

Appendix 1. Quartets of prime, target, foil and nonwords for the Mandarin and English lexical decision tasks

English

	Prime-MMS	Target	Prime-FMisM	Nonword
1	grease	greed	booth	greach
2	lake	laid	noun	laip
3	roof	root	oil	roop
4	team	teach	aire	teag
5	seal	seat	cloth	seaf
6	moon	mood	ear	moob
7	rice	mice	gold	kice
8	free	tree	month	pree
9	flu	glue	cake	plue
10	joy	toy	wise	doy
11	pain	gain	suit	zane
12	kiss	miss	tape	fiss

Mandarin

	Prime-MMS	Target	Prime-FMisM	Nonword
1	pa4	ma4	bao2	ka4
	pa2	ma2	bao4	ka2
2	mao4	tao4	hui2	fao4
	mao2	tao2	hui4	fao2
3	ying4	ming4	liang2	(bing4)
	ying2	ming2	liang4	bing2
4	bai4	pai4	chang2	rai4
	bai2	pai2	chang4	rai2
5	lou4	chou4	wang2	pou4
	lou2	chou2	wang4	(pou2)
6	she4	ke4	tiao2	fe4
	she2	ke2	tiao4	fe2
7	jie4	xie4	zhu2	gie4
	jie2	xie2	zhu4	gie2
8	pei4	fei4	lan2	rei4
	pei2	fei2	lan4	rei2
9	luo4	huo4	wan2	shuo4
	luo2	huo2	wan4	shuo2
10	jia4	xia4	nian2	dia4
	jia2	xia2	nian4	dia2

Appendix 2. Model formulae

Write-up:

For LogRT:

When Falling and FMisM are the reference conditions:

1. For the Chinese LogRT overall model for native Chinese speaker:

$\text{LogRT} \sim 1 + \text{PrimingCondition} * \text{PitchShape} * \text{Lexicality} + \text{TargetDuration} + (1|\text{Subject}) + (1|\text{Group})$

2. For the English LogRT overall model for native Chinese speaker and for the English LogRT overall model for native English speaker:

$\text{LogRT} \sim 1 + \text{PrimingCondition} * \text{PitchShape} * \text{Lexicality} + \text{TargetDuration} + (1 + \text{PrimingCondition} + \text{PitchShape} + \text{Lexicality}|\text{Subject}) + (1|\text{Group})$

3. For the Chinese LogRT word and nonword models for native Chinese speaker and for the English LogRT word and nonword models for native Chinese speaker and for the English LogRT word model for native English speaker:

$\text{LogRT} \sim 1 + \text{PrimingCondition} * \text{PitchShape} + \text{TargetDuration} + (1|\text{Subject}) + (1|\text{Group})$

4. For the English LogRT nonword model for native English speaker:

$\text{LogRT} \sim 1 + \text{PrimingCondition} * \text{PitchShape} + \text{TargetDuration} + (1 + \text{PrimingCondition}|\text{Subject}) + (1|\text{Group})$

For ACC:

When Falling and FMisM are the reference conditions:

5. For the Chinese and English ACC overall models for native Chinese speaker and for the English ACC overall model for native English speaker:

$\text{ACC} \sim 1 + \text{PrimingCondition} * \text{PitchShape} * \text{Lexicality} + \text{TargetDuration} + (1|\text{Subject}) + (1|\text{Group})$

6. For the Chinese and English ACC word model for native Chinese speaker and for the English ACC word model for native English speaker:

$\text{ACC} \sim 1 + \text{PrimingCondition} * \text{PitchShape} + \text{TargetDuration} + \text{Frequency} + \text{NumNeighbors} + (1|\text{Subject}) + (1|\text{Group})$

7. For the Chinese and English ACC nonword model for native Chinese speaker and for the English ACC nonword model for native English speaker:

$\text{ACC} \sim 1 + \text{PrimingCondition} * \text{PitchShape} + \text{TargetDuration} + (1|\text{Subject}) + (1|\text{Group})$

Appendix 3. Priming effects of different conditions for reaction times and accuracy scores.

