new words.

	Early New words	Late New words
	number/ frequency	number/ frequency
Day 1	40/6 times	0
Day 2	40/6 times	40/6 times
Day 3	0	40/6 times
Day 4	40/6 times	40/6 times
Day 5	40/6 times	40/6 times

Table 3. Linear mixed models (LMMs) estimates of the fixed and random effects for raw response times (inverse RT) in lexical decision and delayed word naming tasks.

	Lexical decision task			Delayed word naming task		
	b	SE	t	b	SE	t
<i>Fixed effects</i>						
Intercept	-.14	.004	-38.55	-.25	.06	-4.11
OoA	.01	.003	1.86 <sup>+</sup>	-.04	.08	-.53
L1AoA	.01	.003	1.43	-.09	.08	-1.15
OoA x L1 AoA	-.01	.005	-1.60	.07	.11	.65
	Variance	SD		Variance	SD	
<i>Random effects</i>						
Word (Intercept)	.0002	.01		.02	.13	
Subject (Intercept)	.0004	.02		.01	.10	

Note: <sup>+</sup> $p < .10$ . Model structure: `depvar.lmer = lmer(inverse RT~ OoA*L1AoA+(1|subject) + (1|stim), datafile)`

Table 4. Linear mixed models (LMMs) estimates of the fixed and random effects for raw response times (inverse RT) in the semantic category judgment task.

	Semantic category judgment task		
	b	SE	t
<i>Fixed effects</i>			
Intercept	-1.00	.04	-27.24
OoA	-.01	.03	-.24
L1AoA	.03	.05	.63
Semantic	<b>.09</b>	<b>.02</b>	<b>4.12***</b>
OoA x L1 AoA	.03	.05	.71
OoA x Semantic	.01	.02	.71
L1 AoA x Semantic	-.01	.03	-.46
OoA x L1 AoA x Semantic	-.02	.03	-.78
	Variance	SD	
<i>Random effects</i>			
Word (Intercept)	.01	.08	
Subject (Intercept)	.01	.08	

*Note:* \*\*\*  $p < .001$ . Model structure: `depvar.lmer = lmer(inverseRT~ L2AoA*L1AoA*SemCate  
+(1|subject) + (1|stim), datafile)`

Table 5. Linear mixed models (LMMs) estimates of the fixed and random effects for accuracy rate (ACC) in the semantic category judgment task.

	Semantic category judgment task		
	b	SE	z
<i>Fixed effects</i>			
Intercept	2.92	.40	7.23
OoA	.27	.48	.57
L1AoA	<b>-1.28</b>	<b>.54</b>	<b>-2.37*</b>
Semantic	<b>-.68</b>	<b>.24</b>	<b>-2.86**</b>
OoA x L1 AoA	-.41	.66	-.62
OoA x Semantic	-.23	.28	-.80
L1 AoA x Semantic	<b>.68</b>	<b>.33</b>	<b>2.03*</b>
OoA x L1 AoA x Semantic	.33	.41	.80
	Variance	SD	
<i>Random effects</i>			
Word (Intercept)	.33	.58	
Subject (Intercept)	.37	.61	

Note: \*\*\*  $p < .001$ . Model structure: `depvar.glmmer = glmer(ACC ~ OoA*L1AoA*SemCate +`

`(1|subject)+ (1|stim), datafile, family=binomial)`

Table 6. Linear mixed models (LMMs) estimates of the fixed and random effects for raw response times (Raw RT) in lexical decision and delayed word naming tasks.

	Lexical decision task			Delayed word naming task		
	b	SE	t	b	SE	t
<i>Fixed effects</i>						
Intercept	733.75	21.3	34.45	543.38	19.23	28.26
OoA	34.16	18.8	1.82 <sup>+</sup>	4.58	8.93	.51
L1AoA	24.36	18.81	1.3	13.59	11.58	1.17
OoA x L1 AoA	-38.00	26.6	-1.43	-12.77	12.63	-1.01
	Variance	SD		Variance	SD	
<i>Random effects</i>						
Word (Intercept)	6205	78.77		1827	42.75	
Subject (Intercept)	12167	110.3		11139	105.54	

Note: <sup>+</sup> $p < .10$ . Model structure: `depvar.lmer = lmer(RawRT~ OoA*L1AoA+(1|subject) + (1|stim), datafile)`

Table 7. Linear mixed models (LMMs) estimates of the fixed and random effects for raw response times (Raw RT) in the semantic category judgment task.

	Semantic category judgment task		
	b	SE	t
<i>Fixed effects</i>			
Intercept	1030.13	50.74	20.30
OoA	9.21	46.16	0.20
L1AoA	83.13	70.19	1.18
Semantic	<b>133.73</b>	<b>30.89</b>	<b>4.33***</b>
OoA x L1 AoA	2.20	70.00	0.03
OoA x Semantic	11.39	29.80	0.38
L1 AoA x Semantic	-43.67	44.49	-0.98
OoA x L1 AoA x Semantic	-9.03	44.94	-0.20
	Variance	SD	
<i>Random effects</i>			
Word (Intercept)	10501	102.50	
Subject (Intercept)	10761	103.70	

*Note:* \*\*\*  $p < .001$ . Model structure: `depvar.lmer = lmer(RawRT ~ OoA*L1AoA*SemCate`

`+(1|subject) + (1|stim), datafile)`

Table 8. Linear mixed models (LMMs) estimates of the fixed and random effects for log response times (Log RT) in lexical decision and delayed word naming tasks.

	Lexical decision task			Delayed word naming task		
	b	SE	t	b	SE	t
<i>Fixed effects</i>						
Intercept	6.57	.03	239.59	6.21	.04	164.15
OoA	.04	.02	1.84 <sup>+</sup>	.02	.02	.77
L1AoA	.03	.02	1.36	.02	.03	.89
OoA x L1 AoA	-.05	.03	-1.51	-.05	.03	-1.49
	Variance	SD		Variance	SD	
<i>Random effects</i>						
Word (Intercept)	.01	.10		.01	.09	
Subject (Intercept)	.02	.14		.05	.22	

Note: <sup>+</sup> $p < .10$ . Model structure: `depvar.lmer = lmer(logRT~ OoA*L1AoA+(1|subject) + (1|stim), datafile)`



Table 9. Linear mixed models (LMMs) estimates of the fixed and random effects for log response times (Log RT) in the semantic category judgment task.

	Semantic category judgment task		
	Estimate	SE	t
<i>Fixed effects</i>			
Intercept	6.92	.04	165.27
OoA	.00	.04	-.02
L1AoA	.05	.06	.91
Semantic	<b>.11</b>	<b>.03</b>	<b>4.24***</b>
OoA x L1 AoA	.02	.06	.38
OoA x Semantic	.01	.02	.56
L1 AoA x Semantic	-.03	.04	-.71
OoA x L1 AoA x Semantic	-.02	.04	-.51
	Variance	SD	
<i>Random effects</i>			
Word (Intercept)	.01	.09	
Subject (Intercept)	.01	.09	

*Note:* \*\*\*  $p < .001$ . Model structure: `depvar.lmer = lmer(logRT ~ OoA*L1AoA*SemCate`

`+(1|subject) + (1|stim), datafile)`