Understanding Language Evolution Using an Event-Based Model

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Introduction

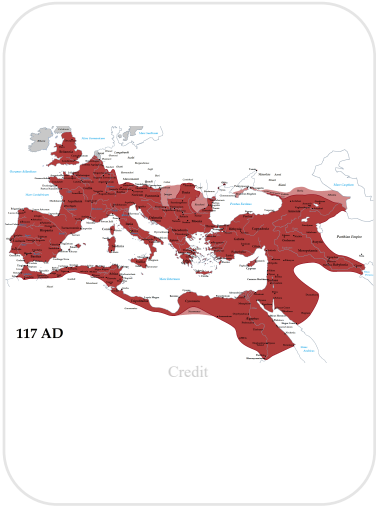
Modern languages are related to one another through a complicated history of divergence and word borrowing. The divergence of languages is caused by the slow change in spoken language as it is passed from parents to offspring. Over time, divergence causes languages to become increasingly different from one another, ultimately to the point where they are mutually unintelligible. Languages that were spoken by the same human group more recently in time are considered to be more closely related to each other than they are to groups that spoke the language more distantly in time; this relatedness information can be depicted by a tree-like diagram called a 'phylogeny.' Linguistic borrowing, by contrast, causes languages to become more similar to one another.

Language	IPA	Coding
English	/hænd/	0
German	/hant/	0
French	/mɛ̃/	1
Spanish	/ˈmano/	1
Italian	/ˈmaːno/	1
Russian	/rʊka/	2
Polish	/rɛŋka/	2

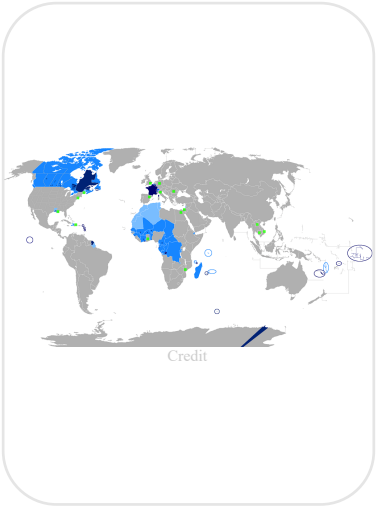
Table 2. Coding of lexical cognates for the word *hand*.

Languages

Latin

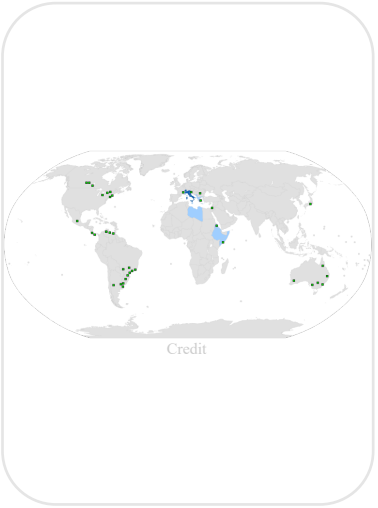


French



Spanish

Italian



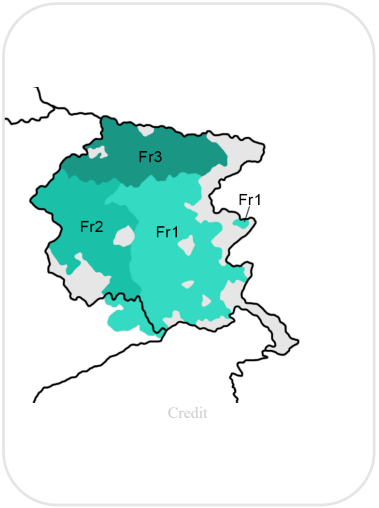
Brazilian Portuguese

Portuguese

Catalan

Walloon

Friulian



Romanian

Concepts Used

	I	We	YouPlural	YouSingular	YouSingular-VostramMerc	Woman
Latin	- e g oː	n oː - s -	w oː - s	t uː		f eː - m i - n - a
French	ʒ ə - -	n u - - -	v u - -	t y		f a - m - - - - -
Spanish	ɟ - - o	n o - s -	b o - s	t u	- u s t e d	- e - m - b ɾ - a
Italian	i - - o	n oː i - -	v oː i -	t u		f e m m i - n - a
PortugueseBrazi	- e - w	n ɔ j - s	v ɔ j s	t u	v o s - e -	f e - m e - - - ɐ
Portuguese	- e - w	n ɔ - ʃ -	v o - ʃ	t u	v ɔ s - e -	f e - m j - - - ɐ
Catalan	ʒ - - ɔ		b u - s	t u	v o s t e -	f e - m - b ɾ - a
Walloon	ʤ ɪ - -	n o - - -	v o - s	t y		f œ - m - - - - -
Friulian	j - - o	n oː - - -	v oː - -	t u		f ɛ - m i - n - ɛ
Romanian	j e - w	n oj - - -	v oj - -	t u		f e - m e - - j e

	Woman-Mulier	Woman-Domina	ManHumanBeing	ManHumanBeing-Homo	Child	Child-Ninnus
Latin	m u l i e r e m	d o m i n a	h o m i - n e m	- h o m oː	i n f a n t e m	
French		d a m - - -	- ɔ m - - - - -	- ɔ̃ - - -	ɑ̃ - f ɑ̃ - - - -	
Spanish	m u x - e ɾ - -	d o - - ɲ a	o m - b ɾ e - -		i n f a n t e -	n i ɲ o
Italian	m o ʎ ʎ e - - -	d ɔ n - n a		w ɔ m o -	- - f a n t e -	n i n o
PortugueseBrazi	m u ʎ - e ʁ - -	d o - - n ɐ	o m ẽ ʃ - - - - -		ĩ - f ɐ̃ - ʧ i -	n e n ẽ ʃ
Portuguese	m u ʎ - e ɾ - -	d o - - n ɐ	ɔ m ẽ ʃ - - - - -		ĩ - f ɐ̃ - t ɨ -	n e n ẽ ʃ
Catalan	m u ʎ - e - - -	d ɔ - - n ə	- ɔ m ə - - - -			n e n -
Walloon		d œ m - - -	- ɔ m - - - - -		ɛ - f ɑ̃ - - - -	
Friulian	m u - - iː r - -	d ɔ - - n e	- ɔ m - - - - -			
Romanian	m u - j e r e -	d o̯ a m - n ə	- o m - - - - -			

	Wife	Wife-Mulier	Husband	Husband-Sponsus	Husband-Socius	Mother
Latin	- s p o n s a	m u l i e r -	m a r iː t u s	- s p o n s u s	s o k i u s	m aː t r e m
French	e - p u - z -		m a ʁ i - - -	e - p u - - - -		m e - ʁ - -
Spanish	e s p o - s a	m u x - e ɾ -	m a ɾ i ð o -	e s p o - s o -		m a ð ɾ e -
Italian	- s p ɔ - z a	m o ʎ ʎ e - -	m a r i t o -	- s p ɔ - z o -	s ɔ ʧ - o -	m aː d r e -
PortugueseBrazi	i s p o - z a	m u ʎ - e ʁ -	m a ɾ i d u -	i s p o - z u -		m ɐ̃ʃ - - - -
Portuguese	ɨ ʃ p o - z ɐ	m u ʎ - e ɾ -	m ɐ ɾ i ð u -	ɨ ʃ p o - z u -		m ɐ̃ʃ - - - -
Catalan	ə s p ɔ - z ə	m u ʎ - e - -	m a ɾ i t - -	ə s p ɔ - s - -		m a - ɾ ə -
Walloon						m e - ʀ - -
Friulian		m u - iː r - -	m a r iː t - -	- s p oː - s - -		m a - r i -
Romanian		m u - j e r e	m ə r i t - -		s o ʦ - - -	

