Short Research Article

Are You Taking the Fastest Route to the RESTAURANT?

The Role of the Usual Letter-Case Configuration of Words in Lexical Decision

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Abstract: Most words in books and digital media are written in lowercase. The primacy of this format has been brought out by different experiments showing that common words are identified faster in lowercase (e.g., molecule) than in uppercase (MOLECULE). However, there are common words that are usually written in uppercase (street signs, billboards; e.g., STOP, PHARMACY). We conducted a lexical decision experiment to examine whether the usual letter-case configuration (uppercase vs. lowercase) of common words modulates word identification times. To this aim, we selected 78 molecule-type words and 78 PHARMACY-type words that were presented in lowercase or uppercase. For molecule-type words, the lowercase format elicited faster responses than the uppercase format, whereas this effect was absent for PHARMACY-type words. This pattern of results suggests that the usual letter configuration of common words plays an important role during visual word processing.

Keywords: visual word recognition, letter-case, lexical decision

The Latin alphabet was first composed of uppercase letters, but eventually writers developed smaller versions of these letters that allowed them for faster handwriting. While originally the visual form of these lowercase letters was similar to that of the uppercase letters, some of these letters evolved into a different visual form (e.g., A → a; B → b; D → d; R → r; see Kleve, 1994). At present, most words in Latinate languages are written in lowercase. Thus, it is not surprising that a number of word identification and text reading experiments have shown that common words are identified more quickly in lowercase than in uppercase (e.g., lexical decision: Paap, Newsome, & Noel, 1984; semantic categorization: Mayall & Humphreys, 1996; naming: Mayall & Humphreys, 1996; text reading: Tinker & Paterson, 1928).

The lowercase advantage is apparently at odds with a basic assumption of neural models of visual word recognition.[1] These models postulate that, early in processing, the elements that constitute the visual input are mapped onto case-invariant abstract letter units, which in turn are mapped onto whole-word abstract units (see Dehaene, Cohen, Sigman, & Vinckier, 2005; Grainger, Rey, & Dufau, 2008). In these models, the visual input provided by house and HOUSE – or even hOuSE – would similarly activate the same abstract representations during visual word processing. Evidence consistent with this interpretation comes from masked priming experiments: the size of masked repetition priming effects on uppercase target words is similar with lowercase primes (e.g., house-HOUSE), uppercase primes (HOUSE-HOUSE), and alternating-case primes (e.g., hOuSe-HOUSE) (e.g., Jacobs, Grainger, & Ferrand, 1995; Perea, Vergara-Martínez, & Gomez, 2015; see also Brysbaert, Speybroeck, & Vanderelst, 2009, for evidence with acronyms). Clearly, if letter-case modulated the initial contact with lexical entries, one would have expected smaller masked repetition priming for the lowercase and alternating-case compared to the uppercase priming conditions. Additional converging evidence comes from sentence reading experiments. Reingold, Yang, and Rayner (2010; see also Perea, Rosa, & Marcet, 2017) found that

[1] Contemporary computation models of visual word recognition only include, for simplicity, an uppercase font at the letter level (see Davis, 2010, for discussion).

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the duration of the initial of multiple fixations on a target word was shorter for high- than for low-frequency words, whereas it was uninfluenced by letter case. Therefore, even the effect of word-frequency (i.e., a lexical effect) emerges on early measures during normal sentence reading, while the effect of letter-case does not.

The lowercase advantage in visual word recognition can be reconciled with the predictions of the above-cited models with an extra assumption: the effects of letter-case would arise at a post-access processing stage, probably when the visual input and the whole-word stored representations are combined to form a conscious percept (Besner, 1983; see also Herdman, Chernecki, & Norris, 1999; Perea, Vergara-Martínez, et al., 2015; Van Orden & Goldinger, 1994). Long-term memory traces of words are partly built on the interaction with many more accounts of the lowercase than the uppercase version of the stimuli. Therefore, the more similar the visual input is with the long-term memory trace of a word, the easier the integration into a stable percept. Thus, hOuSe would be more difficult to integrate as a percept than HOUSE, which in turn would be more difficult to integrate than house. As a result, word identification times and eye fixation durations are longer for alternating-case than for uppercase words, and for uppercase words than for lowercase words (e.g., see Mayall & Humphreys, 1996, for behavioral evidence; see Perea et al., 2017; Reingold et al., 2010, for eye movement evidence).

