

Vowel - Zero Alternations in Czech Prefixes

(1) [e]-zero alternations in Czech prefixes

+e	-e	
beze-dný	bezø-květný	"without bottom/ without flowers"
vze-dmout	vzø-hled	"blow up/ expression (face)"
přede-vším	předø-skok	"before all/ test-jump ('before-jump)'"
roze-dmout	rozø-dmýchat	"blow up/ fan"
roze-přít	rozø-přahat	"strut/ remove"

(2) conditions on this alternation

a. only C-final prefixes alternate

do-hovořit	*doe-hovořit	"finir de parler"
do-cela	*doe-cela	"tout à fait"
do-hra	*doe-hra	"épilogue", NOMsg
do-her	*doe-her	"épilogue", GENpl

b. only \sqrt{CC} -initial stems provoke the alternation

roz-dat	*roze-dat	"distribuer"
před-loni	*přede-loni	"il y a deux ans"
bez-pečí	*beze-pečí	"sécurité"
nad-hodnota	*nade-hodnota	"plus-value"

(3) zero-forms are underlying

a. corresponding prepositions have zero-forms in isolation

bez, před, nad, pod,...

b. vocalized forms are the consequence of consonant-clusters like elsewhere in the language

-CøC-V		-CeC-ø		-CeC-CV	
hudb-a	NOM sg	hudeb	GEN pl	hudební	Adj
kavárn-a	NOM sg	kaváren	GEN pl	kaváren-ský	Adj
lokt-u	GEN sg	loket	NOM sg	loketní	Adj

(4) identical \sqrt{CC} - behave contrastively

cluster	provoking	provoking	
	prefixal V vs.	prefixal zero	
\sqrt{BR}	ode-BRat vs.	bezø-BRadý	"take away/ beardless"
\sqrt{DR}	roze-DRat	vs. rozø-DRobit	"tear up/ crumble"
$\sqrt{ŠL}$	vze-ŠLý	vs. rozø-ŠLapat	"open (flower)/ crush"
$\sqrt{PŘ}$	roze-PŘít vs.	rozø-PŘahat	"spread around (tech)/ stretch out"

- (5) corpus: exhaustive data from Ulbrich (1978) concerning 7 C-final prefixes (out of 11, *ob-* and the three "non-syllabic" items *s-*, *z-*, *v-* miss).

Numeric overview:

prefix	nb items +e	nb items -e	gloss
bez	16	39	"without"
vz	11	20	inchoative, "up"
před	16	48	"before, in front of"
roz	80	295	inch., "disperse/ break into pieces"
nad	5	33	"over"
pod	26	74	"under"
od	41	253	distantiational movement
sum	195	762	
TOTAL		957	

- (6) the secret must be found in the different status of stem-initial CC-clusters.

- (7) stem-initial CCs observed with

- a. prefixal -V only +e
 b. prefixal -∅ only -e
 c. both mix

+e only: 17 CCs	-e only: 38 CCs
ct, dn, dř, jm, lstn, mk, pn, ps, rv, řv, sch, sr, šv, tn, vž, zř, žr	bl, bř, cl, cv, čl, fň, fr, hl, hm, hv, chl, chrchl, km, kr, kř, kv, mň, mr, pl, pt, sh, sv, šk, šn, šp, šr, tl, tr, tv, vd, vr, zbr, zp, zt, žh, žm, žň, žv
mix: 35 CCs	
br, čt, dm, dr, dv, hn, hr, hř, chv, jd, kd, kl, ml, mn, pj, pr, př, sk, sl, sm, sn, sp, st, šl, št, tř, vč, vl, vř, vš, vz, zd, zl, zn, zv	
TOTAL nb CC: 90	

- (8) A given root belongs to one and only one of these three groups.

(9)

CC mix represented by how many items?								
underscored: CCs with significant numeric disproportion								
CC mix	items		CC mix	items		CC mix	items	
	+e	-e		+e	-e		+e	-e
br	6	10	<u>ml</u>	<u>5</u>	<u>14</u>	<u>št</u>	<u>1</u>	<u>14</u>
čt	1	2	mn	2	6	<u>tř</u>	<u>1</u>	<u>17</u>
dm	3	2	pj	3	1	vč	1	2
<u>dr</u>	<u>3</u>	<u>14</u>	<u>pr</u>	<u>2</u>	<u>57</u>	<u>vl</u>	<u>1</u>	<u>24</u>
<u>dv</u>	<u>1</u>	<u>8</u>	<u>př</u>	<u>8</u>	<u>20</u>	vř	5	2
hn	3	1	<u>sk</u>	<u>1</u>	<u>13</u>	vš	2	1
<u>hr</u>	<u>7</u>	<u>16</u>	sl	8	6	vz	5	1
hř	3	2	sm	3	3	zd	4	3
chv	2	2	sn	1	1	zl	2	2
jd	2	2	sp	2	2	zn	6	2
kd	1	1	<u>st</u>	<u>21</u>	<u>97</u>	zv	4	4
<u>kl</u>	<u>1</u>	<u>53</u>	šl	2	3			

