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What is the letter é?

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ABSTRACT
Most orthographies contain both accented and non-accented vowels. But are they processed as variants of the same letter unit or as separate abstract units? Recent research in French has revealed that accented vowels seem to be processed as separate units. Here we examined whether this phenomenon is universal or language-specific. We chose Spanish because, unlike French, accented and non-accented vowels only convey stress information. We conducted a masked priming alphabetic decision experiment and a masked priming lexical decision experiment, each with three priming conditions (identity, visually similar, visually dissimilar). Results showed an advantage of the visually similar over the visually dissimilar condition. Furthermore, for non-accented primes, the visually similar condition was as effective as the identity condition. Thus, these findings suggest that: 1) accented and non-accented vowels share their abstract letter representations in Spanish; and 2) the nature of orthographic representations is molded by the characteristics of each language.

Letters are the key ingredients of visual word identification in alphabetic languages (see Paap, Newsome, McDonald, & Schvaneveldt, 1982, for early evidence; see Grainger, 2018, for review). In the course of letter/word identification in Latin-based orthographies, most theorists assume that the visual input is mapped onto a case-specific (allograph) level of representation (e.g., $\alpha = a \neq A$) and subsequently onto a case-invariant (abstract) level of representations (e.g., $\alpha = a = A$) that would, in turn, drive word identification (see Grainger, Rey, & Dufau, 2008; Schubert & McCloskey, 2013). Currently, researchers have at their disposal a large number of letter-based computational models that allow them to obtain quantitative predictions of word identification times (e.g., LETRS model: Adelman, 2011; DRC model: Coltheart, Rastle, Perry, Langdon, & Ziegler, 2001; spatial coding model: Davis, 2010; multiple read-out model: Grainger & Jacobs, 1996; interactive activation model: McClelland & Rumelhart, 1981). A limitation of the above-cited models, however, is that the letter level is exclusively based on the English orthography. Unlike the vast majority of languages written with the Roman alphabet (e.g., German, Spanish, Czech, Finnish, to cite instances from different language families), English does not contain any accented vowels. This raises the fundamental question of how accented and non-accented vowels are represented in the letter/word recognition system. What is the letter *é*? Is it just a variant of *e* or is it a separate abstract unit by itself? (see Hofstadter, 1985).

Recent research with Forster and Davis' (1984) masked priming technique has shown that accented vowels may not be mere variants of their non-accented counterparts. In two masked priming experiments using an alphabetic decision task ("is the stimulus a letter?"; see Jacobs & Grainger, 1991) with non-accented target vowels, Chetail and Boursain (2019) found that the responses in the identity condition were faster than in a visually similar condition consisting of its accented counterpart, whereas there were no differences between the visually similar condition and a

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visually dissimilar condition consisting of a consonant (i.e., *a-A* < *à-A* = *z-A*)[1]. Furthermore, they found the same pattern in a masked priming lexical decision experiment with non-accented word targets (*taper-TAPER* < *tâper-TAPER* = *tuper-TAPER*). Chetail and Boursain (2019) concluded that accented and non-accented vowels activate different letter representations in French. To justify the "full status of letters" for accented vowels, they argued that not only accented vowels provide unambiguous phonemic information in French (e.g., *é*→/e/, *è*→/ɛ/), but that they help discriminate between otherwise homonym words (e.g., *tache* [stain] vs. *tâche* [task]).

The main goal of the current masked priming experiments was to examine whether the separate letter representations for accented and non-accented vowels is a language-specific or universal phenomenon. Here we focused on Spanish. Unlike French, accented vowels in Spanish only signal the stressed syllable without altering phonemic information (e.g., *plátano*→/'pla.ta.no/[banana]) and the use of accent marks to distinguish otherwise homonyms is restricted to a small set of short function words (e.g., *él* [he] vs. *el* [the]). Indeed, Chetail and Boursain (2019) claimed: "there is no reason that visual inputs such as *a* and *á* in Spanish words (e.g., *pájaro* or *bailar*) would activate separate letter representations (…) since in this case the diacritics are not relevant for letter perception" (p. 2). A similar prediction comes from the learning model of letter identification proposed by Hannagan and Grainger (2013), according to which visual features impact on letter identification to the extent that they provide relevant information for identifying a letter. If so, one would predict that both e and *é* would activate the same abstract representations in Spanish. Alternatively, if accented vowels constitute separate abstract representations from their non-accented counterparts regardless of their phonemic information or their discriminating role among lexical items, one would expect to obtain the same pattern of findings as Chetail and Boursain (2019).

The second goal of the present experiments was to examine not only whether non-accented vowels are more effective at activating their counterparts than accented vowels – note that Chetail and Boursain (2019) only examined prime stimuli with accented vowels. There are reasons to believe that accented vowels might be less effective as primes than non-accented vowels. Leaving aside that accented vowels are less frequent than non-accented vowels (see New & Grainger, 2011, for a letter-frequency effect in letter identification), accented vowels are more complex visually than non-accented vowels (the accent mark in *é* is not present in *e*)[2]. Furthermore, as a reviewer suggested, the accent mark in a prime stimulus (e.g., *é, tâper*) represents a visually salient feature and this could potentially limit its impact on the target stimulus as a function of whether or not this salient feature is also present in the target.