	Fish-Piskem	Fish-Pescion	Bird-Avem	Bird-Avicellum	Bird-Passerem	Fruit
Latin	p i s k e m		a w e m	- a w i - k - e l l u m	p a s s e r e m	f r uː - k t u s
French		p w a s õ		w a - - - z - o - - - -		f ʁ ɥ i - - - -
Spanish	p e θ - - -		a b e -		p a - x a ɾ o -	f ɾ u - - t o -
Italian	p e ʃ ʃ e -			- - u - t ʧ - ɛ l l o -	p a s s e r o -	f r u - t t o -
PortugueseBrazi	p ɐj ʃ - i -		a v i -		p a - s ɐ ɾ u -	f ɾ u - - t ɐ -
Portuguese	p ɐj ʃ - i -		a v i -		p a - s ɐ ɾ u -	f ɾ u - - t ɐ -
Catalan	p e ʃ - - -		a w - -	- - u - - s - e - ʎ - -		f ɾ u j - t - -
Walloon		p - ɛ h õ		- - uː - - h - ɛː - - - -		f ʁ y - - - - -
Friulian	p ɛ s - - -			- - u - - ʧ j ɛ - l - -		f r u - - t - -
Romanian	p e ʃ t e -				p a - s ə ɾ e -	f r u - k t - -
	Flower	Nose	Nose-Nares	Sun	Sun-Soliculus	Moon
Latin	f l oː r e m	n aː s u s		s oː l e m	s o l i k u l u s	l uː n a
French	f l œ ʁ - -	n e - - -			s ɔ l ɛj - - - - -	l y n -
Spanish	f l o ɾ - -	n a s o -	n a ɾ i θ -	s o l - -		l u n a
Italian	f j oː ɾ e -	n aː s o -	n a r i ʧ e	s o l e -		l u n a
PortugueseBrazi	f l o ʁ - -		n a ɾ i s -	s ɔ w - -		l u - ɐ
Portuguese	f l o ɾ - -		n ɐ ɾ i ʃ -	s ɔ ɫ - -		l u - ɐ
Catalan	f l ɔ - - -	n a s - -	n aː r ɪ s -	s ɔ l - -		ʎ u n ə
Walloon	f l øː ʁ - -	n e - - -		s ɔ l ɔ -		l ø n -
Friulian	f l oː r - -	n aː s - -			s o r e - - l i -	l u n e
Romanian	f l o̯a ɾ e -	n a s - -		s o̯a ɾ e -		l u n ə
	Star	Water	Rain	Lake	Sea	Salt
Latin	- s t - eː l l a	a - kʷ - a	p l u - w i a	l a k u m	m a r e	s aː l e m
French	e - t w a - l -	o - - - -	p l ɥ - - i -	l a k - -	m ɛ ʁ -	s ɛ l - -
Spanish	e s t ɾ e - ʝ a	a - ɣ w a	ʝ - u - b j a	l a g o -	m a ɾ -	s a l - -
Italian	- s t - e l l a	a k k w a	p j o d ʤ - a	l a g o -	m a r e	s a l e -
PortugueseBrazi	i s t ɾ e - l ɐ	a - ɡ w ɐ	ʃ - u - v - ɐ	l a g u -	m a ʁ -	s a w - -
Portuguese	i ʃ t ɾ e - l ɐ	a - ɡ w ɐ	ʃ - u - v - ɐ	l a ɣ u -	m a ɾ -	s a l - -
Catalan	ə s t - ɛ - l -	aj - ɣ w ə	p l u - ʒ - ə	ʎ a k - -	m a r -	s a l - -
Walloon	- s t - øː - l -	ɛː - - w -	p l uː - ʁ - -	l a k - -	m e ʁ -	s e - - -
Friulian	- s t - ɛ - l e	a - g - e	p l o - - j e	l aː t - -	m aː r -	s aː l - -
Romanian	- s t - e̯a - - -	a - p - ə	p l o̯a - - j e	l a k - -	m a r e	s a r e -

	Earth	Fog	Fog-Nebula	Fog-Tenebrae	Fog-Tenebras	Fog-Fumata
Latin	t - e r r a	k a: l i: g i n e m	n - e - b u l a	t e n e: b r aj	t - e n - e: b r a: s	f u: m a: t a
French	t - e - ʁ -		n j ɔ - - - l y		t - e n - ɛ b ʁ - -	f y m e - -
Spanish	t j e - r a	k a l i - - n a -	n j e - b - l a		t - i n j e b l a s	f u m a t a
Italian	t - ɛ r r a	k a l i ʤ i n e -	n - e b b - j a	t ɛ: n e b r e	t - ɛ: n - e b r e -	f u m a: t a
PortugueseBrazi	t - e - ʁ ɐ	k a l i ʒ ẽj - - -	n - ɛ - v w - ɐ			f u m a s ɐ
Portuguese	t - ɛ - ʁ ɐ	k ɐ l i ʒ ɐ̃j - - -	n - ɛ - v w - ɐ		t ɾ - - - ɛ v - ɐ ʃ	f u m a s ɐ
Catalan	t - ɛ - r ə		n - e - - w l ə		t - ə n - e b ɾ ə s	
Walloon	t - ɛ: - ʁ -					
Friulian	t j ɛ - r e					f u m a t e
Romanian	ʦ - a - r ə		n e g u r ə - -			

	Fog-Caecia	Sky	Wind	Fire-Focus	Year	Name-Nomen
Latin	k aj k i a	k - aj l u m	w - e n t u m	f - o k u m	a n n u m	n o: m e n
French		s j ɛ l - -	v - ɑ̃ - - - -	f - ø - - -	ɑ̃ - - - -	n ɔ̃ - - -
Spanish		θ j e l o -	b j e n t o -	f w e ɡ o -	a - ɲ o -	
Italian		ʧ - ɛ l o -	v - ɛ n t o -	f w ɔ k o -	a n n o -	n o: m e -
PortugueseBrazi		s - ɛ w - -	v - ẽ - t u -	f - o ɡ u -	ɐ - n u -	n o m i -
Portuguese		s - ɛ w - -	v - ẽ - t u -	f - o ɣ u -	ɐ - n u -	n o m ɨ -
Catalan		s - ɛ l - -	b - e n - - -	f - ɔ k - -	a - ɲ - -	n ɔ m - -
Walloon		s - i: ʁ - -	v - ẽ - - - -	f - ø: - - -	ɑ̃ - - - -	n õ - - -
Friulian		ʧ - i: l - -	v - i n t - -	f - u: k - -	a - ŋ - -	n ɔ ŋ - -
Romanian	ʧ e̯a ʧ - ə	ʧ - e ɾ - -	v - ɨ n t - -	f - o k - -	a n - - -	n u m e -

	Name-Nominem	Tongue	ToDrink	ToEat	ToEat-Manducare	ToBite
Latin	n o: m i n - e m	l i n ɡʷ - a	b i b - e r e	k o m e d e r e	m a n d u k a: r e	m - o r d e: r e
French		l ɑ̃ - ɡ - -	b - - w ɑ ʁ -		m ɑ̃ - ʒ - - e - -	m - o ʁ d - ʁ -
Spanish	n o m - b ɾ e -	l e ŋ g w a	b e b - e ɾ -	k o m e - - ɾ -	m a n d u k a ɾ -	m - o ɾ ð e ɾ -
Italian		l i n g w a	b e - - - ɾ e		m a n ʤ - - a ɾ e	m - ɔ r d e r e
PortugueseBrazi		l ĩ - g w ɐ	b e b - e ʁ -	k o m e - - - -	m ɐ̃ - ʒ - - a ʁ -	m - o ʁ d e ʁ -
Portuguese		l ĩ - g w ɐ	b ɨ β - e ɾ -	k u m - - e ɾ -	m ɐ̃ - ʒ - - a ɾ -	m - u ɾ ð e ɾ -
Catalan			b ɛ w - - ɾ ə		m ə ɲ ʒ - - a - -	
Walloon		l ɛ̃u - - - -	b - - - ø: ʁ -		m a ɲ - - - i: - -	
Friulian		l ɛ n g - ɛ	b e v i - - -		m a ŋ ɟ - - a: - -	m w a r d i - -
Romanian		l i m b - ə	b - - - e̯a - -		m ɨ n - - k a - -	