- (10) a. all CC mix with numeric disproportion are classical branching Onsets or s+Cs.
 b. almost all branching Onsets present a numeric disproportion.

(11)

Combien de racines par CC?								
CC	nb racines		CC	nb racines		CC	nb racines	
	+e	-e		+e	-e		+e	-e
br	1	7	zd	1	2	tr	-	7
čt	1	1	zl	1	1	tv	-	1
dm	1	1	zn	2	2	vd	-	1
dr	1	11	zv	2	3	vr	-	5
dv	1	3	bl	-	2	zbr	-	1
hn	1	1	bř	-	4	zp	-	1
hr	1	5	cl	-	1	zt	-	1
hř	1	1	cv	-	1	žh	-	1
chv	1	2	čl	-	2	žm	-	1
j(d)	1	1	fň	-	1	žň	-	1
kd	1	1	fr	-	1	žv	-	1
kl	1	11	hl	-	6	ct	1	-
ml	1	3	hm	-	1	dn	1	-
mn	1	1	hv	-	1	dř	1	-
pj	1	1	chl	-	1	jm	2	-
pr	1	10	chrchl	-	1	lstn	1	-
př	1	7	km	-	2	mk	1	-
sk	1	5	kr	-	10	pn	1	-
sl	3	2	kř	-	5	ps	1	-
sm	3	3	kv	-	2	rv	1	-
sn	1	1	mň	-	7	řv	1	-
sp	2	1	mr	-	4	sch	1	-
st	6	24	pl	-	22	sr	1	-
šl	1	2	pt	-	1	šv	1	-
št	1	1	sh	-	1	tn	1	-
tř	1	4	sv	-	5	vž	1	-
vč	1	1	šk	-	7	zř	1	-
vl	1	6	šň	-	1	žr	1	-
vř	1	1	šp	-	1			
vš	1	1	šr	-	2			
vz	1	1	tl	-	2			

- (12) a. all +e CCs are represented by a single Root.
 b. many +e CCs are "exotic" in regard of ordinary IE branching Onsets: jm, dn, mk, kd, tn.

(13) conclusion

- a. -e items are unmarked, both in overall count and within mixed CCs
 b. if +e items were to be disconsidered, root-initial CCs would coincide with what is classically known as a possible branching IE Onset.
 c. +e CCs are represented by a single Root. They are untypical IE word-initial clusters.

==> Something is wrong with +e CCs.

- (14) Solution: Root structure. +e CCs enclose a hidden zero.

- (15) +e √CC- Roots have alternating √CVC- forms
 -e √CC- Roots never do.

	+e Root				-e Root
	two words from the same root				non-related root
√CC-	a.		b.		c.
√BR-	ode-brat	pf	od-bírat	ipf	bez-bradý
√DR-	roze-drat	inf	roz-deru	1Esg	roz-drobit
√HR-	přede-hra	noun NOMsg	her	noun GENpl	od-hrabit
√HN-	ode-hnat	pf	od-hánět	ipf	roz-hněvat
√PR-	ode-prat	inf	od-peru	1Esg	vz-pruha
√SN-	beze-sný	adj	sen	noun NOMsg	pod-sněžník
√ŠL-	vze-šlý	adj	šel	pap masc sg	roz-šlapat
√ZD-	pode-zdít	inf	zedř	noun NOMsg	od-zdola
√DN-	beze-dný	adj	den	noun GENpl	-

- (16) +e Roots are always open.

-e Roots are always closed by a third consonant.