In sum, we designed a masked priming alphabetic decision experiment and a masked priming lexical decision experiment to examine whether accented and non-accented vowels in Spanish activate the same representations during the initial moments of processing. We employed three priming conditions with non-accented targets (identity [*a-A; feliz-FELIZ*] {*happy in English*} vs. visually similar [*á-A; féliz-FELIZ*] vs. visually dissimilar [*ú-A; fáliz-FELIZ*]) and accented targets (identity [*á-Á; fácil-FÁCIL*] *{easy in English}* vs. visually similar [*a-Á; facil-FÁCIL*] vs. visually dissimilar [*u-Á; feliz-FELIZ*]). We made two modifications with respect to the Chetail and Boursain (2019) experiments. First, the visually dissimilar letter in Experiment 1 was a vowel instead of a consonant (i.e., *ú-A* and not *z-A*) – note that consonants and vowels may be processed differently (New, Araújo, & Nazzi, 2008). Second, the visually similar and visually dissimilar conditions in Experiment 2 were matched in the presence/absence of an accent mark (e.g., the control for *féliz-FELIZ* was *fáliz-FELIZ*, not *faliz-FALIZ*).

The predictions are fairly straightforward. If accented and non-accented vowels activate separate abstract representations in Spanish, one would expect an advantage of the identity condition over the visually similar condition and no differences between the visually similar and the visually dissimilar conditions. This outcome would reveal that accented and non-accented vowels would activate separate letter representations even in orthographies where accent marks do not carry phonemic information. Alternatively, if base letters and their accented counterparts are variants of the same abstract representations in Spanish, one would expect similar responses in the identity and visually similar conditions, together with an advantage of the visually similar over the visually dissimilar condition. This pattern would suggest that the nature of the abstract representations of accented and non-accented vowels is shaped by the peculiarities of each language (see Hannagan & Grainger, 2013, for a model of letter learning). Finally, as discussed above, these patterns of effects might be modulated by whether the prime stimuli contain an accent mark or not.

Experiment 1 (alphabetic decision task)

Method

Participants

Forty-eight university students, all of them native speakers of Spanish, took part voluntarily in the experiment. This sample size allowed us to have 3840 observations in each priming condition, which is above the guidelines given by Brysbaert and Stevens (2018). The two experiments reported in this paper were approved by the Experimental Research Ethics Committee of the Universitat de València and they were in accordance with the Declaration of Helsinki. All participants signed a consent form before the experiment.

Materials

The target letters were the five Spanish vowels in uppercase, both accented (*Á, É, Í, Ó, Ú*) and non-accented (*A, E, I, O, U*). For each target letter, we created three lowercase primes: 1) identical to the target (identity condition; e.g., *a-A* or *á-Á*); 2) identical to the target except for the addition/removal of the accent mark while keeping the same base letter (visually similar condition; e.g. *á-A* or *a-Á*); and 3) a different vowel with/without an accent mark in consonance with the visually similar prime (visually dissimilar condition; *ú-A* or *u-Á*). For the purposes of the alphabetical decision task, we also selected five artificial letters in uppercase taken from the BACS (Vidal, Content, & Chetail, 2017). To add an accent mark to the non-artificial letters, we used TypeLight 3.2 software (https://www.cr8software.net/typelight.html). Each non-letter target was preceded by a non-accented or an accented vowel in the same manner as the letter targets (see Table 1). We created a list composed

Table 1. Depiction of the prime-target pairs in Experiment 1.

Type of stimulus							
Letter				Non-Letter			
Targets	Type of prime			Targets	Type of prime		
	Identity	Visually Similar	Visually Dissimilar		Identity	Visually Similar	Visually Dissimilar
A	a	á	ú		a	á	ú
E	e	é	í		e	é	í
I	i	í	ó		i	í	ó
O	o	ó	á		o	ó	á
U	u	ú	é		u	ú	é
Á	á	a	u		á	a	u
É	é	e	i		é	e	i
Í	í	i	o		í	i	o
Ó	ó	o	a		ó	o	a
Ú	ú	u	e		ú	u	e

of 480 experimental trials (240 letters [80 in each priming condition]) and 240 non-letters. Sixteen practice trials preceded the experimental trials.

Procedure

The experiment was conducted in a quiet room with four computers running DMDX software (Forster & Forster, 2003). Participants were instructed to decide, as quickly and accurately as possible, whether the stimulus that appeared in the computer screen was a letter or not. On each trial, a pattern mask (###) appeared for 500 ms in the centre of the computer screen. The mask was then replaced by a lowercase prime letter, which remained on the CRT screen for 50 ms. Then, the prime was immediately replaced by the target stimulus, which remained on screen until the participant pressed the "green" (yes) or the "red" (no) buttons. If there was no response within the 2-sec deadline, the trial was automatically categorized as an error. Both primes and targets were presented in 40-pt Courier New font in black on a white background. The session took 15–18 min.