Critically, if the lowercase advantage during word recognition and reading arises because this is the usual letter-case configuration of most words, one should obtain a lowercase disadvantage for those words whose usual letter-case configuration is uppercase. An excellent scenario to test this hypothesis is by using brand names, as they are generally written in the same case, either lowercase (e.g., adidas) or uppercase (e.g., IKEA). Consistent with this idea, Gontijo and Zhang (2007) employed a number of brand names that were usually written in uppercase (e.g., GUCCI) in a lexical decision experiment and found faster response times to uppercase than lowercase brand names (e.g., GUCCI faster than gucci). More recently, Perea, Jiménez, et al. (2015) employed brand names usually written either in lowercase (adidas) or uppercase (IKEA) and asked participants whether the item was a brand name or not. Perea, Jiménez, et al. (2015) found faster response times when the brand names were presented in their usual letter-case than when they were presented in their infrequent letter-case (i.e., adidas was recognized faster than ADIDAS; IKEA was recognized faster than ikea). A similar advantage of the usual letter-case of words has been reported with acronyms (i.e., FBI is recognized faster than fbi; Seymour & Jack, 1978) and proper names (Mary is recognized faster than mary; Peressotti, Cubelli, & Job, 2003). While all these experiments suggest that the identification times of words are modulated by their usual letter-case, a potential shortcoming is that the mental representations of brand names, acronyms, and proper names may be different from that of common words (see Gontijo & Zhang, 2007).

The goal of the present lexical decision experiment was to examine whether word identification times are modulated by the usual letter-case configuration of common words. To that end, we selected a large number of common words that readers usually encounter in uppercase on billboards or store signs (e.g., PHARMACY, RESTAURANT, BINGO, CLOSED, MUSEUM, PARKING, THEATER; throughout this article, we refer to words that are usually encountered in uppercase as *PHARMACY-type* words). This was done on the basis of subjective ratings (see Method section) because case-sensitive frequencies via Google Books n-grams – or other procedures – underestimate the occurrence of the usual letter-case configuration of these words in everyday life (e.g., these computations do not take into account the frequency of encountering billboards or store signs). Then, we matched these PHARMACY-type words on an item-by-item basis with other common words of similar word-frequency and length that are usually encountered in lowercase (e.g., molecule; throughout this article, we refer to words that are usually encountered in lowercase as *molecule-type* words). The two types of words were presented in lowercase or uppercase (e.g., PHARMACY vs. pharmacy; MOLECULE vs. molecule) in a 2 × 2 factorial design.

The predictions of the experiment are straightforward: if the usual letter-case configuration of words influences word identification times, there should be an interaction between usual letter-case configuration and format presentation (lowercase, uppercase). Specifically, molecule-type words should show – as in previous research – a lowercase advantage. In contrast, PHARMACY-type words should show a lowercase disadvantage (as occurs with IKEA-type brand names) or a null effect of letter-case – note that unlike IKEA-type brand names, PHARMACY-type words are frequently found in lowercase (e.g., pharmacy).

Method

Participants

The sample was composed of 30 students of the University of Valencia, all native speakers of Spanish, who volunteered to take part in the experiment. None of them reported having reading difficulties. All participants signed a consent form before the experiment.

Table 1. Mean correct lexical decision times (in ms) and percent error (in parenthesis) across usual case configuration and format presentation in the experiment

	Format presentation		
Usual case configuration	Lowercase	Uppercase	Uppercase-Lowercase
Uppercase	586 (3.2)	591 (2.8)	5 (−0.4)
Lowercase	606 (4.7)	634 (4.2)	28 (−0.5)

Note. The mean correct RTs and error rates for the lowercase and uppercase pseudowords were 734 and 4.8% and 736 and 5.1%, respectively.