	C ₂ is stem-final		C ₂ is part of the stem-initial cluster
[√C ₁ C ₂ -]	=/C ₁ __C ₂ /		=/C ₁ C ₂ __/
√BR-	ode-B__R-at	vs.	bez-BRaD-ý
√DR-	roze-D__R-at	vs.	roz-DRoB-it
√HR-	přede-H__R-a	vs.	od-HRaB-at
√HN-	ode-H__N-at	vs.	roz-HNěV-at
√PR-	ode-P__R-at	vs.	vz-PRuH-a
√SN-	beze-S__N-ý	vs.	pod-SNěŽ-ník
√ŠL-	vze-Š__L-ý	vs.	roz-ŠLaP-at
√ZD-	pode-Z__D-ít	vs.	od-ZDoL-a
√DN-	beze-D__N-ý		-

- (17) √/CCvC/ ==> +e
 √/CøC/ ==> -e

- (18) given (17), all previous observations fall out naturally:
- "untypical" #CCs such as #jm etc. were observed with +e Roots. In fact, only C_1 is root-initial, C_2 being root-final: $[C_1C_2] = /C_1\emptyset C_2/$.
 - +e CCs represent a single root and are marked because they come from jer-roots $\langle \sqrt{C_{jer}C} \rangle$ that are less frequent than non-jer roots. The number of roots with identical C_1C_2 is higher for $/C_1C_2vC/$ than for $/C_1vC_2/$.
- (19) (17) holds for ALL items and roots. Exhaustive data for the CCs involved in (15) (for all CCs, cf. Scheer 1996):

Concordance CC - number & nature of the roots concerned				
CC	nb √	nb √ ⁿ e	nb it	Roots representing the CC (one illustrations per root followed by the number of items representing it in brackets)
br	8	1+	9	roze-br-án (9)
		7-	10	bez-bran-ný (1), bez-brad-ý (3), roz-brázd-it (1), roz-breč-et (1), od-bruč-et (1), od-brebt-at (2), roz-broj (1)
dr	12	1+	3	roze-dra-t (3)
		11-	14	roz-drtit (1), roz-drbat (1), roz-drobit (3), roz-drolit (3), roz-družovat (2), roz-dráždít (1), bez-dřevý (1), roz-drápat (1), roz-drásat (1)
hr	6	1+	7	ode-hrá-t (7)
		5-	16	pod-hr-nout (4), roz-hrab-at (4), roz-hran-í (4), roz-hryz-at (2), pod-hrad-í (2)
pr	11	1+	2	ode-pra-t (2)
		10-	57	roz-proud-it (1), roz-prask-aný (9), od-prásk-nout (1), vz-pruh-a (3), bez-praš-ný (9), bez-práv-í (9), před-prs-eň (4), od-prac-ovat (4), od-pro-dat (15), pod-prů-měrný (2)
sn	2	1+	1	beze-sn-ý
		1-	1	pod-sněž-ník (1)
šl	3	1+	2	vze-šl-ý (2)
		2-	3	roz-šlap-at (2), roz-šleh-at (1)
zd	3	1+	4	pode-zd-ít (4)
		2-	3	od-zdol-a (1), nad-zdvihn-out (2)
dn	1	+	4	beze-dn-ý (4)

- (20) counter-examples (one example per root followed by the number of items representing it in brackets; total number of contravening items: 73)

Hiatus	syllabic C ₂	s+C
beze-srážkový (1)	od-frknout (4)	ode-střít (5)
beze-skvrnný (1)	od-chrchlat si (1)	ode-stlat (6)
beze-slovní (1)	roz-tržení (14)	roze-štvat (1)
roze-smát (1)	roz-vrstvit (2)	
beze-sporný (1)	roz-vrtat (3)	
roze-spalý (1)	pod-vrh (14)	
beze-stopý (1)	pod-hrnout (4)	
roze-znat (4)	roz-vlnit (2)	
beze-zvučný (3)	od-vlhnout (2)	
ode-dávna (1)		

- (21) all counter-examples are expected to behave in this way
- in Hiatus position ...C_x - C_x..., vowels appear more generally in the language, cf. (22).
 - syllabic consonants behave more generally like vowels, cf. (23), thus [CCC]=/CVC/.
 - s+C clusters behave as one consonant elsewhere in the language, cf. (24).