	ToBite-Morsicare	ToSuck	ToSpit	ToSpit-Exconspuere	ToSpit-Sputare	ToKnow
Latin	m o r s i k aː r e	s uː g e r e	k o n s p u e r e		- s p u t e r e	s k iː r e
French		s y s e - -	k ɔ̃ - s p y e - -			
Spanish	m o - s - k a ɾ -			e s k u - p i ɾ	e s p u t a ɾ -	
Italian	m o r s i k a ɾ e				- s p u t a ɾ e	
PortugueseBrazi	m u - s ə g a - -	s u g a ʁ -	k u - s p i ʁ - -			
Portuguese	m u - s ə g a r -	s u g a ɾ -	k u - ʃ p i ɾ - -			
Catalan	m u - s ə ɣ a - -			ə s k u - p i -		
Walloon		s y s iː - -				
Friulian		c u c aː - -			s p u d aː - - -	
Romanian	m u r s e k a - -	s u ʤ e - -		- s k u j p a -		ʃ t i - -
	ToKnow-Sapere	ToKnow-Cognoscere	ToThink	ToThink-Pensare	ToFear	ToFear-Tremere
Latin	s a p - e r e	k o g n oː s k e r e	k - oː g i t aː r e	p eː n s aː r e	t i m eː r e	t r e m - e r e
French	s a v w a ʁ -	k ɔ - n ɛ - t ʁ - -	k ɥ - - i d e - -	p ɑ̃ - s e - -		k ʁ ɛ̃ - d - ʁ -
Spanish	s a b - e ɾ -	k o - n o θ e ɾ - -	k w - - i d a ɾ -	p e n s a ɾ -	t e m e ɾ -	t ɾ e m - e ɾ -
Italian	s a p - e r e	k o - n o ʃ ʃ e r e	k - o ʤ i t a r e	p e n s a ɾ e	t e m e r e	t r e m - a r e
PortugueseBrazi	s a b - e ʁ -	k o - ɲ e s - e ʁ -	k - u ʒ i t a ʁ -	p ẽ - s a ʁ -	t e m e ʁ -	t ɾ e m - e ʁ -
Portuguese	s ɐ b - e ɾ -	k u - ɲ i s - e ɾ -	k - u ʒ i t a ɾ -	p ẽ - s a ɾ -	t i m e ɾ -	t ɾ i m - e ɾ -
Catalan	s ə β - ɛ - -	k u - n ɛ ʃ - ə - -	k - u - j d a - -	p ə n s a - -	t e m ə - -	
Walloon	s a v - øː ʁ -	k i - n ɔ h - - - -		p ɛ̃ - s e - -		
Friulian	s a v - eː - -	k o - ɲ o s - i - -		p e ŋ s aː - -	t e m i - -	t r i m - aː - -
Romanian		k u - n o̯a ʃ t e - -	k - u ʤ e t a - -	p ə - s a - -	t e m e - -	
	ToSleep	ToLive	ToDie	ToKill	ToKill-Adnecare	ToKill-Tutari
Latin	d - o r m iː r e	w iː w e r e		n - e k aː r e		t uː - t aː r i
French	d - ɔ ʁ m i ʁ -	v i v - ʁ -	m u ʁ i ʁ -	n w aj e - - -		t - ɥ - e - -
Spanish	d - o ɾ m i ɾ -	b i b i ɾ -	m o ɾ i ɾ -		a - n e g a ɾ -	
Italian	d - o r m i r e	v i v e r e	m o r i r e		a n n e g a r e	
PortugueseBrazi	d - o ʁ m i ʁ -	v i v e ʁ -	m o ʁ e ʁ -			
Portuguese	d - u ɾ m i ɾ -	v i v e ɾ -	m u ʁ e ɾ -			
Catalan	d - u r m i - -	b i w - ɾ ə	m u ɾ i - -	n - ə g a - -		
Walloon	d w a ʁ m i - -		m ɔ ʁ i - -			t u w - e - -
Friulian	d - u r m iː - -	v i v i - -	m u r iː - -			
Romanian	d - o r m i - -	v i - a - -	m u r i - -	n - e k a - -		

	ToKill-Mactare	ToKill-Occidere	ToFight	ToFight-Battuere	ToHunt-Captiare	ToHit
Latin	m a k t aː r e	o k k iː d e r e	p u g n aː r e	b a t t u e r e	k a p t i aː r e	p u l s aː r e
French	m a - t e - -	ɔ k s i - - ʁ -		b a t - - ʁ - -	ʃ a - s - e - -	p u - s e - -
Spanish	m a - t a ɾ -		p u - ɲ a ɾ -	b a - t - i ɾ -	k a - θ - a ɾ -	p u - x a ɾ -
Italian		u t ʧ i d e ɾ e	p u ɲ ɲ a r e	b a t t - e r e	k a t ʧ - a r e	p u l s a r e
PortugueseBrazi	m a - t a ʁ -			b a - t - e ʁ -	k a - s - a ʁ -	p u - ʃ a ʁ -
Portuguese	m ɐ - t a ɾ -			b ɐ - t - e ɾ -	k ɐ - s - a ɾ -	p u - ʃ a ɾ -
Catalan	m ə - t a - -	u k s i - - - -	p u - ɲ a - -	b a - t - - ɾ ə	k ə - s - a - -	
Walloon				b a t - e - - -	ʧ ɛ - s - iː - -	
Friulian	m a ʧ - aː - -			b a t - i - - -	c a - ʧ - aː - -	p u l s aː - -
Romanian		u - ʧ i d e - -		b a t - e - - -		p u l s a - -
	ToCut	ToCut-Curtare	ToCut-Excurtare	ToCut-Taliare	ToSplit	ToSplit-Scindere
Latin	s - e k aː r e	k u r t aː r e	e k s k u r t aː r e	t aː - l i aː r e	d iː w i d e r e	s k i n d e r e
French	s j e - - - -		e - - k u ʁ t e - -	t ɑ j - - e - -		s - ɛ̃ - d e - -
Spanish	s - e g a ɾ -	k o ɾ t a ɾ -		t a - x - a ɾ -	d i b i d i ɾ -	
Italian	s - e g a r e		- - s k o r t a r e	t a - ʎ ʎ aː r e	d i v i d e r e	ʃ - i n d e r e
PortugueseBrazi	s - e ɡ a ʁ -	k o ʁ t a ʁ -		t a - ʎ - a ʁ -	ʤ i v i ʤ i ʁ -	
Portuguese	s - i ɣ a ɾ -	k u ɾ t a ɾ -		t ɐ - ʎ - a ɾ -	d i v i ð i ɾ -	
Catalan	s - ə ɣ a - -			t ə - ʎ - a - -	d i b i d i - -	
Walloon				t ɛ - - j iː - -		
Friulian	s - e - aː - -		- - s k u r t aː - -	t a - - j aː - -	d i v i d i - -	
Romanian			- - s k u r t a - -	t ə - - j a - -	d i v i d e - -	
	ToSplit-Findere	ToSplit-Partire	ToSplit-Separare	ToStab	ToStab-Iugulare	ToScratch
Latin	f i n d e r e	p a r t iː r e	s eː p a r aː r e -	p - u n g e r e	j u g u l aː r e	r aː d e r e
French	f ɑ̃ - d - ʁ -	p a ʁ t i ʁ -	s ə - v - - - ʁ e	p w ɛ̃ - d - ʁ -	ʒ y g y l e - -	
Spanish	- e n d e ɾ -	p a ɾ t i ɾ -	s e p a ɾ a ɾ - -			r a - e ɾ -
Italian	f ɛ n d e r e	p a r t i r e	s e p a r a r e -	p - u n ʤ e r e	j u g u l aː r e	r a d e r e
PortugueseBrazi	f ẽ - d e ʁ -	p a ʁ ʧ i ʁ -	s e p a ɾ a ʁ - -	p - ũ - ʒ i ʁ -		ʁ a - e ʁ -
Portuguese	f ẽ - d e ɾ -	p ɐ ɾ t i ɾ -	s ɨ p ɐ ɾ a ɾ - -	p - ũ - ʒ i ɾ -		ʁ ɐ - e ɾ -
Catalan	f ɛ n d - ɾ ə	p ə r t i - -	s ə p ə ɾ a - - -	p - u ɲ - i - -		r a w - ɾ ə
Walloon	f ɛ̃ - t - - -	p ɔː ʁ t i - -				
Friulian		p a r t iː - -	s e p a r aː - - -			r a d aː - -
Romanian			s e p a r a - - -	p u n ʤ e - - -		r a d e - -