Materials

Firstly, we asked other colleagues and members of the laboratory to write down potential words whose usual letter-case configuration was uppercase (PHARMACY-type words). We selected 102 common words out of this initial screening. Secondly, we selected 102 common words whose usual letter configuration was lowercase (molecule-type words). These words were matched with the PHARMACY-type words on word-frequency, number of letters, and number of orthographic neighbors from the Spanish database EsPal (Duchon, Perea, Sebastián-Gallés, Martí, & Carreiras 2013) using the software Match (Van Casteren & Davis, 2007). As there are no reliable sources of the case-sensitive word-forms in everyday life, we obtained ratings from ten naïve university students on a 1–7 Likert scale (1 = *almost always in lowercase*; 7 = *almost always in uppercase*) to assess the familiarity of each of the two types of preselected words in lowercase or uppercase. To ensure that the PHARMACY-type words were rated as typically presented in uppercase, we excluded from the final set those words whose average was less than 4.9 out of 7 (24 excluded words; note that this also implied excluding their corresponding pairs in the set of the molecule-type words). This criterion allowed us to select a total of 78 PHARMACY-type words (mean rating: 6.0; range: 4.9–6.9). To make sure that the molecule-type words were typically presented in lowercase, we replaced three molecule-type words whose average ratings were higher than 2.5 out of 7 (mean rating: 1.3; range: 1.0–2.5). Thus, the final set of stimuli was composed of 156 words (78 PHARMACY-type words and 78 molecule-type words). These two sets of words were matched on word-frequency per million (35.8 vs. 33.2), number of letters (7.59 vs. 7.54), and number of orthographic neighbors (2.8 vs. 2.6; all *p*s > .5). In addition, the frequency of the individual letters was similar for the two sets of words, $\chi^2(25) = 31.1$, $p = .19$. A set of 156 legal pseudowords was created with Wuggy (Keuleers & Brysbaert, 2010) to act as foils in the lexical decision task. Two stimuli lists were created in order to counterbalance the printed-stimulus letter-case across participants: if PHARMACY were presented in uppercase in List 1, it would be presented in lowercase in List 2. All participants responded to 156 words and 156 pseudowords, half of which were in lowercase and the other half in uppercase. The list of words and pseudowords is presented in the Appendix.

Procedure

The experiment was conducted individually using a computer equipped with DmDX software (Forster & Forster, 2003) in a quiet laboratory. Participants were told that they would be presented with strings of letters that could either form a Spanish word or not, and that their task was to press the "Sí" (Yes) button for words and the "No" button for nonwords. Participants were also instructed to make the responses as fast as possible while trying not to make mistakes. In each trial, the stimulus (word/nonword) was preceded by a 500-ms fixation point (+). The stimulus remained on the computer screen until the participant responded or a 2,100 ms deadline had elapsed – in this latter case the response would be coded as incorrect but no response time (RT) was assigned. The 312 experimental trials were preceded by 16 practice trials similar to the experimental trials. (The complete raw data are available in the Electronic Supplementary Material, ESM 1).

Results

For the analysis of the correct lexical decision times, we excluded those trials with extremely short RT values (less than 250 ms; 2 data points) – note that the upper limit was set by the maximum duration of each trial: 2,100 ms. Overall, there were 4,503 data points for the word stimuli in the latency data (#trials [4680] – timeouts – error responses). The average correct RTs and error rates in each condition are displayed in Table 1. The inferential RT analyses were carried out with linear mixed effects models (lme4 and lmerTest packages in R) – as RT distributions typically show a positive skew, the RTs were inverse-transformed to approach a normal distribution. For the word stimuli, the fixed factors were usual letter-case configuration and format presentation – the levels of the factors were encoded as −.5 and .5. We employed the maximal random structure model that converged – the model was: LME_RT = − 1,000/RT ∼ configuration × format + (format + 1|item) + (format + 1|subject). The models of the analyses on the accuracy data (0 [incorrect] vs. 1 [correct]) employed the function *glmer* (family = binomial) instead of *lmer*. For the pseudoword data, the only factor in the analyses was format presentation. It may be worth noting here that the analyses of variance across participants' and items' means with untransformed data revealed the same results as those reported here.

Word Data

The analyses of lexical decision times on words showed that, on average, lowercase words were responded to faster than uppercase words, t = 3.08, b = .032, SE = 0.011, p = .005, and that, on average, PHARMACY-type words were responded to faster than molecule-type words, t = 3.55, b = .068, SE = 0.019, p < .001. More important, we found a significant interaction between the two factors, t = 2.74, b = .051, SE = 0.018, p = .006. This interaction showed that, for molecule-type words, response times were on average 28 ms faster when presented in lowercase than in uppercase, t = 3.79, b = .057, SE = 0.015, p < .001, whereas there were no signs of an effect of letter-case for PHARMACY-type words (a 5 ms advantage for the lowercase stimuli), t < 1, p > .64.

To examine in further detail the influence of letter-case on word recognition times, we conducted vincentile analyses of the RT distributions (see Gomez & Perea, 2014, for a similar procedure). Specifically, we computed the .1, .3, .5, .7, and .9 quantiles for each participant and then averaged the values for each quantile over the participants. As can be seen in Figure 1, there was a robust lowercase advantage for molecule-type words that increased in the higher quantiles (11, 14, 18, 36, and 59 ms at the .1, .3, .5, .7, and .9 quantiles, respectively). In contrast, there were no signs of an effect of letter-case for PHARMACY-type words across quantiles (−5, 1, 8, 5, and 12 ms at the .1, .3, .5, .7, and .9 quantiles, respectively).