- (22) Hiatus

a. ...C _x +C _x V...	b. ...C _x +C _y V...	
<u>š</u> e šatnou	<u>š</u> atně	"avec/dans le vestiaire"
<u>ž</u> e šatny	<u>ž</u> atně	"de/vers le vestiaire"
<u>š</u> e šilou	<u>š</u> íle	"avec de la/dans la force"
<u>ž</u> e síly	<u>ž</u> íle	"de force/vers la force"
<u>v</u> e válce	<u>v</u> álce	"dans/vers la guerre"
<u>z</u> e zeleniny	<u>z</u> elenině	"de/vers des légumes"
<u>k</u> e kávě	<u>k</u> ávě	"au/dans le café"

- (23) syllabic consonants behave like vowels

Czech infinitives must be bimoraic:

V+V dělat

VV krást

V+C_{syll}trpět

inf 1E, 2E sg ind past active participle

krás-t krád-u, krád-eš krádl

růs-t ros-u, ros-eš rostl

krý-t kry-j-u, kry-j-eš kryl

stá-t se stan-e se stál se

zná-t zn-ám znál

dlí-t dl-ím dll

prá-t per-u prál

- (24) s+C

- a. the incriminated roots bear a \emptyset not as predicted /søtC/, but after C₂ /støC/:

stC₂=pf st₂C=ipf

ode-stří-t po-stír-at

ode-stl-at roz-stýl-at

roze-štv-at po-štív-at

b. s+C clusters behave as a single consonant

1. radical V-zero alternations never over a CC *[CøCC-V], only exception: CC=st

√Cest-ø	√Cøst-V	
NOMsg	GENsg	
lest	løst-i	"cunning"
křest	křøt-u	"baptism"
čest	cøt-i	"honour"

2. group-palatalisations only with s+C:

	adj. NOM sg		adj. NOM pl
kr	mokr-ý		mokř-í
stv	čerstv-ý		čerstv-í
h	drah-ý		draž-í
ch	hluch-ý		hluš-í
br	dobr-ý		dobř-í
vs.			
sk	česk-ý		češt-í
ck	historick-ý		historičt-í

	infinitive	past passive participle			infinitive	past passive participle
dl	obydl-it	obydl-en	vs.	sl	mysl-et	myšl-en
				st	čist-it	čišt-ěn
				zd	jezd-it	ježd-ěn

Datation

(25) [Prefix+Root] are lexicalized items stored as one in the lexicon.

Prefixation is synchronically inactive.

a. heavily restricted productivity.

b. analogical activity: pf roze-mlít provokes roze-mílat analogically.

c. Hiatus-situations are treated at random: e may appear or not.

d. not any prefix can be combined with any stem. By contrast, any preposition can stand before any stem.

e. in some cases (11 roots), the vowel appearing within #[CC] can be detected in former stages of the language only:

	roze-řvat	"begin to shout"	has no related CVC-form synchronically.
ButOld Czech		Modern Czech	
1°	řev-u	řv-u	
2°	řev-eš	řv-eš	
3°	řev-e,...	řv-e	

(26) When did prefixation take place?

When did Prefix and Root stop being two distinct lexical items?

(27) incorporation of an affixal consonant into the stem

IE *sul (lat sol) > CS *sXl-n-\ce > cz slunce

od-sluní the above analysis predicts /CCvC/

in CS, the structure was /CvCC/

hence, /CvCC/ > /CCvC/ must have been achieved when prefixation took place.

==> the analysis predicts that prefixation took place after CS times.

(28) Slavic Metathesis

IE *ghordh- >	C__LC	CL__C
	lat h o r t u s	
	ger Ga r t e n	
CS *g o r d-	>	OCS g r a d X
		cz h r a d (rus gorod)

Roots having undergone META never bear the prefixal -e-:

roz -blácený < psl *bol-to	od -plazit se < psl *polzX	od -předu < psl *per-d\
od -blanit < psl *bol-na	od -plivnout < psl *pel'nX	od -středit < psl *serda
před-březnový < psl *berza	vz -tlak < psl *tolk	< IE *kerd
bez -hlavý < psl *gol-va	roz -trhat < psl *tXrg-ati	od -stranit < psl *stor-na
roz -hlaholit se < psl *gol-gol	roz -trnout < psl *t\rp-n	bez -třídni < psl *čerda
roz -hlas < psl *gol-sX	pod -vrátit < psl *vert	bez -vládí < psl *vold
bez -královí < psl *karl	od -zbrojit < psl *borj	roz -vláknit < psl *volk
bez -mraký < psl *mork	roz -broj < psl *borj	bez -vlasý < psl *volsX
roz -mrazit < psl *morz	bez -dřevý < psl *dervo	od -vléci < psl *velk-ti
vz -planout < psl *pol-nút	roz -mlátit < psl *moltX	roz -tlouci < psl *tolk-ti
roz -plamenit < psl *pol-men	bez -prašný < psl *porch	
roz -plašit < psl *polch	od -pracovat < psl *port-ja	

absence of prefixal -e- implies a CL__C structure

==> the analysis predicts that prefixation took place after META.