Results

Error responses (4.2%) and response times shorter than 200 ms (less than 0.1%) were omitted from the analyses of the latency data. The mean response times and accuracy in each experimental condition are shown in Table 3. To perform the inferential analyses on the letter targets, we employed linear mixed effects (LME) models (Bates, Maechler, Bolker, & Walker, 2015) in R (R Development Core Team, 2019) with Type of target (Accented, Non-accented) and Prime-target relationship (Identity, Visually Similar, Visually Dissimilar) as fixed factors. Type of target was encoded centred in zero. Prime-target relationship was encoded to test the two research questions: 1) identity vs. visually similar (i.e., "are visually similar primes as effective as identity primes?"); and 2) visually similar vs. visually dissimilar (i.e., "are visually similar primes more effective than visually dissimilar primes?"). An inverse transformation (−1000/RT) was applied to the latency data to reduce the positive skew of response time (RT) distributions. The p values were obtained from the lmerTest package (Kuznetsova, Brockhoff, & Christensen, 2017). The most complex model that converged in terms of random effect structure was: LME_RTs = lmer (−1000/RT~typetarget*prime+(prime+1|item) +(prime+1|subject),data = letterRTs). The analyses on the accuracy data were analogous to those in the latency data, except that we used generalized linear effect models because of the binomial nature of the dependent variable (1 = correct, 0 = incorrect).

The analyses of the latency data showed no overall differences between accented and non-accented vowels, $t < 1$, $p > .63$. More important, we found faster response times to target letters when preceded by an identity prime than when preceded by a visually similar prime, $b = -0.0258$, $SE = 0.0099$, $t = -2.604$, $p = .011$. This interacted with type of target, $b = 0.0559$, $SE = 0.0197$, $t = 2.834$, $p = .006$, reflecting that the advantage of the identity condition occurred for non-accented targets (10 ms; *a-A* < *á-A*), but not for accented-targets (−2 ms; *á-Á* = *a-Á*). Furthermore, target letters were responded to faster when preceded by a visually similar prime than when preceded by a visually different prime, $b = 0.0752$, $SE = 0.0174$,

Table 2. Mean response times (ms) and accuracy (proportion) for accented and non-accented letters in each condition in experiment 1.

Prime Type	Accented letter	Non-accented letter
Identity	459 (0.955)	443 (0.968)
Visually Similar	457 (0.966)	453 (0.968)
Visually Dissimilar	472 (0.941)	464 (0.951)

For the non-letter targets, the mean response time and accuracy (in parenthesis) were 491 ms (0.963) and 487 ms (0.958) for the non-accented and accented targets, respectively.

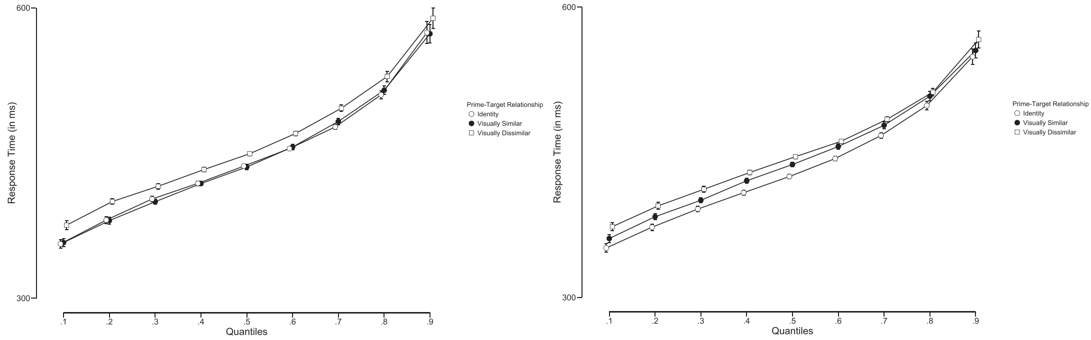

Figure 1. Vincentile plots with the different prime-target conditions for accented targets (left panel) and non-accented targets (right panel) in Experiment 1. The bars reflect the Standard Errors.

t = 4.311, p = .001. This effect did not differ for accented and non-accented targets (interaction: t < 1, p > .41; i.e., *a-Á* < *a-Á* and *á-A* < *ú-A*).

The analyses of the accuracy data only showed that participants were more accurate on the target letters when preceded by a visually similar prime than when preceded by a visually dissimilar prime (b = − 0.5176, SE = 0.1143, z = − 4.530, p < .001). None of the other effects approached significance (ps > .20).

To corroborate the findings from the latency data using untransformed data, we averaged the deciles for each participant and condition, thus obtaining a vincentile plot. As usual, the effects of prime-target relationship (see Figure 1) reflected a shift in the RT distributions (see Gomez, Perea, & Ratcliff, 2013, for modeling evidence). Thus, the vincentile plots mimicked the same pattern as the inverse-transformed latency analyses.

Experiment 2 (lexical decision task)

Participants

Thirty-six students from the same population as in Experiment 1 participated. The number of observations per priming condition was 2160. All participants signed a consent form before the experiment.

Materials

We selected 180 Spanish words from the EsPal database (Duchon, Perea, Sebastián-Gallés, Martí, & Carreiras, 2013), half of which contained an accented vowel (e.g., *FÁCIL*) and the other half did not contain an accented vowel (e.g., *FELIZ*). The sets of accented and non-accented words

Table 3. Mean response times (ms) and accuracy (proportion) for accented and non-accented words in each condition in experiment 2.

