

The effect of word length in short-term memory: Is rehearsal necessary?

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Three experiments investigated the effect of word length on a serial recognition task when rehearsal was prevented by a high presentation rate with no delay between study and test lists. Results showed that lists of short four-phoneme words were better recognized than lists of long six-phoneme words. Moreover, this effect was equivalent to that observed in conditions in which there was a delay between lists, thereby making rehearsal possible in the interval. These findings imply that rehearsal does not play a central role in the origin of the word length effect. An alternative explanation based on differences in the degree of retroactive interference generated by long and short words is proposed.

The capacity to retain phonological information in the short term is an important and intriguing characteristic of human memory. A satisfactory understanding of the mechanisms underlying this ability depends on our capacity to explain phenomena such as the word-length effect: the finding that immediate recall is better for lists of short words than for lists of long words (Baddeley, Thomson, & Buchanan, 1975).

The most comprehensive explanation of the word-length effect is that offered within the *phonological loop model* (Baddeley, 1986; Burgess & Hitch, 1999). According to this model, verbal information is kept in a phonological store, but decays in a few seconds unless it is reactivated by a subvocal

rehearsal process. The word-length effect occurs because rehearsal is faster with short than with long words and therefore more efficient in counteracting the consequences of decay between presentation and recall. A crucial factor in this account is the finding that the effect disappears when rehearsal is disrupted by articulatory suppression, a procedure in which participants were instructed to repeat an irrelevant word or phrase over and over during the memory task (Baddeley, Lewis, & Vallar, 1984). According to the phonological loop model, since the word-length effect is due to differences in rehearsal rate, the disappearance of the effect under articulatory suppression is the logical consequence of rehearsal prevention.¹

¹ This explanation is confined to situations in which items are presented auditorily, so they enter straight into the phonological store. The reason for this is that articulatory suppression prevents subvocalization. According to the model, subvocalization supports both rehearsal of items kept in the phonological store and recoding of visually presented stimuli into phonological traces. When items are presented visually under suppression, the word-length effect would disappear merely because items are not phonologically recorded, and, therefore, there are not items in the phonological store to be rehearsed.

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However, there are a number of reasons why this interpretation should be considered with caution.

On the one hand, apart from preventing rehearsal, articulatory suppression also involves the generation of abundant *phonological noise* as occurs in irrelevant speech situations (Neath, Farley, & Surprenant, 2003b). This characteristic of the procedure provides an alternative interpretation of the disappearance of the length effect under articulatory suppression, given that it has been shown that the presentation of irrelevant speech during the memory task can be enough to eliminate the word-length effect (Neath, Surprenant, & LeCompte, 1998). The results under suppression, therefore, could perhaps be attributed to autogenerated irrelevant speech rather than rehearsal prevention.

On the other hand, according to the *redintegration hypothesis* (Hulme, Maughan, & Brown, 1991; Schweickert, 1993), short-term recall involves reconstructive mechanisms in which long-term memory representations are used to reconstruct partially degraded phonological traces. Longer words benefit more from this redintegration process because they result in more remaining phonological information, and the number of suitable candidates in long-term memory is smaller (Brown & Hulme, 1995). Given that articulatory suppression results in there being less phonological information available in the phonological short-term memory, reconstructive mechanisms could become more relevant in this condition and compensate for the otherwise disadvantaged long words. Evidence supporting this possibility emerges from a study by Romani, McAlpine, Olson, Tsouknida, and Martin (2005). In this study, it was shown that the word-length effect can even be reversed under articulatory suppression when words are used but not when items are nonwords. This was explained by the fact that nonwords cannot benefit from redintegration because they do not have existing representations in long-term memory. Again, an alternative interpretation is possible in which the disappearance of the length effect under suppression is not attributed to the prevention of rehearsal.

Because of these alternative interpretations, the explanation of the word-length effect provided by the phonological loop model seems to require the demonstration of the abolition of the effect when rehearsal is prevented by a different procedure and one that overcomes the problems of phonological noise generation and large degradation of the stored phonological information. This was the aim of the present study.

In the experiments described, a serial recognition task was used: a procedure in which two lists with the same words (the study and test lists) are presented consecutively, and participants merely have to indicate whether the word order in the two lists is the same or different (Allport, 1984; Baddeley, Chincotta, Stafford, & Turk, 2002; Gathercole, Pickering, Hall, & Peaker, 2001). In contrast to the usual procedures of serial recall, the serial recognition task has the advantage that a full temporal control is possible throughout the trial. In a previous study, Baddeley et al. (2002) took advantage of this temporal control to demonstrate that the word-length effect is observed when the output delay is controlled, a factor that has been proposed as an alternative explanation of the length effect (Cowan, Day, Sauls, & Keller, 1992; Doshier & Ma, 1998). In the present study, the serial recognition task was employed to test the word-length effect when rehearsal was prevented by a high word presentation rate with no delay between study and test lists. This procedure prevents rehearsal merely because participants do not have enough time between presentations to engage in a rehearsal loop (Cowan, Nugent, & Elliott, 2000). The word-length effect with rapid presentation of the stimuli has been previously studied by Coltheart and Langdon (1998), who found the effect with rates of one item every 114, 157, or 243 ms. Even though these results demonstrated that the length effect can be found when rehearsal is prevented during stimulus presentation, there are a number of reasons why the results could be accommodated within the phonological loop model. First, the temporal pressure that prevented rehearsal in the study by Coltheart and Langdon was confined to the presentation phase. The