Table 1. Priming effects of different conditions relative to the FMisM condition for falling and rising targets for reaction time for Chinese-English speakers.

Chinese Tone	speakers Task	VS. FMisM	word				nonword			
			est.	<i>t</i>	<i>p</i>		est.	<i>t</i>	<i>p</i>	
Falling	Chinese	FM	-0.53	-9.67	0.00	***	-0.44	-7.44	0.00	***
		MMS	-0.12	-2.17	0.03	*	-0.13	-2.36	0.02	*
		MMF0	-0.17	-3.11	0.00	**	-0.17	-2.98	0.00	**
		MMSF0	-0.09	-1.76	0.08	.	-0.12	-2.02	0.04	*
	English	FM	-0.50	-9.00	0.00	***	-0.44	-6.18	0.00	***
		MMS	-0.18	-3.13	0.00	**	-0.16	-2.42	0.02	*
		MMF0	-0.43	-7.71	0.00	***	-0.21	-2.92	0.00	**
		MMSF0	-0.16	-2.87	0.00	**	-0.12	-1.85	0.06	.
Rising	Chinese	FM	-0.50	-8.71	0.00	***	-0.13	-2.27	0.02	*
		MMS	-0.04	-0.75	0.45		-0.03	-0.60	0.55	
		MMF0	-0.13	-2.26	0.02	*	0.04	0.75	0.45	
		MMSF0	-0.19	-3.38	0.00	***	-0.04	-0.62	0.54	
	English	FM	-0.36	-5.94	0.00	***	-0.30	-4.65	0.00	***
		MMS	-0.13	-2.22	0.03	*	-0.17	-2.65	0.01	**
		MMF0	-0.21	-3.26	0.00	**	-0.12	-2.01	0.05	*
		MMSF0	-0.18	-2.93	0.00	**	-0.17	-2.67	0.01	**

Table 2. Priming effects of different conditions relative to the FM condition for falling and rising targets for reaction time for Chinese-English speakers.

Chinese Tone	speakers Task	VS. FM	word				nonword			
			est.	<i>t</i>	<i>p</i>		est.	<i>t</i>	<i>p</i>	
Falling	Chinese	FMisM	0.53	9.67	0.00	***	0.44	7.44	0.00	***
		MMS	0.42	7.53	0.00	***	0.30	5.15	0.00	***
		MMF0	0.36	6.30	0.00	***	0.27	4.50	0.00	***
		MMSF0	0.44	7.91	0.00	***	0.32	5.45	0.00	***
	English	FMisM	0.50	9.00	0.00	***	0.44	6.18	0.00	***
		MMS	0.33	5.92	0.00	***	0.28	3.86	0.00	***
		MMF0	0.07	1.30	0.19		0.23	3.07	0.00	**
		MMSF0	0.34	6.19	0.00	***	0.31	4.45	0.00	***
Rising	Chinese	FMisM	0.50	8.71	0.00	***	0.13	2.27	0.02	*
		MMS	0.46	7.92	0.00	***	0.10	1.71	0.09	.
		MMF0	0.37	6.29	0.00	***	0.18	2.96	0.00	**
		MMSF0	0.31	5.29	0.00	***	0.10	1.66	0.10	.
	English	FMisM	0.36	5.94	0.00	***	0.30	4.65	0.00	***
		MMS	0.23	3.68	0.00	***	0.13	2.08	0.04	*
		MMF0	0.15	2.37	0.02	*	0.18	2.75	0.01	**
		MMSF0	0.18	2.93	0.00	**	0.13	2.12	0.03	*

Table 3. Priming effects of different conditions relative to the FMisM condition for falling and rising targets for reaction time for native English speakers.