	ToScratch-Rasare	ToScratch-Rasicare	ToScratch-Coctiare	ToDig	ToDig-Cavare	ToDig-Excavare
Latin				f o d e r e	k a w aː r e	e k s k a w aː r e
French	ʁ ɑ z e - -			f w i ʁ - -		
Spanish	r a s a ɾ -	r a s k a ɾ			k a b a ɾ -	e s k a b a ɾ - -
Italian	r a s a r e				k a v a r e	- - s k a v a r e
PortugueseBrazi	ʁ a z a ʁ -	ʁ a ʃ k a ʁ	k o s a ɻ		k ɐ v a ʁ -	i - ʃ k ɐ v a ʁ -
Portuguese	ʁ ɐ z a ɾ -	ʁ ɐ ʃ k a ɾ	k u s a ɾ		k ɐ v a ɾ -	i - ʃ k ɐ v a ɾ -
Catalan	r ə z a - -	r ə s k a -			k ə b a - -	
Walloon					ç ɑː v - l e	
Friulian	r a s aː - -				ɟ a v aː - -	- - z ɟ a v aː - -
Romanian						

	ToSwim	ToSwim-Navigare	ToFly	ToFly-Exvolare	ToWalk	ToWalk-Marcher
Latin	n - a t aː r e	n a v i g aː r e	w o l aː r e			
French		n a - - ʒ e - -	v o l e - -		ʃ ə m i n e - - -	m a ʁ ʃ e
Spanish	n - a d a ɾ -	n a b e g a ɾ -	b o l a ɾ -		k a m i n a ɾ - -	
Italian	n w o t a ɾ e	n a v i g a r e	v o l a ɾ e	z v o l a ɾ e	k a m m i n a ɾ e	
PortugueseBrazi	n - a d a ʁ -	n a v ɨ ɣ a ʁ -	v o - a ʁ -		k ɐ m i ɲ a ʁ - -	
Portuguese	n - ɐ ð a ɾ -	n ɐ v ɨ ɣ a ɾ -	v w - a ɾ -		k ɐ m i ɲ a ɾ - -	
Catalan	n - ə d a - -	n ə b ə g a - -	b u l a - -		k ə m i n a - - -	
Walloon		n ɛ - - ʤ iː - -	v ɔ l e - -		ʧ i m i n e - - -	m aː ʁ ʧ iː
Friulian	n - a d aː - -	n a v i g aː - -		z v o l aː - -	c a m i n aː - - -	
Romanian		n a v i g a - -		z b u ɾ a - -		

	ToWalk-Mergere	ToWalk-Ambitare	ToCome	ToLieAsInABed	ToLieAsInABed-Iacere	ToSit
Latin	m e r g e r e	a m b i t aː r e	w e n iː r e	e k s t e n d e r e	j a - k eː r e	s - e d eː r e
French			v ə n i ʁ -	e - t ɑ̃ - d - ʁ - -	ʒ e - z i ʁ -	s w a - - ʁ -
Spanish		a n d - - a ɾ -	b e n i ɾ -	e k s t e n d e ɾ -	ʝ a - θ e ɾ -	s - e - - ɾ -
Italian	m ɛ r ʤ e r e	a n d - - a r e	v e n i ɾ e	e - s t ɛ n d e r e	ʤ a - ʧ eː ɾ e	s - e d e r e
PortugueseBrazi		ẽ - d - - a ʁ -	v - - i ʁ -	i s t ẽ - d e ʁ - -	ʒ ɐ - z e ʁ -	s - e - - ʁ -
Portuguese		ẽ - d - - a ɾ -	v - - i ɾ -	i ʃ t ẽ - d e ɾ - -	ʒ ɐ - z e ɾ -	s - e - - ɾ -
Catalan			b ə n i - -	ə - s t e n d - ɾ ə	ʒ a w - - ɾ ə	
Walloon			v i n i - -		ʤ e - - r e -	
Friulian			v i ɲ iː - -		j e - s i - -	
Romanian	m e r ʤ e - -		v e n i - -	e k s t i n d e - -	z ə - ʧ e̯a - -	ʃ - e d e̯a - -

	ToSit-Sedentare	ToStand	ToStand-Levare	ToStand-Altiare	ToTurnIntransitive	ToTurnIntransitive-Gyrare
Latin	s e d e n t a: r e	- s t a: r e	l e v a: r e	- a l t i a: r e	t o r n a: r e	g y r a: r e
French		ɛ - t - ʁ -	l ə v e - -	- o - s - e - -	t u ʁ n e - -	ʒ i ʁ e - -
Spanish	s e - - n t a ɾ -	e s t a ɾ -	ʝ e b a ɾ -	- a l θ - a ɾ -	t o ɾ n a ɾ -	x i ɾ a ɾ -
Italian		- s t a r e	l e v a r e	- a l ʦ a r e -	t o r n a r e	ʤ i r a ɾ e
PortugueseBrazi	s ẽ - - - t a ɾ -	ɨ ʃ t a ɾ -	l e v a ʁ - -	- a ɬ s - a - -	t o ʁ n a ʁ -	ʒ i ɾ a ɾ -
Portuguese	s ẽ - - - t a ɾ -	ɨ ʃ t a ɾ -	l i v a ɾ - -	- a ɬ s - a ɾ -	t u ɾ n a ɾ -	ʒ i ɾ a ɾ -
Catalan		ə s t a - -	ʎ ə b a - -	- ə l s - a - -	t u r n a - -	ʒ i ɾ a - -
Walloon		ɛ s - - - -	l ə v e - -	h ɔ: - s - i: - -	t u: r n e - -	
Friulian	s e - - n t a: - -	- s t a: - -	l e v a: - -	- a l t ʃ - a: -	t o r n a: - -	ʤ i r a: - -
Romanian		- s t a - -	l - u a - -		t u r n a - -	

	ToTurnIntransitive-Ancestr	ToTurnIntransitive-Torquer	ToFall	ToFall-Tumbare	ToHold	ToHold-Segurar
Latin		t o r kʷ e: r e	k - a d e r e		t e n - e: r e	
French	v i ʁ e - -	t ɔ ʁ d - ʁ -	ʃ w a - - ʁ -	t õ - b e -	t ə n - i ʁ -	
Spanish	b i ɾ a ɾ -	t o ɾ θ e ɾ -	k - a - e ɾ -	t u m b a ɾ	t e n - e ɾ -	s e g u ɾ a ɾ
Italian	v i r a ɾ e	t ɔ r ʧ e r e	k - a d e ɾ e		t e n - e ɾ e	
PortugueseBrazi	v i ɾ a ɾ -	t u r s e r -	k - ɐ - i ɾ -	t õ - b a ʁ	t e - - - ʁ -	s ɨ g u ɾ a ʁ
Portuguese	ʒ i ɾ a ɾ -	t u r s e r -	k - ɐ - i ɾ -	t õ - b a ɾ	t e - - - ɾ -	s ɨ ɣ u ɾ a ɾ
Catalan	b i ɾ a - -	t ɔ r s ə - -	k - a w - r ə	t u m b a -	t ə n - i - -	
Walloon	v i ʁ e - -		ʧ - ɛ: - - ʁ -	t u m - e -	t i n - i - -	
Friulian	ʤ i r a: - -		ʧ j a d e - -		t i n j i - -	
Romanian		t o̯ a r ʧ e - -	k ə d e̯ a - - -		ʦ i n - e - -	