Prime Type	Accented Word	Non-accented Word
Identity	601 (0.965)	610 (0.971)
Visually Similar	597 (0.970)	627 (0.965)
Visually Dissimilar	627 (0.962)	630 (0.932)

For the pseudoword targets, the mean response time and accuracy (in parenthesis) were 739 ms (0.927) and 733 ms (0.928) for the non-accented and accented targets, respectively.

were matched in Zipf frequency (4.3 vs. 4.3), number of letters (5.6 v. 5.6), and orthographic similarity (OLD20) to other words (1.9 vs. 1.7). Each uppercase target word was preceded by a lowercase prime that could be: 1) the same as the target word (identity condition: *fácil-FÁCIL; feliz-FELIZ*); 2) the same as the target word except for the addition/deletion of an accented mark in a vowel, creating a pseudoword (visually similar condition: *facil-FACIL; féliz-FELIZ*); or 3) the same except that the critical vowel was replaced with another vowel, creating a pseudoword (visually dissimilar condition: *fecil-FACIL; fáliz-FELIZ*). Visually similar and visually dissimilar primes were matched in mean token frequency (141.1 vs. 134.6 per million, $p > .56$). To act as foils, we created 180 pseudowords with Wuggy (Keuleers & Brysbaert, 2010), half of them with an accented vowel. The prime-target manipulation was the same for word and pseudoword targets. We prepared three lists to counterbalance the pairs across priming conditions (e.g., *fácil-FÁCIL* [list 1], *facil-FÁCIL* [list 2], and *fecil-FÁCIL* [list 3]). The pairs are presented in the Appendix.

Procedure

It was parallel to Experiment 1, except that the task was lexical decision and the stimuli were presented in 16-pt Courier New.

Results

Incorrect responses (3.9%) and RTs shorter than 250 ms (less than 0.1%) were removed from the latency analyses. The mean RTs and accuracy in each condition are displayed in Table 2. As is customary in masked priming experiments, we focused on the word targets. The statistical analyses were equivalent to those in Experiment 1. The most complex model that converged in terms of random effect structure in the RT analyses was: LME_RTs = lmer(−1000/RT~typetarget*prime+(1 + 1|item)+(prime+1|subject), data = wordsRTs).

The analyses of the latency data showed that, on average, accented words were responded to 14 ms more rapidly than non-accented words, $b = -0.0819$, $SE = 0.0190$, $t = -4.313$, $p < .001$. More important, word targets were responded to more rapidly when preceded by an identity prime than when preceded by a visually similar prime, $b = -0.0538$, $SE = 0.0154$, $t = -3.499$, $p < .001$. Importantly, this effect interacted with type of target, $b = 0.0624$, $SE = 0.0207$, $t = 3.016$, $p = .002$, reflecting an advantage of the identity condition for non-accented targets (17 ms, $p < .001$; *feliz-FELIZ* < *féliz-FELIZ*), but not for accented-targets (−3 ms; *fácil-FÁCIL* = *facil-FÁCIL*). In addition, word targets were responded to more rapidly when preceded by a visually similar prime than when preceded by a visually different prime, $b = 0.0290$, $SE = 0.0154$, $t = 1.883$, $p = .0.06$. This effect also interacted with type of target ($b = 0.0616$, $SE = 0.0201$, $t = 2.959$, $p = .003$), reflecting that the advantage of the visually similar condition was higher for accented targets (20 ms, $p < .001$; *facil-FÁCIL* < *fecil-FÁCIL*) than for accented-targets (3 ms, $p = .099$; *féliz-FELIZ* = *fáliz-FELIZ*).

None of the models of the accuracy data converged. As accented and non-accented targets behaved differently in the latency data, we examined their effects separately. For accented targets, accuracy was similar across conditions (both *t*s < 1.1, *p*s > .27). For non-accented targets, accuracy was lower in the visually dissimilar than in the visually similar condition ($b = -0.7074$, $SE = 0.2079$, $z = -3.403$, $p < .001$), whereas there were no differences between the identity and visually similar conditions ($t < 1$, $p > .38$).

Finally, as in Experiment 1, we conducted RT distributional analyses (See Figure 2). Results mimicked those of the LME analyses with one exception. For non-accented targets, the visually similar condition produced faster response times than the visually dissimilar condition in the leading edge of the RT distribution (around 10–15 ms in the .1 to .3 quantiles, *p*s < .02). This difference disappeared in the higher quantiles.

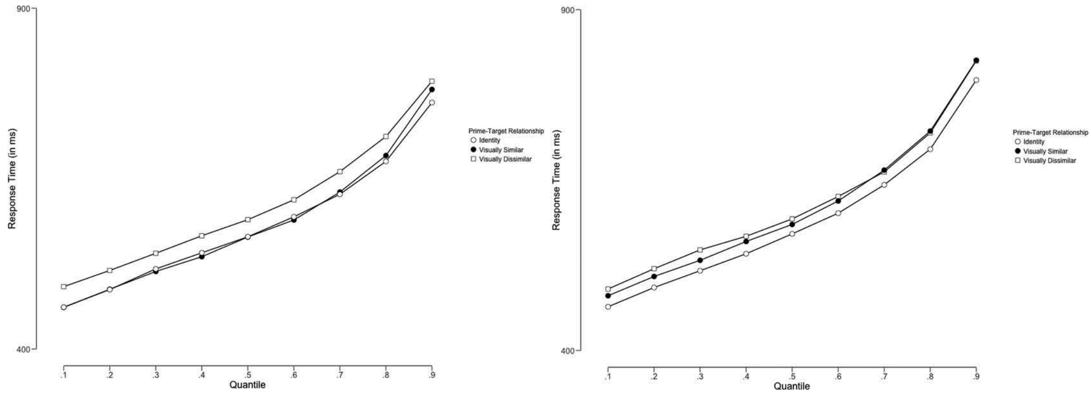

Figure 2. Vincentile plots with the different prime-target conditions for accented targets (left panel) and non-accented targets (right panel) in Experiment 2.