The analyses of the accuracy rates only showed that participants committed more errors on molecule-type words than on PHARMACY-type words, t = −1.98, b = .397, SE = 0.200, p = .047. The other effects did not approach significance.

Nonword Data

The analyses on the effect of the printed-stimulus letter-case on latencies/errors on nonwords did not reveal any significant effects neither for latency nor for accuracy (both ps > .15).

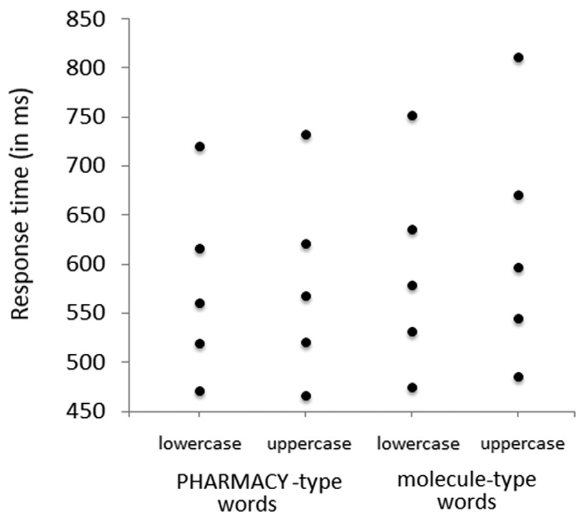

Figure 1. Group response time distributions for the four experimental conditions in the experiment. The dots represent the .1, .3, .5, .7, and .9 quantiles.

Discussion

We designed a lexical decision experiment to examine whether the usual letter-case configuration (uppercase vs. lowercase) of common words modulates word identification times. To that end, we selected a set of common words that are often encountered in uppercase (e.g., PHARMACY) or lowercase (e.g., molecule) and presented them in uppercase or lowercase. Results showed a substantial 28-ms lowercase advantage for molecule-type words. In contrast, PHARMACY-type words produced similar word identification times regardless of letter-case (see Figure 1). Therefore, the usual letter configuration of letter-case plays a role during the identification of common words.

Before discussing the implications of this dissociation for models of word recognition, it is important to comment on an apparently unexpected outcome: despite the fact the PHARMACY-type and molecule-type words were matched on an item-by-item basis in word-frequency and other relevant variables, word identification times were, on average, faster for PHARMACY-type than molecule-type words – this difference occurred to a larger degree for the words presented in uppercase (a 43 ms difference), t = 4.12, b = .093, SE = 0.023, p < .001 than in lowercase (a 20 ms difference), t = 1.91, b = .042, SE = 0.022, p = .060. A potential explanation for the faster responses to PHARMACY-type words relies on the idea that the frequency of PHARMACY-type items is underestimated in current lexical databases. The reason is that we encounter PHARMACY-type words in everyday life (e.g., when looking at street signs, billboards, etc.), but these occurrences are not reflected in lexical databases (i.e., they are based on word counts in movie subtitles, web documents, or books). If this is so, one could argue that the lack of an effect of letter-case for PHARMACY-type words could be some form of floor effect: frequent words are responded more rapidly than less frequent words and this might reduce or eliminate the effect of letter-case.[2] To examine this explanation, we analyzed the effect of letter-case as a function of word-frequency in the PHARMACY-type words. Accordingly, we selected the 30 words with the highest word-frequency values (M = 85.4 per million, range: 14.5–321.1) and the 30 words with the lowest word-frequency values (M = 1.9 per million; range: 0.2–6.3). Results showed that the effect of letter-case was absent for the less frequent words (3 ms; 608 ms [lowercase] vs. 611 ms [uppercase]) and the more frequent words (6 ms; 571 ms [lowercase] vs. 577 ms [uppercase]) – unsurprisingly, we found a sizeable effect of word-frequency (t = 3.55, b = .093, SE = 0.026, p < .001). Thus, the lack of an effect of letter-case for PHARMACY-type words in the current experiment was not due to a floor effect. We also carried out a parallel analysis for the molecule-type words. In this case, the effect of letter-case was sizeable and similar in magnitude for the less frequent words (28 ms; 639 ms [lowercase] vs. 667 ms [uppercase]) and the more frequent words (24 ms; 585 ms [lowercase] vs. 609 ms [uppercase]) – again, the effect of word-frequency was robust (t = 4.44, b = .140, SE = 0.032, p < .001). Taken together, these findings are consistent with previous additive effects of letter-case and word-frequency in word recognition and sentence reading experiments (see Perea et al., 2017, for discussion).[3]