	ToSqueeze	ToSqueeze-Serrere	ToSqueeze-Serare	ToSqueeze-Appectorare	ToSqueeze-Stringere	ToRub
Latin	e k s p r i m - e r e	s e r r e r e	s e - r a r e	a p p e k t o r a: r e	- s t r i n g e r e	f r i k a: r e
French	e - - p ʁ ɛ̃ - d - ʁ -		s e - ʁ e - -		e - t ʁ ɛ̃ - d - ʁ -	f ʁ ɛj e - - -
Spanish	e k s p ɾ e m - i ɾ -	s e - r a ɾ -	θ e - r a ɾ -	a - p - - ɾ e t a ɾ -	e s t ɾ e ɲ - i ɾ -	f ɾ e g a ɾ -
Italian	- - s p r ɛ m - e r e		s e r r a r e		- s t r i n ʤ e r e	f r e g a r e
PortugueseBrazi	i - ʃ p r ə m - e ʁ -	s e - ʁ a - -	s ɨ - ʁ a ɾ -	ɐ - p ɨ - ɾ - t a ɾ -	ə ʃ t r ĩ - ʒ i r -	
Portuguese	i - ʃ p r ə m - e r -	s ə - ʁ a ɾ -	s ɨ - ʁ a ɾ -	ɐ - p ɨ - ɾ - t a ɾ -	ə ʃ t r ĩ ʒ i r - -	
Catalan	ə - s p ɾ e m - ə - -	s ə - r a - -			ə s t ɾ ɛ ɲ ə - - -	f ɾ ə g a - -
Walloon			s ɛ - ʁ e - -		s t r i n g e - - -	f r oj - - - -
Friulian	e - s p r i m - i - -				s t r ɛ n g i: - - -	f r e - a - -
Romanian	- s k - r e m e - - -				s t r ɨ n ʤ e - - -	f r e k a - -

	ToRub-Exfricare	ToRub-Frictare	ToRub-Frictiare	ToWash	ToWipe	ToWipe-Extergere
Latin		f r i k t a: r e		l a w a: r e	t e r g e r e	e k s t e r g e r e
French		f ʁ o t e - - -		l a v e - -		
Spanish		f ɾ o t a ɾ - -	f r i s a ɾ	l a β a ɾ -		e - s t a ɾ s i ɾ -
Italian		f r e t t a r e		l a v a r e	t ɛ r ʤ e r e	
PortugueseBrazi	i ʃ f ɾ i g a ɾ			l ɐ v a ɾ -		
Portuguese	i ʃ f ɾ i ɣ a ɾ			l ɐ v a ɾ -		
Catalan			f ɾ ə s a -	ʎ ə b a - -		ə - s t ə r ʒ i - -
Walloon		f ʁ o t e - - -		l a v e - -		
Friulian				l a v a: - -		
Romanian				l a - - - -		- - ʃ t e r ʤ e - -

	ToWipe-Exsucare	ToWipe-Limpidare	ToPull	ToPull-Pulsare	ToPull-Trahere	ToPush
Latin	e k s - u: k - a: r e	l i m p i d a: r e	t i r a: r e	p u l s a: r e	t r a h e r e	i m p i n g e r e
French	e - s ɥ i - j e - -		t i ʁ e - -	p u - s e - -	t ʁ - - ɛ ʁ -	
Spanish	e n x - u g - a ɾ -	l i m p j - a ɾ -	t i ɾ a ɾ -	p u - x a ɾ -		
Italian	a ʃ ʃ - u g - a r e		t i r a r e	p u l s a r e	t r a r - r e	i m p i n ʤ e r e
PortugueseBrazi	ẽ - ʃ - u g - a ɾ -	l ĩ - p - - a ɾ -	ʧ i ɾ a - -	p u - ʃ a ɾ -	t ɾ a z e - -	
Portuguese	ẽ - ʃ - u ɣ - a ɾ -	l ĩ - p - - a ɾ -	t i ɾ a ɾ -	p u - ʃ a ɾ -	t ɾ ɐ z e ɾ -	
Catalan	ə - ʃ - u g a - - -		t i ɾ a - -		t ɾ ɛ w - ɾ ə	ə m p ɛ ɲ - ə - -
Walloon	- - s - u - w e - -		t i r e - -	p u: s i: - - -		
Friulian	- - s - u - j a: - -		t i r a: - -	p u l s a: - -	t r aj - - - -	
Romanian	u - s - - k - a - -			p u l s a - -	t r a ʤ e - -	i m p i n ʤ e - -

	ToThrow	ToThrow-Lanceare	ToThrow-Eruncare	ToTie	ToTie-Aptare	ToSew
Latin	j a k t a: r e	l a n k e a: r e	e: - r u n k a: r e	l i g a: r e	a p t a: r e	k o: n - s u e r e
French	ʒ ə - t e - -	l ɑ̃ - s - e - -		l i - e - -		k u - d - - - ʁ -
Spanish	- e - ʧ a ɾ -	l a n θ - a ɾ -	a - r a n k a ɾ -	l e g a ɾ -	a - t a ɾ -	k o - - s - e ɾ -
Italian	ʤ e t t a r e	l a n ʧ a r e -	a r r o n ʧ a r e	l e g a r e		k u - - ʧ - i r e
PortugueseBrazi	ʒ ej t a ɾ - -	l ẽ - s - a - -			ɐ - t a ɾ -	k u - - z - e ɾ -
Portuguese	ʒ ej t a ɾ - -	l ɐ̃ - s - a ɾ -			ɐ - t a ɾ -	k u - - z - e ɾ -
Catalan	x i t a - - -	ʎ ə n s - a - -		ʎ i ɣ a - -		k u - - z - i - -
Walloon	ʤ ɛ t e - - -	l a n c - i: - -		l ɔ j i: - -		k ø: - - z - - - -
Friulian		l a n ʧ a: - - -		l e - a: - -		k u - - z i - - -
Romanian			a - ɾ u ŋ k a - -	l e g a - -		c o̯a - - s - e - -

	ToCount	ToCount-Enumerare	ToSay	ToSay-Exponere	ToSing-AncestralClass	ToPlay-Ludere
Latin	k o m p u t aː r e	eː n u m e r aː r e	d iː k e r e	e k s p oː n e r e	k a n t aː r e	l uː d e r e
French	k õ - - - t e - -	e n u m e ʁ e - -	d i - - ʁ -		ʃ ɑ̃ - t e - -	
Spanish	k o n - - t a ɾ -	e n u m e ɾ a ɾ -	d e θ i ɾ -		k a n t a ɾ -	l u d i ɾ -
Italian	k o n - - t a r e	e n u m e r a r e	d i - - r e	- - s p o r - r e	k a n t a r e	
PortugueseBrazi	k õ - - - t a ɾ -	e n u m e ɾ a ɾ -	d i z - e ɾ		k ɐ̃ - t a ɾ -	
Portuguese	k õ - - - t a ɾ -	e n u m e ɾ a ɾ -	d i z - e ɾ		k ɐ̃ - t a ɾ -	
Catalan	k u m - - t a - -	e n u m e ɾ a - -	d i - - - -		k ə n t a - -	
Walloon	k õ - - - t e - -		d iː - - ʁ -		ʧ ɑ̃ - t e - -	
Friulian	k o n - - t aː - -		d iː - - - -		c a n t aː - -	
Romanian		- n u m a r a - -	z i ʧ e - -	- - s p u n e - -	k ɨ n t a - -	

	ToPlay-Jiocare	ToFloat	ToFloat-Fluitare	ToFlow	ToFlow-Colare	ToFlow-Excurrere
Latin	j o - k aː r e	f l uː k t u aː r e	f l u i t aː r e	f l u e r e	k oː l aː r e	e k s k u r r e r e
French	ʒ - w - e - -	f l y k t ɥ e - -		f l y e - -	k u l e - -	
Spanish	x u - g a ɾ -	f l u g t w a ɾ -		f l u i ɾ -	k o l a ɾ -	e - s k u r i ɾ - -
Italian	ʤ o - k a r e	f l u t t u a r e	f l u i t a r e	f l u i r e	k o l a r e	- - s k o r r e r e
PortugueseBrazi	ʒ o - g a ʁ -	f l u - t u a ʁ -		f l w i ʁ -	k o - a ʁ -	i - ʃ k o - ʁ e ʁ -
Portuguese	ʒ u - ɣ a ɾ -	f l u - t u a ɾ -		f l w i ɾ -	k u - a ɾ -	i - ʃ k u - ʁ e ɾ -
Catalan	ʒ u - g a - -	f l u k t u a - -		f l u i - -	k u ɫ a - -	ə - s k o - r ə - -
Walloon	ʤ u w - e - -				k ɔ l e - -	
Friulian	ʤ u j - aː - -					- - s k o - r iː - -
Romanian	ʒ u - k a - -	f l u c t u a - -				- - s k u ɾ ʤ e - -