General discussion

We conducted two masked priming experiments to examine whether accented and non-accented vowels activate shared or separate representations. We did so in an orthography in which accented vowels do not convey any phonemic information (Spanish). For accented targets, visually similar primes were more effective than visually dissimilar primes (i.e., *a-Á* < *e-Á; facil-FÁCIL* < *fecil-FÁCIL*) – this was reflected as a shift in the RT distributions. Furthermore visually similar primes were as effective as identity primes (i.e., *a-Á* = *á-Á; facil-FÁCIL* = *fácil-FÁCIL*), as deduced from the LME analyses and the RT distributions. This pattern strongly suggests that, as anticipated by Chetail and Boursain (2019), accented and non-accented vowels share the same abstract representations in Spanish. Furthermore, given that visually similar primes (e.g. *facil*) in Experiment 2 do not share the syllable stress with their target word (i.e., *FÁCIL*; compare/fa.'θil/and/'fa.θil/), this finding suggests that, in the absence of accent marks, syllable stress information is not encoded very early in word processing. Keep in mind that Spanish orthography has a complex set of rules to decide when a vowel should be accented or not[3].

In addition, for non-accented targets, we found that visually similar primes containing an accented vowel (e.g., *á, féliz*) were more effective than the visually dissimilar condition (i.e., *á-A* < *é-A; féliz-FELIZ* ≤ *fáliz-FELIZ* [accuracy data and leading edge of the RT distribution]), but they were not as effective as the identity primes (i.e., *a-A* < *á-A; feliz-FELIZ* < *féliz-FELIZ*). As indicated earlier, a plausible explanation for this pattern is that accented vowels contain a salient visual feature that could have limited their impact on the target stimulus when this salient feature is not present in the target. Furthermore, an accented pseudoword prime such as *féliz* contains unambiguous mismatching stress information for the target word *FELIZ* (compare/'fe.liz/and/fe.'liz/), and this may have had a detrimental effect on target processing.

In sum, we found that – unlike French – accented and non-accented vowels in Spanish (e.g., *é* and *e*) can be considered as variants of the same abstract representations. Therefore, the nature of orthographic representations appears to be modulated by the peculiarities of each language (Hannagan & Grainger, 2013). We believe that the current experiments offer an avenue to design further research in different orthographies to examine the similarities/differences in the processing of diacritical letters during letter/word recognition and reading (e.g., in Finnish, *a* and *ä* [/a/and/æ/] are treated as separate entries in the dictionary and cannot coexist in the same monomorphemic word).

Notes

1. As accented vowels and their non-accented counterparts share the base letter, they have a high degree of visual similarity (e.g., 6.30 out of 7 for the pair *e-é* in the Simpson, Mousikou, Montoya, & Defior, 2012, norms).
2. We acknowledge that the effects of letter complexity in letter recognition are only beginning to be understood (e.g., more complex letters also tend to be more distinctive; see Wiley & Rapp, 2018, for discussion).
3. For instance, the word *sabana*, which ends in a vowel, is pronounced/sa.'ba.na/, whereas the word *sabanal*, which ends in a consonant different from *n* or *s*, is pronounced/sa.ba.'nal/. Indeed, in the last edition of the norms of the Spanish Academy (Real Academia Española, 2010), the chapter on when to use accent marks occupies nearly 90 pages.

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Conflict of interest

The authors declare that they have no conflict of interest.

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Appendix Materials of Experiment 2

The items are presented in quadruplets (identity prime, visually similar prime, visually dissimilar prime, TARGET)