The current results generalize previous findings with brand names, acronyms, and proper names to a more standard scenario: common words. A remaining question is why PHARMACY-type words did not show a lowercase disadvantage – the data showed a negligible 5 ms effect in the unexpected direction. How can we reconcile this null effect with the findings reported by Perea, Jiménez, et al. (2015) with brand names? In the Perea, Jiménez, et al. (2015) experiment the lowercase advantage for adidas-type brand names was larger than the lowercase disadvantage for IKEA-type brand names (43 vs. 26 ms). To explain this finding, Perea, Jiménez, et al. (2015) argued that while adidas-type words are hardly seen in uppercase, IKEA-type words are occasionally seen in lowercase (e.g., in the website of IKEA: www.ikea.com). In the present experiment, PHARMACY-type words are certainly encountered quite often in uppercase – as deduced from the familiarity ratings on each letter-case, but still the number of occurrences of the lowercase form (i.e., pharmacy) is quite frequent in written text. For instance, in Google Book n-gram counts, pharmacy is more frequent than PHARMACY (in 2008: 0.000289 vs. 0.000005%, respectively), whereas IKEA is much more frequent than ikea (0.0000285 vs. 0.0000002%, respectively). To further examine this issue in the present scenario, we obtained the frequencies of all molecule-type words and PHARMACY-type words when presented in lowercase and uppercase in Google Books n-gram counts (from 2000 to 2008). These data showed that when presented in lowercase, molecule-type words were more likely to be encountered in books than PHARMACY-type words (the averages were 3.2e-05% vs. 2.2e-05%, respectively, p = .017), whereas when written in uppercase, molecule-type words were less likely to be encountered in books than PHARMACY-type words (2.3e-07% vs. 3.4e-07%, respectively, p = .073) – note that this latter difference should be greater in everyday life because PHARMACY-type words are often encountered in billboards or store signs that are not taken into account in a Google Book search.

The present findings have implications for models of visual word recognition. Whilst there is ample consensus that readers have an early access to abstract letter/word units, it remains to be explained why common words are read faster in lowercase than in uppercase across a variety of tasks ranging from laboratory word identification tasks to sentence/text reading. Here we have provided evidence that the effects of letter-case in visual word recognition can be explained as due to a post-access stage that is sensitive to the typical letter-case configuration of the word (see Besner, 1983; Herdman et al., 1999). That is, when integrating the visual input with the stored representations, readers may use an estimate of the familiarity of the usual letter-case configuration to make their responses in lexical decision or – in a reading scenario – decide whether there is enough evidence to make a forward saccade to the following word (e.g., Perea et al., 2017, found more refixations on uppercase than on lowercase words). This mechanism can also explain the lowercase advantage of those words that are typically written in lowercase and the lowercase disadvantage of those words that are archetypically written in uppercase (e.g., brand names like IKEA; acronyms like FBI). To examine this interpretation, it is important to examine the shape of the RT distributions in the framework of the diffusion model (see Gomez & Perea, 2014). If the lowercase advantage occurs at a decisional stage

[2] We thank an anonymous reviewer for suggesting this alternative explanation.

[3] A second explanation for the advantage of PHARMACY-type words is that these words might benefit from a familiarity advantage when presented individually, as in word recognition experiments (i.e., PHARMACY-type words may be more typically encountered in isolation than the molecule-type words). One way to test this possibility is to embed these two types of words in sentences. If this interpretation is true, the differences between PHARMACY-type words and molecule-type words sets of words should vanish during sentence reading. An examination of these overall differences between PHARMACY-type and molecule-type words is beyond the scope of the current paper.

(i.e., greater familiarity/wordness for lowercase than for uppercase words), the effect would grow in the higher quantiles of the RT distribution – as occurs with the effect of word-frequency (e.g., see Gomez & Perea, 2014). Instead, if the lowercase advantage occurs at early encoding processes (e.g., inter-letter spacing; see Perea & Gomez, 2012), the effect would be reflected as shifts of the RT distributions (see Gomez & Perea, 2014, for a dissociation of encoding and decision processes in the lexical decision). Figure 1 shows that, for molecule-type words, the lowercase advantage is substantially greater in the higher quantiles of the RT distribution (11 ms at the .1 quantile and 59 ms at the .9 quantile). This pattern is consistent with the idea of higher familiarity/wordness of the lowercase format for molecule-type words in the decision process.