	ToFlow-Currere	ToFreeze	ToFreeze-Glaciare	ToFreeze-Inglaciare	ToBurn-Brojan	ToBurn-Cremare
Latin	k u r r e r e	g e l aː r e	g l a - k i aː r e	i n g l a k i aː r e		k r e m aː r e
French	k u - ʁ i ʁ -	ʒ ə l e - -	g l a - s - e - -		b ʁ y l e - -	k ʁ a m e - -
Spanish	k o - r e ɾ -	- e l a ɾ -				k - e m a ɾ -
Italian	k o r r e r e	ʤ e l a r e	g j a t ʧ j a r e		b r u ʧ a r e	k r e m a r e
PortugueseBrazi	k o - ʁ e ʁ -	ʒ i l a ɾ -				k - ʁj m a ɾ e
Portuguese	k u - ʁ e ɾ -	ʒ i l a ɾ -				k - ej m a ʁ e
Catalan	k o - r ə - -	ʒ ə l a - -	g l ə - s - a - -			k r ə m a - -
Walloon		ʤ a l e - -			b ʁ uː l e - -	
Friulian	k o - r i - -		g l a - ʧ - aː - -		b r u z aː - -	
Romanian	k u ɾ ʤ e - -			ɨ n g - e ʦ - a - -		

	ToBurn-Flammare	ToBurn-Ardere	ToBurn-Flagrare	ToBurn-Incendere	ToBurn-AncestralClass8	All
Latin	f l a m m aː r e	a r d eː r e	f l a g r aː r e	i n k e n d - e r e	u s t u l aː r e	o m n eː s
French	f l ɑ̃ - b e - -	a ʁ d - ʁ -	f l a g ʁ e - -	ɛ̃ - s ɑ̃ - d j e - -		
Spanish	f l a - m e a ɾ	a ɾ d e ɾ -	f l a g ɾ a ɾ -	e n θ e n d - e ɾ -		
Italian	f j a m m a r e	a r d e r e	f l a g r a r e	i n ʧ ɛ n d j a r e	u s t o l a r e	o ɲ ɲ i -
PortugueseBrazi		a ʁ d e ʁ -	f l a g ʁ a ʁ -	ĩ - s e n dʒ ɪ a ɾ -		
Portuguese		ɐ ɾ d e ɾ -	f l a g ɾ a ɾ -	ĩ - s ẽ - d j a ɾ -		
Catalan	f ɫ a m a - - -			ə n s e n d - - ɾ ə		
Walloon						
Friulian						
Romanian		a ɾ d e - -		i n ʧ i n d ʒ e - -	u s t u r a - -	

	All-Totus	Many	Many-Tantus	Some	Few	Other
Latin	t oː - t u s	m u l t u s	t a n t u s		p aʊ̯ k u s	a l t e r -
French	t u - - - -	m u - - - -		o - k œ̃ - -	p ø - - -	o - t - ʁ -
Spanish	t o - d o -	m u - ʧ o -	t a n t o -	a l g u n o	p o k o -	o - t - ɾ o
Italian	t u t t o -	m o l t o -	t a n t o -	a l k u n o	p ɔ k o -	a l t - r o
PortugueseBrazi	t o - d u -	m ũ j̃ - t u	t ẽ - t u -	a w g ũ - -	p o w k u	o w t - ɾ u
Portuguese	t o - ð u -	m ũ j̃ - t u	t ẽ - t u -	a ɫ g ũ - -	p o w k u	o w t - ɾ u
Catalan	t o - t - -	m o l - - -	t a n t - -	ə l g u - -	p ɔ k - -	a l t - ɾ ə
Walloon	t ɔ - - - -				p õ - - -	õ - t - - -
Friulian	d u - t - -	m o l c - -	t a n c - -		p oː k - -	a l t - r i
Romanian	t o - t - -	m u l t - -				a l t - - -

	Other-Alius	Big	Big-Grandem	Big-Majjorem	Long-Longum	Long-Largum
Latin	a l i u s	m a g n u m	g r a n d e m	m aj j o r e m	l o - n g u m	l a r g u m
French			g ʁ ɑ̃ - - - -		l ɔ̃ - - - - -	l a ʁ ʒ - -
Spanish		m a - ɲ o -	g ɾ a n d e -		l o - n g o -	l a ɾ ɣ o -
Italian		m a ɲ ɲ o -	g r a n d e -		l u - n g o -	l a r g o -
PortugueseBrazi	a w - - -		g ɾ ẽ - dʒ i -		l õ - g u - -	l a ʁ g u -
Portuguese	a ɫ - - -		g ɾ ẽ - d ɨ -		l õ - g u - -	l a ɾ g u -
Catalan			g r a n - - -		ʎ o - ŋ - - -	ʎ a ɾ k - -
Walloon			g ʁ ɑ̃ - - - -		l õ - - - - -	
Friulian			g r a n t - -		l u n k - - -	l a r k - -
Romanian				m a - - - ɾ e	l u n g - - -	l a r g - -

	Wide	Wide-Amplum	Heavy	Heavy-Lurdus	Heavy-Pesant	Small
Latin	l a: t u m	a m p l u m	g r a w i s	l u r d u s	p e: s a n t -	p i t t i t u s
French	l e - - -	ɑ̃ - p l - -	g ʁ a v - -	l u ʁ - - -	p ə z ɑ̃ - - -	p ə - t i - - -
Spanish	l a t o -	a n ʧ - o -	g ɾ a b e -	l e ɾ d o -	p e s a - ð o	
Italian	l a t o -	a m p j o -	g r ɛ v e -	l o r d o -	p e s a n t e	
PortugueseBrazi	l a t u -	ɐ̃ - ʃ - u -	g ɾ a v i -	l e ɾ d o -	p e z a - d u	
Portuguese	l a t u -	ɐ̃ - ʃ - u -	g ɾ a v ɨ -	l e ɾ d o -	p ɨ z a - ð u	
Catalan		a m p l ə -	g ɾ e w - -		p ə z a - t -	p ə t i t - - -
Walloon			g r a v - -			p i - t i - - -
Friulian			g r ɛ v i -		p e z a n t -	
Romanian	l a t - -		g ɾ e w - -			

	Small-Pittinus	Small-Pitulus	Short	Short-Brevis	Narrow	Narrow-Strictus
Latin	p i t t i n u s	p i - t u l u s	k u r t u s	b r e w i s	a n g u s t u s	- s t r - i - k t u s
French			k u ʁ - - -	b ʁ ɛ f - -		e - t ʁ w a - - - -
Spanish	p e - k e ɲ o -		k o ɾ t o -	b ɾ e b e -	a n g o s t o -	e s t ɾ - e - - ʧ o -
Italian	p i t ʧ i n o -	p i k k o l o -	k o r t o -	b r ɛ v e -	a n g u s t o -	- s t r - e - t t o -
PortugueseBrazi	p e - k e n u -		k u ʁ t u -	b ɾ ɛ v i -		i s t ɾ - ej - - t u -
Portuguese	p ɨ - k e n u -		k u ɾ t u -	b ɾ ɛ v ɨ -		ɨ ʃ t ɾ - ɐj - - t u -
Catalan			k u ɾ t - -	b ɾ e w - -		ə s t ɾ - ɛ - - t - -
Walloon			k u: ʁ - - -	b ʁ e f - -		- s t ʁ - ø: - - - - -
Friulian		p i - ʧ u l - -	k u r t - -			- s t r - ɛ - - t - -
Romanian	p u - ʦ i n - -				ɨ ŋ g u s t - -	- s t r - ɨ m - t - -

