

Mandarin fricatives, affricates and tone

Mandarin has three contrasting places of articulation for fricatives that are rather similar to those found in Polish. Here we will use the traditional terms alveolar, retroflex and palatal, even though the last two terms may be misleading: both these sounds are postalveolar. See the [separate demo on Polish](#) for discussion of the articulation of these sounds.

Mandarin also contrasts these places of articulation in affricates, and is, in addition, fairly unusual in having both unaspirated and aspirated affricate series.

This material combines the three places of articulation with the 4 tones of Mandarin, keeping the target syllable as constant as possible. The sounds are spoken in a carrier phrase meaning something like “X is in YX” (or “syllable X is part of word YX”). Thus the target fricative is found in both absolute initial position, and phrase-internally. The tables give the word corresponding to YX. The number indicates the tone of syllable Y (in a few cases target syllable X comes before syllable Y). The transliterations are in PinYin.

Speaker 1 comes from Taiwan, speaker 2 from Beijing.

The retroflex approximant is given as additional material.

See also the [separate demo on tone languages](#) for more information on Mandarin tone.

[Click here](#) for a table of the target words written in Chinese characters.

Notes on the sonagrams:

An F0 trace is overlaid on the sonagrams to provide information on the realization of the tones (this is why the axis labelling is mangled).

Speaker 1. Male, Taiwan

Fricatives				
	<i>Tone 1</i>	<i>Tone 2</i>	<i>Tone 3</i>	<i>Tone 4</i>
<i>Alveolar (S)</i>	Sa-Niau4	Sa	Po1-Sa	Pu2-Sa
	“piss”	<nonword>	“to sprinkle”	“Buddha”
<i>Retroflex (Sh)</i>	Ni2-Sha	Dzuo4-Sha	Dzhuang1-Sha	Xiong1-Sha
	“sand”	“do what”	“pretend stupid”	“terrible man”
<i>Palatal (X)</i>	Long2-Xia	San1-Xia	Jiau1-Xiau	Lo2-Xia
	“lobster”	“location name”	“tiny”	“downstairs”
Unaspirated Affricates				
	<i>Tone 1</i>	<i>Tone 2</i>	<i>Tone 3</i>	<i>Tone 4</i>
<i>Alveolar (Z)</i>	Bau1-Za	Da3-Za	Qin1-Zau	Ji2-Zau
	“to bind”	“to drudge”	“morning”	“rash”
<i>Retroflex (Zh)</i>	Ren1-Zha	Zha-Men2	Zha-Dong4	Mu4-Zha
	“bad guy”	“gate-door”	“to wink”	“location name”
<i>Palatal (J)</i>	Hwei2-Jia	Lien2-Jia	Dzuo4-Jia	Jiang4-Jia
	“go home”	“face”	“cheat”	“down-price”

Aspirated Affricates

	<i>Tone 1</i>	<i>Tone 2</i>	<i>Tone 3</i>	<i>Tone 4</i>
<i>Alveolar (C)</i>	Ban3-Ca	Shuei3-Cau	Hwa1-Cau	Cau-Mi3
	“eraser”	“water trough”	“flower and grass”	“kind of rice”
<i>Retroflex (Ch)</i>	Dau1-Cha	Jin3-Cha	Chau-Cai4	Chu1-Cha
	“knife and fork”	“police”	“cooking”	“make mistake”
<i>Palatal (Q)</i>	Qia1-Si	Lu4-Qiau	Guai1-Qiau	Jie1-Qia
	“choke to death”	“overhead bridge”	“clever”	“contact with”

Retroflex Approximant

	<i>Tone 1</i>	<i>Tone 2</i>	<i>Tone 3</i>	<i>Tone 4</i>
<i>Retroflex (R)</i>	Rang1-Rang1	Qio2-Rau	Da3-Rau	Uei2-Rau
	“to shout”	“beg for spare”	“to interrupt”	“to encircle”

Speaker 2. Female, Beijing

Fricatives				
	<i>Tone 1</i>	<i>Tone 2</i>	<i>Tone 3</i>	<i>Tone 4</i>
<i>Alveolar (S)</i>	Sa-Niau4	Sa	Po1-Sa	Pu2-Sa
	“piss”	<nonword>	“to sprinkle”	“Buddha”
<i>Retroflex (Sh)</i>	Ni2-Sha	Dzuo4-Sha	Dzhuang1-Sha	Xiong1-Sha
	“sand”	“do what”	“pretend stupid”	“terrible man”
<i>Palatal (X)</i>	Long2-Xia	San1-Xia	Jiau1-Xiau	Lo2-Xia
	“lobster”	“location name”	“tiny”	“downstairs”
Unaspirated Affricates				
	<i>Tone 1</i>	<i>Tone 2</i>	<i>Tone 3</i>	<i>Tone 4</i>
<i>Alveolar (Z)</i>	Bau1-Za	Da3-Za	Qin1-Zau	Ji2-Zau
	“to bind”	“to drudge”	“morning”	“rash”
<i>Retroflex (Zh)</i>	Ren1-Zha	Zha-Men2	Zha-Dong4	Mu4-Zha
	“bad guy”	“gate-door”	“to wink”	“location name”
<i>Palatal (J)</i>	Hwei2-Jia	Lien2-Jia	Dzuo4-Jia	Jiang4-Jia
	“go home”	“face”	“cheat”	“down-price”

Aspirated Affricates

	<i>Tone 1</i>	<i>Tone 2</i>	<i>Tone 3</i>	<i>Tone 4</i>
<i>Alveolar (C)</i>	Ban3-Ca	Shuei3-Cau	Hwa1-Cau	Cau-Mi3
	“eraser”	“water trough”	“flower and grass”	“kind of rice”
<i>Retroflex (Ch)</i>	Dau1-Cha	Jin3-Cha	Chau-Cai4	Chu1-Cha
	“knife and fork”	“police”	“cooking”	“make mistake”
<i>Palatal (Q)</i>	Qia1-Si	Lu4-Qiau	Guai1-Qiau	Jie1-Qia
	“choke to death”	“overhead bridge”	“clever”	“contact with”

Retroflex Approximant

	<i>Tone 1</i>	<i>Tone 2</i>	<i>Tone 3</i>	<i>Tone 4</i>
<i>Retroflex (R)</i>	Rang1-Rang1	Qio2-Rau	Da3-Rau	Uei2-Rau
	“to shout”	“beg for spare”	“to interrupt”	“to encircle”