English Tone	speakers Task	VS. FMisM	word est.	<i>t</i>	<i>p</i>		nonword est.	<i>t</i>	<i>p</i>	
Falling	English	FM	-0.42	-8.47	0.00	***	-0.31	-4.17	0.00	***
		MMS	-0.17	-3.33	0.00	***	-0.10	-1.75	0.08	.
		MMF0	-0.17	-3.45	0.00	***	-0.05	-0.78	0.44	
		MMSF0	-0.10	-2.10	0.04	*	-0.14	-2.58	0.01	*
Rising	English	FM	-0.38	-7.54	0.00	***	-0.14	-1.84	0.07	.
		MMS	-0.10	-1.92	0.05	.	-0.05	-0.82	0.41	
		MMF0	-0.14	-2.89	0.00	**	-0.05	-0.90	0.37	
		MMSF0	-0.15	-2.95	0.00	**	-0.09	-1.78	0.08	.

Table 4. Priming effects of different conditions relative to the FM condition for falling and rising targets for reaction time for native English speakers.

English Tone	speakers Task	VS. FM	word est.	<i>t</i>	<i>p</i>		nonword est.	<i>t</i>	<i>p</i>	
Falling	English	FMisM	0.42	8.47	0.00	***	0.31	3.97	0.00	***
		MMS	0.26	5.08	0.00	***	0.22	2.77	0.01	**
		MMF0	0.25	5.03	0.00	***	0.27	4.40	0.00	***
		MMSF0	0.32	6.42	0.00	***	0.18	2.14	0.04	*
Rising	English	FMisM	0.38	7.54	0.00	***	0.14	1.93	0.06	.
		MMS	0.28	5.58	0.00	***	0.10	1.25	0.22	
		MMF0	0.23	4.66	0.00	***	0.09	1.34	0.19	
		MMSF0	0.23	4.51	0.00	***	0.05	0.55	0.59	

Table 5. Priming effects of different conditions relative to the FMisM condition for falling and rising targets for accuracy for native Chinese speakers.

Chinese Tone	speakers Task	VS. FMisM	word			nonword				
			est.	<i>z</i>	<i>p</i>		est.	<i>z</i>	<i>p</i>	
Falling	Chinese	FM	0.73	2.71	0.01	**	-0.55	-2.07	0.04	*
		MMS	0.05	0.21	0.84		0.10	0.35	0.72	
		MMF0	0.20	0.79	0.43		-0.17	-0.63	0.53	
		MMSF0	-0.27	-1.15	0.25		-0.07	-0.25	0.80	
	English	FM	0.73	3.12	0.00	**	-0.53	-3.23	0.00	**
		MMS	0.33	1.51	0.13		-0.01	-0.08	0.93	
		MMF0	0.52	2.30	0.02	*	-0.62	-3.82	0.00	***
		MMSF0	0.41	1.84	0.07	.	0.01	0.04	0.97	
Rising	Chinese	FM	0.46	1.70	0.09	.	-0.43	-2.03	0.04	*
		MMS	-0.09	-0.36	0.72		0.17	0.80	0.42	
		MMF0	-0.08	-0.32	0.75		0.04	0.19	0.85	
		MMSF0	-0.32	-1.38	0.17		-0.17	-0.80	0.42	
	English	FM	-0.09	-0.54	0.59		-0.26	-1.57	0.12	
		MMS	-0.01	-0.06	0.95		0.13	0.77	0.44	
		MMF0	-0.83	-5.06	0.00	***	0.24	1.38	0.17	
		MMSF0	-0.25	-1.48	0.14		0.32	1.86	0.06	.

Table 6. Priming effects of different conditions relative to the FM condition for falling and rising targets for accuracy for native Chinese speakers.