	Thin	Thin-Delicatus	Thin-Subtilis	Red	Red-Russus	Red-Vermiculus
Latin	m i n u: - t u s	d e: l i k a: t u s	s u b t i: l e m	r u b e r -	r u s s u s	v e r m i k u l u s
French	m ə n y - - - -	d u: - - ʒ e: - - -			ʁ u - - - -	v ɛ ʁ m ɛj - - - - -
Spanish	m e n u - d o -	d e l - ɣ a ð o -	s u - t i l - -		r o - x o -	b e ɾ m e x o - - -
Italian	m i n u - t o -	d e l i k a t o -	s o t t i l e -	r u b - r o	r o s s o -	v e r m i ʎ - ʎ o -
PortugueseBrazi	m i - u - d u -	d e w - g a d u -	s u - ʧ i w - -		ʁ o - ʃ ʊ -	v e ʁ m e - - ʎ u -
Portuguese	m i - u - ð u -	d ɛ ɬ - ɣ a ð u -	s u - ʧ i w - -		ʁ o - ʃ u -	v ɨ ɾ m ɐj - - ʎ u -
Catalan	m ə n u - t - -	d ə l i k a t - -	s u p t i l - -		r o - s - -	b ə r m ɛ - - ʎ - -
Walloon	m i n u - - - -		s u: - t i - - -			
Friulian	m i n u: - t - -		s u - t i: l - -		r ɔ - s - -	
Romanian	m ə r u n t - -		s u b ʦ i r e -		ɾ o - ʃ u -	

	Red-Rubeus	Green	One	Two-Duos	Two-Duae	Two-Duas
Latin	ɾ u - b e u s	w i r i d e m	uː n u m	d u oː s	d u - aj	d u a s
French	ʁ u - ʒ - - -	v e ʁ - - - -	œ̃ - - -	d - ø -		
Spanish	ɾ u - b j o -	b e ɾ - d e -	u n o -	d - o s		
Italian	ɾ ɔ b b j o -	v e r - d e -	u n o -		d u - e	
PortugueseBrazi	ɾ u - b e o -	v e ɾ - d ɨ -	ũ - - -	d - oj s		d u ɐ s
Portuguese	ɾ u - b e o -	v e ɾ - d ɨ -	ũ - - -	d - oj ʃ		d u ɐ ʃ
Catalan	ɾ u - ʤ e - -	v ɛ ɾ - t - -	u n - -	d - o s		
Walloon	ɾ ɔ - ʧ - - -	v ɛ ʁ - - - -	õ - - -	d - øː -		
Friulian		v ɛ r - t - -	u ŋ - -	d - oj -		
Romanian	r oj - b - - -	v e ɾ - d e -	u n u -	d - oj -	d o w ə	

	Three	Four	Five	Here	There	There-Ibi
Latin	t r - eː s	kʷ - a t t w o r -	kʷ iː n kʷ - e	- e k k u m h iː k	i l l aː k	i b iː
French	t ʁ w ɑ -	k - a - t - - ʁ -	s ẽ - k - -	i - - s - - - i -	- - l a -	
Spanish	t ɾ - e s	k w a - t - - ɾ o	θ i n k - o	- a - k - - - i -	a - ɟ a -	
Italian	t r - e -	k w a t t - - r o	ʧ i ŋ k w e	- - - k w - - i -	- - l a -	- v i
PortugueseBrazi	t ɾ - e s	k w a - t - - ɾ u	s ĩ - k - u	- a - k - - - i -	- - l a -	
Portuguese	t ɾ - e ʃ	k w a - t - - ɾ u	s ĩ - k - u	- ɐ - k - - - i -	- - l a -	
Catalan	t r - ɛ s	k w a - t - - ɾ ə	s i ŋ k - -	- a - k - - - i -	ə - ʎ a -	
Walloon	t r - øː -	k w a - t - - - -	s ẽ - k - -		- - l a -	
Friulian	t r - eː -	k w a - t - - r i	ʧ i ŋ k - -	- a - k - - - i -		
Romanian	t r - ej -	p - a - t - - r u	ʧ i n ʧ - -		- - l a -	

	There-Adlbi	Who-Qui	Who-Quem	What	When-Quando	How-Quomodo
Latin		kʷ - i s	kʷ - e m -	kʷ - i d	kʷ - a n d oː	kʷ oː m o d o
French		k - i -		k w a -	k - ɑ̃ - - -	k ɔ m ɑ̃ - -
Spanish	a i		k j e n -	k - e -	k w a n d o	k o m o - -
Italian		k - i -		k - e -	k w a n d o	k o m e - -
PortugueseBrazi	a i		k - ẽj - -	k - i -	k w ẽ - d u	k o m u - -
Portuguese	ɐ i		k - ɐ̃j - -	k - ɨ -	k w ɐ̃ - d u	k o m u - -
Catalan		k - i -		k - ɛ -	k w a n - -	k ɔ m - - -
Walloon		k - iː -		k w ɛː -	k w a n d -	k ɔ m ɛ̃ - -
Friulian		k w i -		ʧ - e -	k w a n t -	ʧ e m uː t -
Romanian			ʧ - i n e	ʧ - e -	k - ɨ n d -	k u m - - -

	Not			Not-Nec			And-Et			And-Si		
Latin	n	oː	n	n	e	k	e	t		s	iː	k
French	n	ɔ̃	-	n	i	-	e	-				
Spanish	n	o	-	n	i	-	i	-				
Italian	n	o	n	n	e	-	e	-				
PortugueseBrazi	n	ɐ̃w̃	-	n	ẽj̃	-	i	-				
Portuguese	n	ɐ̃w̃	-	n	ɐ̃j̃	-	i	-				
Catalan	n	o	-	n	i	-	i	-				
Walloon				n	ẽ	-	ɛ	-				
Friulian	n	o	-				e	-				
Romanian	n	u	-				e	-		ʃ	i	-

Character Assignments

Each segment gets a different number

1 e 2 g 3 oː 4 ʒ 5 ə 6 ʝ 7 o 8 i 9 w 10 ɔ 11 ʤ 12 ɪ 13 j 14 n 15 s 16 u 17 ʃ 18 oj 19 v

20 b 21 t 22 uː 23 y 24 d 25 f 26 eː 27 m 28 a 29 ɾ 30 ɐ 31 œ 32 ɛ 33 l 34 r 35 x 36 ʎ

37 ʁ 38 iː 39 ɲ 40 o̯a 41 h 42 ẽj̃ 43 ɔ̃ 44 ɑ̃ 45 ĩ 46 ɐ̃ 47 ʧ 48 ɨ 49 p 50 z 51 ð 52 k 53 ʦ

54 aː 55 ɐ̃j̃ 56 ʀ 57 θ 58 ej 59 ɐj 60 õ 61 ɛː 62 ɥ 63 øː 64 ɬ 65 ɛj 66 ø 67 e̯a 68 kʷ 69 ɣ

70 aj 71 g 72 ẽ 73 ŋ 74 gʷ 75 ẽu̯ 76 ɑ 77 β 78 ɟ 79 c 80 ɛ̃ 81 ɔː 82 ũ 83 ɻ 84 ç 85 ɑː 86 j̃

87 œ̃ 88 au̯ 89 ʊ 90 ɐ̃w̃

Partition Assignments

Model: “Linguistically Informed”

1 **Nasal Vowel**

ẽj̃ ɔ̃ ɑ̃ ĩ ɐ̃ ɐ̃j̃ õ ẽ ẽu̯ ɛ̃ ũ œ̃ ɐw̃

2 **Vowel**

e oː ə o i ɔ ɪ u oj uː y eː a ɐ œ ɛ iː o̯a ɨ aː ej ɐj ɛː øː ɛj ø e̯a aj ɑ ɔː ɑː au̯ ʊ