(29) yer-vocalization

traditional view: three different origins of modern Slavic vowel-zero alternations.

a. yers CS *d\ŋ\ > cz den vz GEN døn-e

CS *po-dX > cz pode-brat vs. podø-bradek

b. Ablaut CS inf-stem *b\r-, finite-stem *ber > cz inf bør-át vs. finite forms ber-u,...

c. epenthesis

1. feminine i-stems:

NOMsg *píseň-ø* - GENsg *písn-ě* < NOMsg psl *pě-sn\

NOMsg *báseň-ø* - GENsg *básn-ě* < NOMsg psl *ba-sn\ < IE *bhā

2. neuter o-stems:

GENpl *čsel-ø* - NOMsg *čsl-o* < NOMsg psl *čit-sl-o < IE keit vs. GENpl psl *čit-sl-X

GENpl *sester-ø* - NOMsg *sestr-a* < GENpl psl *sestrX

3. masculine o-stems:

NOMsg *mozek-ø* - GENsg *mozk-u* < stsl NOMsg *mozgX*

4. prefixes/ prepositions such as cz vz(e), roz(e), bez(e), z(e), ot(e)/od(e)

e.g. cz vz - vze (e.g. vze-pnout se - vz-pínat se) < stsl vXz- without final yer.

a single statement covers all cases:

any empty Nucleus escaping Proper Government ("in strong position") was subject to epenthesis. This concerns Nuclei formerly filled with yers as well as Nuclei that have always been empty.

==> prefixation must have occurred before the end of this epenthesis ("vocalisation of yers").

(30) consistent datation: no contradiction.

summary			
indicator	relative datation according to phenomena	datation of prefixation ¹	
		relative: period	absolute: year
"slunce"	after s_l > sl_n	CS or later	500 BC or later
META	<u>after</u> Slavic Metathesis. Datation of META: late CS, before loss of yers	after META	after 825 AD
yers	before the end of yer-vocalisation	late CS, after META ²	West: app. 1025 AD
prefixation occurred in the 10th century			

¹ see classical philological evidence such as e.g. Lamprecht (1987), Panzer (1991), Arumaa (1964), Trávníček (1935), Vondrák (1906), Komárek (1962), Lamprecht et al. (1986), Gebauer (1894).

² words of the shape [CVLjerC] (L=liquid) such as *kol\ce*, *volXč\kX* become *kolce*, *volček*, not ***kloce*, *vloček*. Hence, META was not active anymore when yers fell out.

Relevance of Czech prefixal alternations

(31) vowel-zero alternations cross-linguistically ("e" being an alternation-site) (Scheer 1997):

	zero CeC-V	vowel CeC-ø	vowel CeC-CV	gloss
Moroccan Arabic	kvtøb-u	køtvb-ø	kvttvb-ø	they have written, he has written, he has caused to write
German (optional elision)	xnø"-C	xnC"	xnC"-lxç	inner+infl, inner, internal
Tangale (Chadic)	dobø-go	dobe	dobu-n-go	called, call, called me
Somali (Cushitic)	nirøg-o	nirig-ø	nirig-ta	young female camel pl, sg. indef., sg. def.
Turkish	devør-i	devir-ø	devir-den	transfer ACC, NOM, ABL
Slavic (e.g. Czech)	lokøt-e	loket-ø	loket-ní	elbow GENsg, NOMsg, Adj.

BUT

Czech prefixes	podø-kova	—	podØ-bradek	horseshoe, double chin
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- (32) a. CeC₁-C₂ normally provokes the vowel.
 b. only in Czech prefixes, C₁ and C₂ are mono-morphemic.
 c. ==> the key to the extraordinary behaviour of Czech prefixes must be found in the relation C₁ and C₂ contract (cf. Scheer 1996).

- (33) current approaches to vowel-zero alternations:
 a. epenthesis as a consequence of syllabification, e.g. Wiese (1988).
 b. Government: "Proper Government cannot apply over governing domains", e.g. Kaye et al. (1990).

- (34) approaches relying on syllabification assume that lexical structures are non-syllabified. They are thus unable to encode the crucial *lexical* difference

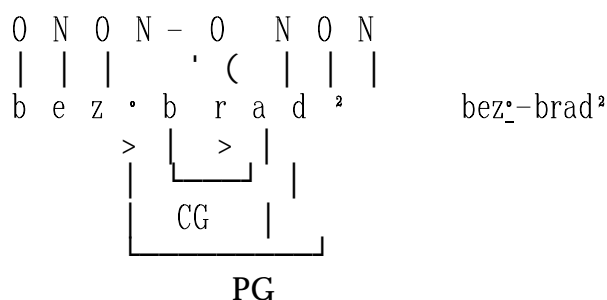
√BRaD vs.