To sum up, the present lexical decision experiment showed that while a lowercase advantage is apparent for most common words (e.g., molecule is identified faster than MOLECULE), this effect vanishes for those words that are often encountered in uppercase (e.g., PHARMACY). Therefore, the typical letter-case configuration modulates the identification of common words, hence generalizing previous findings using acronyms or brand names. Future research should examine in detail how letter-case configuration affects the recognition of recently learned words.

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Electronic Supplementary Materials

The electronic supplementary material is available with the online version of the article at https://doi.org/10.1027/1618-3169/a000391

ESM 1. Data (.xls)
Raw data of the experiment.

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Appendix

List of Words and Pseudowords in the Experiment

PHARMACY-type words: entrada; liquidación; garaje; facultad; exposición; abierto; congreso; seguridad; ayuntamiento; mercado; hostal; muebles; aviso; recepción; atención; horario; locutorio; tabacos; frutería; salida; librería; urgencias; prohibida; ferretería; oferta; papelería; tintorería; teatro; bingo; farmacia; cerrado; droguería; silencio; camping; academia; disponible; master; rebajas; óptica; información; parking; colegio; estanco; taller; cine; ambulancia; novedades; bazar; autovía; peluquería; cafetería; ortopedia; menú; ascensor; sanidad; dental; vende; aseos; emergencia; alarma; transportes; pastelería; museo; vestuario; urgente; horno; restaurante; hotel; notario; taxi; clínica; circo; hospital; gratis; conserjería; cajero; cervecería; extintor.

Molecule-type words: mirada; informático; cuñado; bandera; tendencia; contexto; sencilla; situación; consecuencia; sentido; pétalo; tanques; cable; invisible; defensa; botella; educadora; pestaña; cenicero; sitio; cirujano; bicicleta; elegancia; estantería; hambre; flequillo; cremallera; división; miope; molécula; latina; alcachofa; respeto; zumbido; actuación; comentarios; jugada; sobres; flecha; realidad; cerrojo; animal; marisco; vecina; niño; zapatillas; cansancio; coser; pañuelo; adversidad; escondite; cartulina; riñón; molestia; columna; suegra; mosca; nevar; curiosidad; excusa; estudiante; meticuloso; común; laberinto; anciano; botín; convivencia; árbol; insecto; aguja; sobrino; huevo; frecuencia; puñado; contestador; juerga; servilleta; masticar.

Pseudowords: ustrido; toquibación; pocije; laraltad; irganición; ituente; cospruso; mejucidal; ayertacienta; rorzado; hustol; vieldes; ucaco; remapsión; adarsión; hocirio; bomudoria; latacos; fraficío; zafoda; bifrinía; argescias; grohetido; tirrademía; otorda; gapefonía; testocucía; beafra; bergo; tarmicia; cellida; frochenía; silansia; zampong; amalecio; lasgonobla; zásler; cefijes; óplaca; eslusmación; gunting; cotejia; eslarso; larrer; ceco; antuliscia; mosodales; tavar; eulocío; galuguinía; zatelonía; oslojedio; zanú; ascanror; rasadad; luntal; cusde; usian; enampencia; alirza; trunsgonles; gontebería; suvea; cestoaria; umpante; hermo; centoirante; hofol; silerio; fexi; clísaca; cinso; hempatal; pratus; cinsorpería; capuna; murnenería; exlantor; ricida; vaceifación; cuvida; entirtar; ajecenión; cantixto; sansalla; miluección; moncizuencia; vintudo; gálilo; linques; zabla; grulancia; detanca; llacuro; eturaleca; pesliña; momajera; vitia; besjeque; esgaurape; elipiscia; peragüinzo; hasdre; egazultar; frocifario; bimisián; belde; solízuta; talana; almarrafa; cengeto; zundado; istiación; agariascia; pujafa; nobros; blerra; ceadidol; cellopa; asazal; mararno; cenuna; sizo; compastián; etrofules; pilvo; gañuelo; adsanridad; somiálopo; brepiluro; neñón; zolastio; colonra; zuepra; susca; mucir; cumiosidod; encuza; citolinación; selirulozo; casún; alebesión; rusecor; lodín; canvisiscia; éndol; antecio; egupo; robrano; huino; brerioncia; jucilo; aporbicilis; nepusa; moljaridad; nilalete.