3 **Nasal Consonant**

n m ɲ ŋ j̃

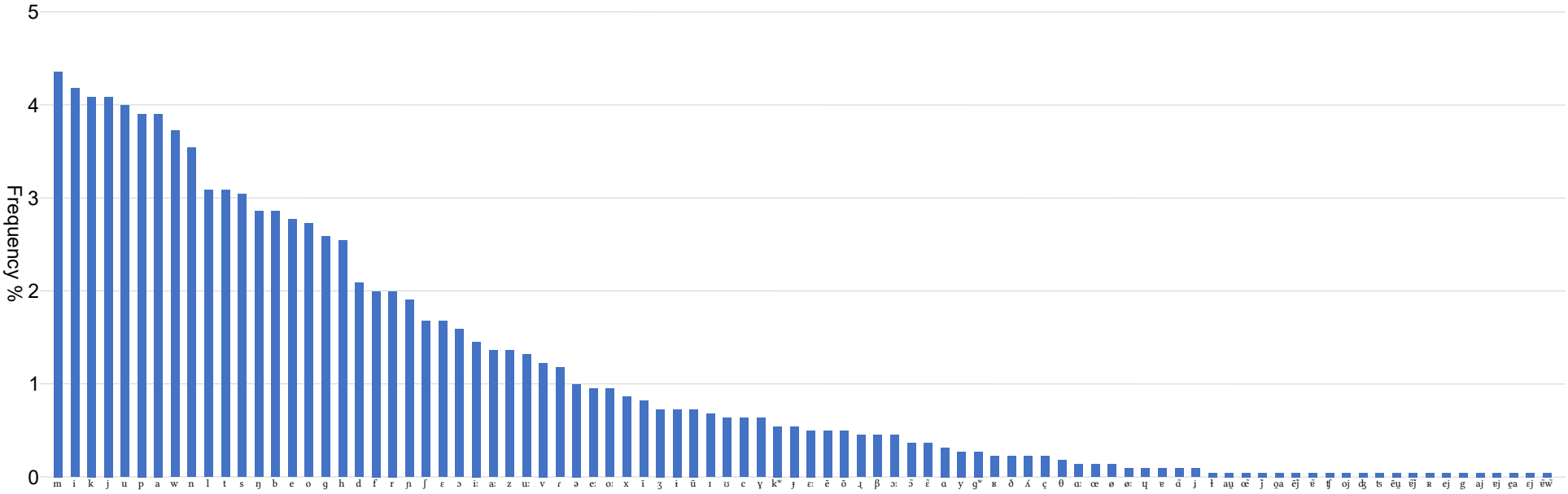
4 **Non Sylabic Sonorant**

w j l r

5 **Consonant**

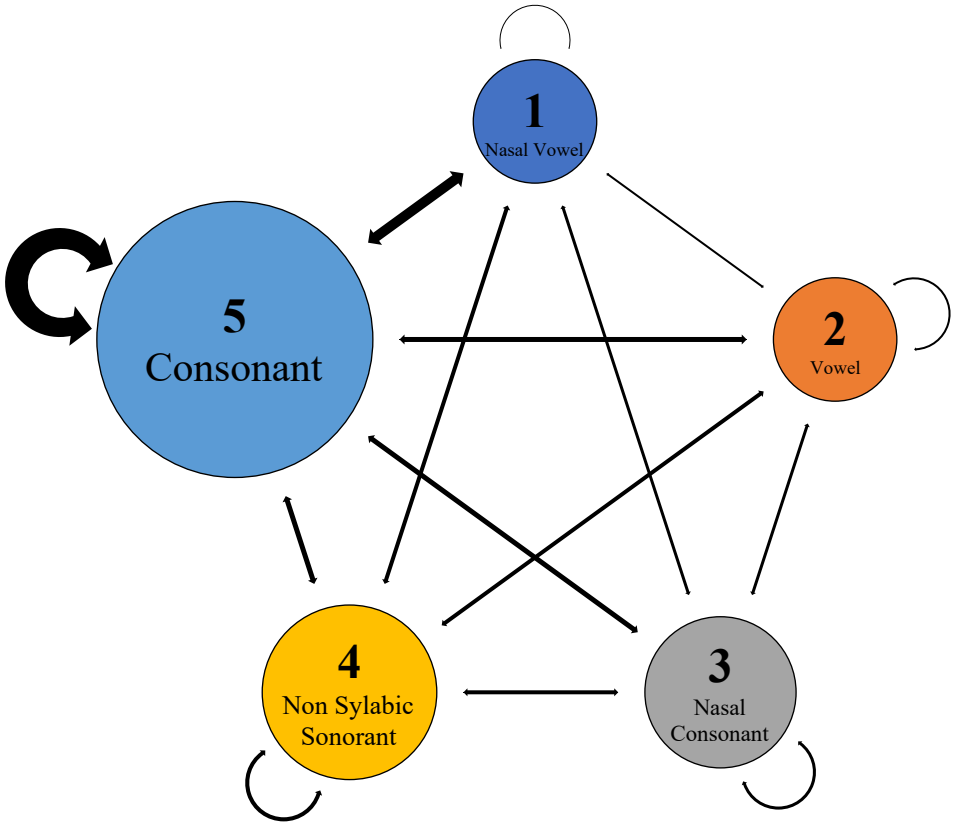
g ʒ ʝ ʤ s ʃ v b t d f ɾ x ʎ ʁ h ʧ p z ð k ʦ ʀ θ ɥ ɬ k^w ɣ g g^w β ɟ c ɻ ç

Prior Segment Frequencies

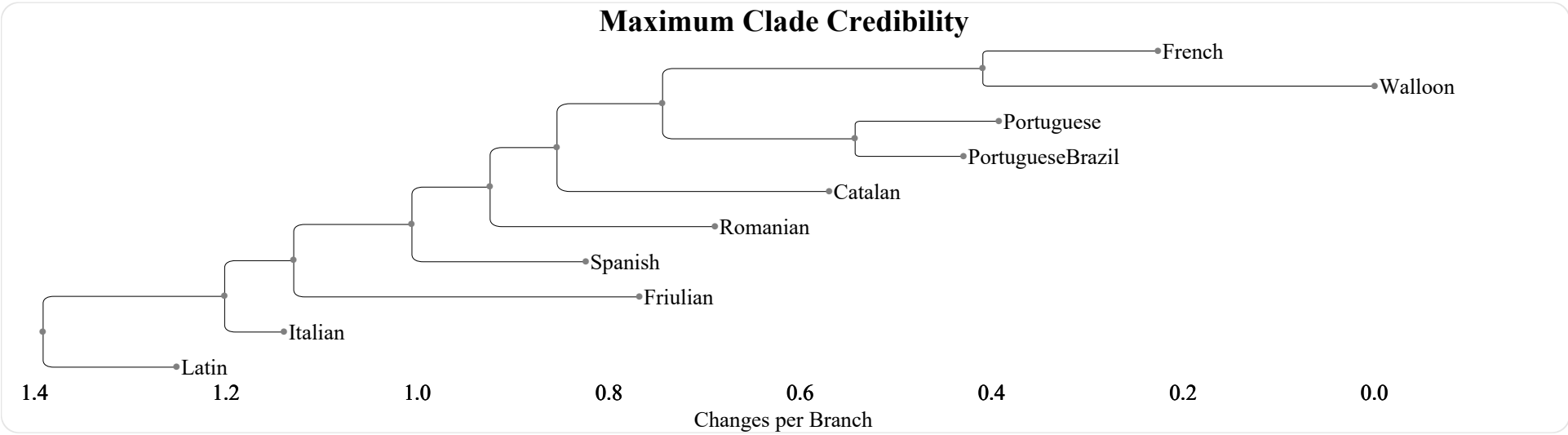


Transition Rates Between Partitions

For the 'Linguistically Informed' model, states were grouped into five sets: Nasal Vowel (1), Vowel (2), Nasal Consonant (3), Non Sylabic Sonorant (4) and Consonant (5). Here, the area of the circles is proportional to the estimated equilibrium frequencies for each group. The width of the arrows is proportional to the estimated rates. Note that rates of change are much greater from one word segment to another when the change is within the word segment group than it is when the change is between word segments in different groups.



Results


Maximum Clade Credibility
French
Walloon
Portuguese
PortugueseBrazil
Catalan
Romanian
Spanish
Friulian
Italian
Latin
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Changes per Branch

Questions