Chinese Tone	speakers Task	VS. FM	word			nonword				
			est.	<i>z</i>	<i>p</i>		est.	<i>z</i>	<i>p</i>	
Falling	Chinese	FMisM	-0.73	-2.71	0.01	**	0.55	2.07	0.04	*
		MMS	-0.68	-2.50	0.01	*	0.65	2.41	0.02	*
		MMF0	-0.53	-1.88	0.06	.	0.38	1.46	0.14	
		MMSF0	-1.00	-3.78	0.00	***	0.48	1.83	0.07	.
	English	FMisM	-0.73	-3.12	0.00	**	0.53	3.23	0.00	**
		MMS	-0.40	-1.65	0.10	.	0.51	3.15	0.00	**
		MMF0	-0.21	-0.83	0.40		-0.09	-0.58	0.56	
		MMSF0	-0.32	-1.31	0.19		0.53	3.29	0.00	***
Rising	Chinese	FMisM	-0.46	-1.70	0.09	.	0.43	2.03	0.04	*
		MMS	-0.55	-2.02	0.04	*	0.60	2.78	0.01	**
		MMF0	-0.54	-1.95	0.05	.	0.47	2.18	0.03	*
		MMSF0	-0.78	-2.94	0.00	**	0.26	1.24	0.22	
	English	FMisM	0.09	0.54	0.59		0.26	1.57	0.12	
		MMS	0.08	0.48	0.64		0.39	2.32	0.02	*
		MMF0	-0.74	-4.40	0.00	***	0.50	2.92	0.00	**
		MMSF0	-0.16	-0.90	0.37		0.58	3.41	0.00	***

Table 7. Priming effects of different conditions relative to the FMisM condition for falling and rising targets for accuracy for native English speakers.

English	speakers	VS.	word			nonword		
Tone	Task	FMisM	est.	<i>z</i>	<i>p</i>	est.	<i>z</i>	<i>p</i>
Falling	English	FM	0.48	1.33	0.18	-0.12	-0.42	0.68
		MMS	-0.30	-0.94	0.35	0.20	0.70	0.48
		MMF0	0.33	0.95	0.34	-0.29	-1.08	0.28
		MMSF0	0.54	1.51	0.13	0.11	0.39	0.70
Rising	English	FM	-0.01	-0.03	0.98	-0.17	-0.61	0.54
		MMS	0.11	0.31	0.75	-0.08	-0.29	0.77
		MMF0	-0.09	-0.28	0.78	-0.29	-1.04	0.30
		MMSF0	-0.51	-1.64	0.10	0.16	0.55	0.58

Table 8. Priming effects of different conditions relative to the FM condition for falling and rising targets for accuracy for native English speakers.

English	speakers	VS.	word			nonword		
Tone	Task	FM	est.	<i>z</i>	<i>p</i>	est.	<i>z</i>	<i>p</i>
Falling	English	FMisM	-0.48	-1.33	0.18	0.12	0.42	0.68
		MMS	-0.78	-2.22	0.03	0.32	1.11	0.27
		MMF0	-0.15	-0.38	0.70	-0.18	-0.66	0.51
		MMSF0	0.06	0.17	0.87	0.23	0.80	0.43
Rising	English	FMisM	0.01	0.03	0.98	0.17	0.61	0.54
		MMS	0.12	0.34	0.73	0.09	0.32	0.75
		MMF0	-0.08	-0.25	0.80	-0.12	-0.42	0.67
		MMSF0	-0.50	-1.61	0.11	0.34	1.15	0.25

Appendix 4. Priming effects of pitch shapes for reaction times and accuracy scores in each priming condition for words and nonwords

Table 1. Pitch shape effects (Rising-Falling) in different priming conditions for reaction time for native Chinese-English speakers.

Task	Lexicality	PrmCond	est.	SE	df	<i>t</i>	<i>p</i>	
Mandarin	word	FMisM	-0.10	0.06	2928.05	-1.62	0.10	
		FM	-0.06	0.06	3011.99	-1.03	0.30	
		MMS	-0.02	0.06	2937.52	-0.39	0.69	
		MMF0	-0.05	0.06	3024.57	-0.86	0.39	
		MMSF0	-0.19	0.06	2966.79	-3.21	0.00	**
	nonword	FMisM	-0.14	0.06	2204.99	-2.35	0.02	*
		FM	0.16	0.07	2283.08	2.48	0.01	*
		MMS	-0.04	0.06	2191.25	-0.69	0.49	
		MMF0	0.07	0.06	2242.95	1.17	0.24	
		MMSF0	-0.06	0.06	2234.03	-1.01	0.31	
English	word	FMisM	0.06	0.06	3424.39	1.00	0.32	
		FM	0.20	0.06	3428.25	3.39	0.00	***
		MMS	0.10	0.06	3425.77	1.71	0.09	.
		MMF0	0.28	0.06	3430.41	4.55	0.00	***
		MMSF0	0.04	0.06	3424.74	0.71	0.48	
	nonword	FMisM	-0.11	0.07	2657.00	-1.74	0.08	.
		FM	0.03	0.07	2658.39	0.36	0.72	
		MMS	-0.12	0.07	2657.00	-1.78	0.08	.
		MMF0	-0.03	0.07	2662.99	-0.43	0.67	
		MMSF0	-0.15	0.06	2655.67	-2.42	0.02	*