Words: dulce, dulcé, dulcí, DULCE; joven, jovén, jovín, JOVEN; conejo, cónejo, cúnejo, CONEJO; famoso, fámoso, fémoso, FAMOSO; tocino, tócino, tícino, TOCINO; abril, ábril, ébril, ABRIL; madre, madré, madrú, MADRE; teatro, téatro, tóatro, TEATRO; verano, vérano, vírano, VERANO; hueso, huesó, huesá, HUESO; feroz, féroz, fíroz, FEROZ; dolor, dólor, dílor, DOLOR; establo, éstablo, ástablo, ESTABLO; nevera, névera, návera, NEVERA; oreja, óreja, áreja, OREJA; sudor, súdor, sódor, SUDOR; cartero, carteró, carteré, CARTERO; cocina, cócina, cúcina, COCINA; suelo, sueló, suelú, SUELO; magia, magiá, magió, MAGIA; canal, cánal, cónal, CANAL; legal, légal, lágal, LEGAL; feliz, féliz, fáliz, FELIZ; aroma, ároma, éroma, AROMA; debajo, débajo, dábajo, DEBAJO; insecto, ínsecto, únsecto, INSECTO; cordero, córdero, cúrdero, CORDERO; calor, cálor, cúlor, CALOR; activo, áctivo, óctivo, ACTIVO; nieve, nievé, nieví, NIEVE; botas, botás, botés, BOTAS; bonita, bónita, búnita, BONITA; taberna, táberna, téberna, TABERNA; boxeo, bóxeo, búxeo, BOXEO; fatal, fátal, fítal, FATAL; enorme, énorme, ínorme, ENORME; fruta, frutá, fruté, FRUTA; huevo, huevó, huevú, HUEVO; breve, brevé, breví, BREVE; gusano, gúsano, gósano, GUSANO; reloj, réloj, ríloj, RELOJ; tobillo, tóbillo, tébillo, TOBILLO; cuchara, cúchara, cóchara, CUCHARA; intenso, íntenso, úntenso, INTENSO; abeja, ábeja, íbeja, ABEJA; final, fínal, fúnal, FINAL; nariz, náriz, nériz, NARIZ; alegre, álegre, élegre, ALEGRE; basura, básura, bósura, BASURA; ballena, bállena, búllena, BALLENA; vital, vítal, vátal, VITAL; cemento, cémento, címento, CEMENTO; ruido, ruidó, ruidú, RUIDO; capaz, cápaz, cópaz, CAPAZ; etapa, étapa, átapa, ETAPA; local, lócal, lécal, LOCAL; aguja, águja, óguja, AGUJA; bigote, bígote, búgote, BIGOTE; pijama, píjama, pújama, PIJAMA; falda, faldá, faldé, FALDA; picante, pícante, púcante, PICANTE; celda, celdá, celdé, CELDA; resumen, résumen, rísumen, RESUMEN; pelota, pélota, pálota, PELOTA; enero, énero, ánero, ENERO; humor, húmor, hímor, HUMOR; cortina, córtina, cúrtina, CORTINA; total, tótal, títal, TOTAL; moral, móral, míral, MORAL; oscuro, óscuro, úscuro, OSCURO; tablero, táblero, téblero, TABLERO; letal, létal, lítal, LETAL; sabor, sábor, síbor, SABOR; civil, cívil, cévil, CIVIL; licor, lícor, lúcor, LICOR; adulto, ádulto, édulto, ADULTO; barato, bárato, bérato, BARATO; evento, évento, ávento, EVENTO; piano, píano, póano, PIANO; anual, ánual, énual, ANUAL; veloz, véloz, váloz, VELOZ; sirena, sírena, súrena, SIRENA; amable, ámable, émable, AMABLE; papel, pápel, pépel, PAPEL; dinero, dínero, dúnero, DINERO; patada, pátada, pótada, PATADA; salud, sálud, sélud, SALUD; cintura, cíntura, céntura, CINTURA; natal, nátal, nétal, NATAL; monja, monjá, monjé, MONJA; espía, espia, espua, ESPÍA; único, unico, inico, ÚNICO; móvil, movil, mevil, MÓVIL; irónico, ironico, irinico, IRÓNICO; época, epoca, apoca, ÉPOCA; balón, balon, balen, BALÓN; jamás, jamas, jamés, JAMÁS; quizá, quiza, quize, QUIZÁ; célula, celula, cilula, CÉLULA; clínica, clinica, clunica, CLÍNICA; árbol, arbol, erbol, ÁRBOL; oídos, oidos, oedos, OÍDOS; éxito, exito, axito, ÉXITO; líder, lider, luder, LÍDER; física, fisica, fosica, FÍSICA; unión, union, unian, UNIÓN; túnel, tunel, tinel, TÚNEL; vagón, vagon, vagun, VAGÓN; cómico, comico, camico, CÓMICO; sábado, sabado, sebado, SÁBADO; máximo, maximo, meximo, MÁXIMO; técnica, tecnica, ticnica, TÉCNICA; jabón, jabon, jabun, JABÓN; atrás, atras, atres, ATRÁS; código, codigo, cadigo, CÓDIGO; océano, oceano, ociano, OCÉANO; cámara, camara, comara, CÁMARA; ídolo, idolo, edolo, ÍDOLO; trágico, tragico, trogico, TRÁGICO; latín, latin, latun, LATÍN; método, metodo, matodo, MÉTODO; víbora, vibora, vebora, VÍBORA; revés, reves, revis, REVÉS; pánico, panico, penico, PÁNICO; jamón, jamon, jamun, JAMÓN; ojalá, ojala, ojale, OJALÁ; década, decada, dacada, DÉCADA; ética, etica, atica, ÉTICA; común, comun, comon, COMÚN; clásico, clasico, clesico, CLÁSICO; adiós, adios, adias, ADIÓS; ratón, raton, ratun, RATÓN; demás, demas, demes, DEMÁS; vacío, vacio, vaceo, VACÍO; sótano, sotano, sutano, SÓTANO; pájaro, pajaro, pejaro, PÁJARO; algún, algun, algon, ALGÚN; música, musica, misica, MÚSICA; ático, atico, otico, ÁTICO; química, quimica, quemica, QUÍMICA; típico, tipico, tepico, TÍPICO; séptimo, septimo, saptimo, SÉPTIMO; águila, aguila, eguila, ÁGUILA; cajón, cajon, cajan, CAJÓN; tímido, timido, tumido, TÍMIDO; cómoda, comoda, cumoda, CÓMODA; mínima, minima, menima, MÍNIMA; láser, laser, leser, LÁSER; hábil, habil, hobil, HÁBIL; rápido, rapido, repido, RÁPIDO; limón, limon, limun, LIMÓN; cañón, cañon, cañun, CAÑÓN; táctica, tactica, tectica, TÁCTICA; botón, boton, botun, BOTÓN; líquido, liquido, lequido, LÍQUIDO; botín, botin, boten, BOTÍN; lógico, logico, lugico, LÓGICO; timón, timon, timun, TIMÓN; débil, debil, dabil, DÉBIL; riñón, riñon, riñun, RIÑÓN; avión, avion, aviun, AVIÓN; álbum, album, elbum, ÁLBUM; razón, razon, razun, RAZÓN; régimen, regimen, rigimen, RÉGIMEN; símbolo, simbolo, sembolo, SÍMBOLO; judía, judia, judua, JUDÍA; fácil, facil, fecil, FÁCIL; básico, basico, bosico, BÁSICO; buzón, buzon, buzen, BUZÓN; crédito, credito, cridito, CRÉDITO; ácido, acido, ocido, ÁCIDO; salón, salon, salun, SALÓN; pólvora, polvora, pilvora, PÓLVORA; árabe, arabe, erabe, ÁRABE; víctima, victima, vectima, VÍCTIMA; núcleo, nucleo, nacleo, NÚCLEO; hígado, higado, hugado, HÍGADO; lámpara, lampara, lempara, LÁMPARA; varón, varon, varin, VARÓN; lápiz, lapiz, lepiz, LÁPIZ