√BøR

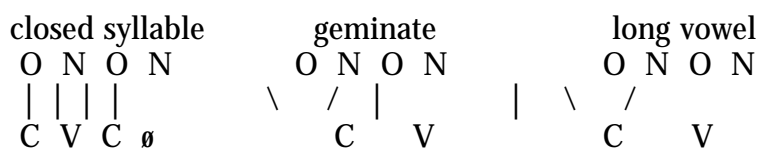
==> lexical structures are fully specified for syllabic structure.

- (35) "Proper Government (PG) cannot apply over governing domains" is falsified:

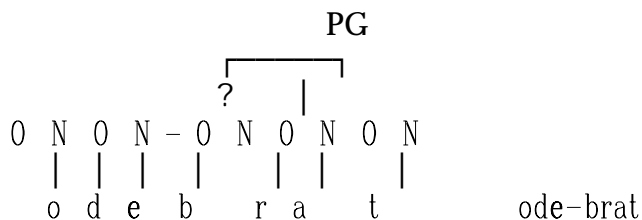
√BRaD "beard"



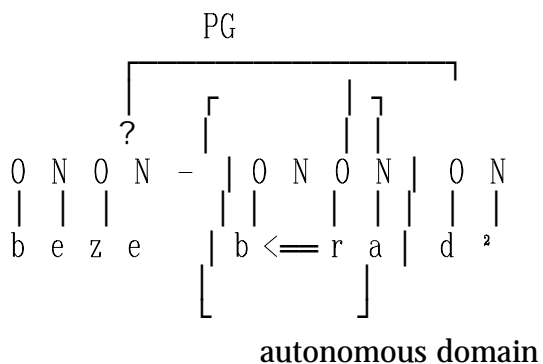
(23) alternative: CVCV syllable structure (Lowenstamm 1996)



(27)



(28)



APPENDIX

Analogical activity

(36) misbehaving items in regard of (2b) "only √CC-initial stems provoke prefixal -e": analogical activity.

...e-√CV: 21 items

...e-√CV		related √CC- form of the same stem	
roze-mílat		roze-mlít	
roze-sílat		roze-slat	
roze-bírat		roze-brat	
pode-mílat		pode-mlít	
pode-zírat		pode-zřivat (ipf)	
ode-pírat		ode-přít	
přede-sílat	ipf	přede-slat	pf
vze-jít	inf	vze-jdu	infl.
přede-jít		přede-jdu	form
roze-jít		roze-jdeme se	s
nade-jít		nade-jdu	

pode-jít		pode-jdu	
ode-jít		ode-jdu	
roze-číst		roze-čtu	
pode-šev	N/As g	pode-šve	G sg
ode-sílání			
ode-sílací			
ode-sílatel	√síl	ode-slání	
roze-bírací			
roze-bíratelný	√bír	roze-brat	
pode-zíravý	√zír	pode-zřívát	

(37) regular alternation

pf=∅	ipf=í	
u-s o n-out	u-sín-at	"s'endormir"
vy-b o r-at	vy-bír-at	"choisir"
po-s o l-at	po-síl-at	"envoyer"
po-š t v-at	po-štív-at	"exciter, provoquer"

(38)

regular	
pf CC- ==> +e	ipf CVC- ==> -e
vze-dmout	vz-dout
roze-tnout	roz-tít
roze-psat	roz-pisovat
nade-psat	nad-pisovat
ode-psat	od-pisovat
roze-stlat	roz-stýlat
pode-přít	pod-pírat
ode-přít	od-pírat
pode-jmout	pod-jímat
ode-brat	od-bírat
ode-hnat	od-hánět
ode-mknout	od-mykat
ode-pnout	od-pínat
ote-vřít	ot-vírat
Total regular items: 14	

irregular		
pf CC- ==> +e	ipf CVC- ==> -e	expected ipf: -e
roze-mlít	roze-mílat	roz-
roze-slat	roze-sílat	roz-
roze-brat	roze-bírat	roz-
pode-mlít	pode-mílat	pod-
pode-zřívát (ipf)	pode-zírat	pod-
ode-přít	ode-pírat	od-
před-slat	před-sílat	před-
Total irregular items -e-√CVC: 8		

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