Table 2. Pitch shape effects (Rising-Falling) in different priming conditions for accuracy for native Chinese-English speakers.

Task	Lexicality	PrmCond	est.	SE	z	p	
Mandarin	word	FMisM	-0.94	0.30	-3.15	0.00	**
		FM	-1.21	0.37	-3.30	0.00	***
		MMS	-1.08	0.30	-3.56	0.00	***
		MMF0	-1.23	0.34	-3.60	0.00	***
		MMSF0	-1.00	0.29	-3.46	0.00	***
	nonword	FMisM	-0.86	0.27	-3.22	0.00	**
		FM	-0.74	0.25	-2.98	0.00	**
		MMS	-0.79	0.28	-2.85	0.00	**
		MMF0	-0.65	0.27	-2.45	0.01	*
		MMSF0	-0.96	0.26	-3.64	0.00	***
English	word	FMisM	-0.67	0.19	-3.48	0.00	***
		FM	-1.49	0.22	-6.72	0.00	***
		MMS	-1.01	0.20	-4.93	0.00	***
		MMF0	-2.02	0.21	-9.74	0.00	***
		MMSF0	-1.32	0.20	-6.46	0.00	***
	nonword	FMisM	0.47	0.17	2.80	0.01	**
		FM	0.73	0.16	4.43	0.00	***
		MMS	0.61	0.17	3.63	0.00	***
		MMF0	1.32	0.17	7.82	0.00	***
		MMSF0	0.78	0.17	4.64	0.00	***

Table 3. Pitch shape effects (Rising-Falling) in different priming conditions for reaction time for native English speakers.

Task	Lexicality	PrmCond	est.	SE	df	t	p	
English	word	FMisM	0.01	0.05	3629.00	0.14	0.89	
		FM	0.05	0.05	3628.60	0.97	0.33	
		MMS	0.08	0.05	3630.00	1.50	0.13	
		MMF0	0.03	0.05	3629.00	0.67	0.51	
		MMSF0	-0.04	0.05	3629.11	-0.76	0.45	
	nonword	FMisM	-0.09	0.05	3552.00	-1.71	0.09	.
		FM	0.09	0.06	45.87	1.46	0.15	
		MMS	-0.04	0.05	3560.00	-0.70	0.48	
		MMF0	-0.09	0.05	3554.00	-1.81	0.07	.
		MMSF0	-0.05	0.05	3624.00	-0.88	0.38	

Table 4. Pitch shape effects (Rising-Falling) in different priming conditions for accuracy for native English speakers.

Task	Lexicality	PrmCond	est.	SE	<i>z</i>	<i>p</i>	
English	word	FMisM	-0.07	0.34	-0.22	0.83	
		FM	-0.56	0.37	-1.54	0.12	
		MMS	0.33	0.33	1.01	0.31	
		MMF0	-0.50	0.35	-1.42	0.16	
		MMSF0	-1.13	0.35	-3.28	0.00	**
	nonword	FMisM	0.08	0.28	0.29	0.77	
		FM	0.02	0.28	0.09	0.93	
		MMS	-0.21	0.29	-0.71	0.48	
		MMF0	0.08	0.26	0.32	0.75	
		MMSF0	0.13	0.30	0.45	0.66	