Pseudowords: volce, volcé, volcí, VOLCE; pobin, pobín, pobún, POBIN; cocepa, cócepa, cúcepa, COCEPA; nacoco, nácoco, nécoco, NACOCO; bonano, bónano, bínano, BONANO; ablel, áblel, éblel, ABLEL; patre, patré, patrí, PATRE; beagro, béagro, bóagro, BEAGRO; fecino, fécino, fácino, FECINO; huino, huinó, huiní, HUINO; leloz, léloz, láloz, LELOZ; goror, góror, gúror, GOROR; escitro, éscitro, áscitro, ESCITRO; neceto, néceto, níceto, NECETO; ocepo, ócepo, écepo, OCEPO; rucor, rúcor, rícor, RUCOR; zalcera, zalcerá, zalceró, ZALCERA; conaro, cónaro, cúnaro, CONARO; tuere, tueré, tuerá, TUERE; mabio, mabió, mabiá, MABIO; mabal, mábal, mébal, MABAL; bemal, bémal, bómal, BEMAL; ferez, férez, fírez, FEREZ; acopu, ácopu, ócopu, ACOPU; depimo, dépimo, dípimo, DEPIMO; incurto, íncurto, óncurto, INCURTO; calcero, cálcero, cólcero, CALCERO; cacer, cácer, cúcer, CACER; abtapo, ábtapo, ébtapo, ABTAPO; gieve, gievé, gievó, GIEVE; dalen, dalén, dalán, DALEN; tomeda, tómeda, támeda, TOMEDA; tadirma, tádirma, tédirma, TADIRMA; tixeo, tíxeo, túxeo, TIXEO; lotaz, lótaz, látaz, LOTAZ; econfe, éconfe, áconfe, ECONFE; fluda, fludá, fludé, FLUDA; huejo, huejó, huejé, HUEJO; creje, crejé, crejá, CREJE; fumino, fúmino, fímino, FUMINO; rerob, rérob, rórob, REROB; bovallo, bóvallo, bévallo, BOVALLO; culliro, cúlliro, cólliro, CULLIRO; incanco, íncanco, úncanco, INCANCO; anepo, ánepo, énepo, ANEPO; liral, líral, lúral, LIRAL; marez, márez, mérez, MAREZ; acitre, ácitre, ócitre, ACITRE; ticuro, tícuro, túcuro, TICURO; tarrero, tárrero, térrero, TARRERO; getal, gétal, gítal, GETAL; cecisto, cécisto, cícisto, CECISTO; ruico, ruicó, ruicá, RUICO; caboz, cáboz, cóboz, CABOZ; ecifa, écifa, ácifa, ECIFA; bodal, bódal, bádal, BODAL; acupo, ácupo, écupo, ACUPO; nucote, núcote, nícote, NUCOTE; pifiza, pífiza, púfiza, PIFIZA; lalca, lalcá, lalcó, LALCA; risente, rísente, rúsente, RISENTE; cezca, cezcá, cezcó, CEZCA; resujos, résujos, rósujos, RESUJOS; secona, sécona, sácona, SECONA; ecena, écena, ócena, ECENA; husor, húsor, hísor, HUSOR; caltana, cáltana, cóltana, CALTANA; lotad, lótad, látad, LOTAD; polal, pólal, pélal, POLAL; utnuro, útnuro, ítnuro, UTNURO; naplera, náplera, néplera, NAPLERA; rital, rítal, rútal, RITAL; tapor, tápor, tépor, TAPOR; cijel, cíjel, cújel, CIJEL; fidor, fídor, fúdor, FIDOR; apolto, ápolto, épolto, APOLTO; vacito, vácito, vécito, VACITO; ecisto, écisto, ácisto, ECISTO; piaso, píaso, péaso, PIASO; acuar, ácuar, écuar, ACUAR; deroz, déroz, dároz, DEROZ; ticera, tícera, tácera, TICERA; asitre, ásitre, ésitre, ASITRE; pabil, pábil, pébil, PABIL; ticera, tícera, túcera, TICERA; macida, mácida, mócida, MACIDA; sarid, sárid, sórid, SARID; culcura, cúlcura, cólcura, CULCURA; zadal, zádal, zódal, ZADAL; murfa, murfá, murfó, MURFA; engío, engio, engeo, ENGÍO; úcaso, ucaso, icaso, ÚCASO; mójel, mojel, mejel, MÓJEL; imócina, imocina, imacina, IMÓCINA; éjolo, ejolo, ajolo, ÉJOLO; rarón, raron, raren, RARÓN; padás, padas, pades, PADÁS; chazá, chaza, chazu, CHAZÁ; cécuzo, cecuzo, cicuzo, CÉCUZO; blísaca, blisaca, blesaca, BLÍSACA; ánzol, anzol, enzol, ÁNZOL; eíbos, eibos, eubos, EÍBOS; énato, enato, anato, ÉNATO; fícer, ficer, fucer, FÍCER; gínaca, ginaca, genaca, GÍNACA; ución, ucion, ucian, UCIÓN; súsel, susel, sisel, SÚSEL; fabón, fabon, faban, FABÓN; cócaso, cocaso, cucaso, CÓCASO; rávido, ravido, rovido, RÁVIDO; pádimo, padimo, pidimo, PÁDIMO; tétbaca, tetbaca, totbaca, TÉTBACA; gajón, gajon, gajan, GAJÓN; ibrés, ibres, ibras, IBRÉS; cópamo, copamo, cupamo, CÓPAMO; oméaca, omeaca, omoaca, OMÉACA; cáciro, caciro, cociro, CÁCIRO; ícoza, icoza, ucoza, ÍCOZA;právaco, pravaco, prevaco, PRÁVACO; nevín, nevin, neven, NEVÍN; sécoda, secoda, sacoda, SÉCODA; nícoro, nicoro, nucoro, NÍCORO; nijés, nijes, nijis, NIJÉS; másaco, masaco, mosaco, MÁSACO; gabón, gabon, gaban, GABÓN; ovisá, ovisa, oviso, OVISÁ; rérida, rerida, ririda, RÉRIDA; écasa, ecasa, ucasa, ÉCASA; monún, monun, monan, MONÚN; blánaco, blanaco, blenaco, BLÁNACO; apión, apion, apian, APIÓN; fedón, fedon, fedan, FEDÓN; fesás, fesas, feses, FESÁS; fanío, fanio, fanuo, FANÍO; dócino, docino, dacino, DÓCINO; máfiro, mafiro, mofiro, MÁFIRO; aspún, aspun, aspin, ASPÚN; púnaca, punaca, penaca, PÚNACA; ácala, acala, ocala, ÁCALA; quésaca, quesaca, quisaca, QUÉSACA; bívaco, bivaco, buvaco, BÍVACO; sédtigo, sedtigo, sidtigo, SÉDTIGO; áchisa, achisa, echisa, ÁCHISA; mabón, mabon, maban, MABÓN; bímado, bimado, bomado, BÍMADO; códora, codora, cudora, CÓDORA; písiza, pisiza, pesiza, PÍSIZA; fáner, faner, foner, FÁNER; hájel, hajel, hejel, HÁJEL; sámado, samado, semado, SÁMADO; fisón, fison, fisan, FISÓN; mabón, mabon, maban, MABÓN; tábtaña, tabtaña, tebtaña, TÁBTAÑA; difón, difon, difan, DIFÓN; tíguedo, tiguedo, teguedo, TÍGUEDO; lorín, lorin, lorun, LORÍN; fóvaco, fovaco, favaco, FÓVACO; cisón, cison, cisan, CISÓN; véjil, vejil, vujil, VÉJIL; sizón, sizon, sizan, SIZÓN; eviós, evios, evias, EVIÓS; álfem, alfem, elfem, ÁLFEM; najón, najon, najin, NAJÓN; révajen, revajen, ruvajen, RÉVAJEN; súncolo, suncolo, sincolo, SÚNCOLO; zoñía, zoñia, zoñea, ZOÑÍA; fásel, fasel, fesel, FÁSEL; vácaco, vacaco, vocaco, VÁCACO; rujón, rujon, rujin, RUJÓN; clépato, clepato, clipato, CLÉPATO; ávada, avada, ivada, ÁVADA; tarón, taron, tarin, TARÓN; pólnora, polnora, pulnora, PÓLNORA; ácipe, acipe, ecipe, ÁCIPE; véltiga, veltiga, viltiga, VÉLTIGA; túplea, tuplea, toplea, TÚPLEA; hívida, hivida, hévida, HIVIDA; vémpira, vempira, vompira, VÉMPIRA; dalón, dalon, dalan, DALÓN; fájiz, fajiz, fejiz, FÁJIZ