word-length effect, therefore, could be explained by rehearsal taking place during the recall phase. In order to avoid this problem, in the present study items of both study and test lists were presented at high rates, so that rehearsal was prevented throughout the length of the task. Secondly, Coltheart and Langdon employed oral and written recall in their experiments. Given that with these procedures long words take longer to be recalled, the word-length effect could be attributed to differences in output duration (Cowan et al., 1992). In the present study, the use of a serial recognition task in which both study and test lists are paced made it possible to control this factor (Baddeley et al., 2002). Lastly, Coltheart and Langdon presented stimuli visually. According to the phonological loop model, subvocalization is required to recode visual stimuli into verbal form, so as to enter the phonological store. In the study by Coltheart and Langdon, it seems clear that the high presentation rates restricted phonological recoding because of the temporal limitation to articulate each word in the interstimulus interval. This encoding limitation was probably heightened by the fact that different words were presented in each trial, in contrast to more usual designs in which words are drawn from a closed set of stimuli throughout the task. Since short words take less time to be articulated, supporters of the phonological loop model could argue that the effect was a consequence of the fact that more short words could gain access to the phonological store. For this reason, in the present study closed sets of stimuli and lower presentation rates were used, so as to make easier the registration of items in the phonological store. Moreover, in Experiment 2 participants were instructed to read each word aloud after its presentation in order to guarantee that items were phonologically recoded. Finally, in Experiment 3 items were presented auditorily, so as to ensure that information gained straight access to the phonological store. In the three experiments presented here, delayed conditions were included in which there was an interval between study and test lists. According to the phonological loop model, the usual word-length

effect was predicted in these delayed conditions given that rehearsal would be necessary to keep the study list in the phonological store until the presentation of the test list. For the no-delay conditions, however, the prediction was the elimination or sharp reduction of the effect, given that, if any, the opportunities for rehearsal were minimal in these conditions.

EXPERIMENT 1

Method

Participants

Participants in this and the following experiments were undergraduates from the University of Murcia, Spain, who volunteered to take part in the study in exchange for course credit. A total of 50 of them participated in Experiment 1.

Materials

Two sets of eight Spanish words were used, one comprising two-syllable words and the other comprising three-syllable words (see Appendix). The two-syllable and three-syllable words (henceforth, short and long words) were matched individually for word frequency, familiarity, imageability, and concreteness using the LEXESP database (Sebastián, Martí, Carreiras, & Cuetos, 2000). All the words were nouns, with the stress being on the penultimate syllable, and were composed of consonant–vowel syllables (two phonemes per syllable). Similarity was controlled by not allowing two words from a set to share more than one phoneme in the same position. The phonological dissimilarity values of short and long words obtained by a Spanish version of PSIMETRICA (Mueller, Seymour, Kieras, & Meyer, 2003) were (standard deviations in parentheses) 0.65 (0.14) and 0.64 (0.09), respectively. A preliminary study was carried out in order to measure the word duration. In this study, 6 participants read lists of five short or long words constructed as the experimental lists (see below). They were instructed to read silently each list a number of times and immediately after to read it aloud as

fast as possible. Analysis of the digitally recorded readings showed that lists of short and long words took (standard deviations in parentheses) 1,303.77 ms (89.86) and 1,601.35 ms (64.47), respectively. A second preliminary study was conducted in order to test these materials in a more standard situation. In this study, five-word lists were auditorily presented for written serial recall. Results showed a significant word-length effect (Cohen's $d = 1.20$), which was eliminated by articulatory suppression ($d = -0.09$).

Procedure

The study was conducted on 2 participants at a time in two sound-attenuated booths. A computer program generated by E-Prime (Schneider, Eschman, & Zuccolotto, 2002) was used for stimulus presentation and response storage. The experiment consisted of seven blocks of 16 trials, with the first block being a practice one. The sequence of events in each trial was the following. First, a row of dashes appeared on the screen indicating that participants had to press a key to initiate the trial. One second after the key was pressed, a five-word series (the study list) was presented in capital letters at the rate of one word every 300 ms (250 ms on, 50 ms off). After a delay of 50 or 3,000 ms, the second sequence (the test list) was presented in lower case at the same rate; when the delay was 3,000 ms, a 300-ms fixation point preceded the test lists. Lastly, a question mark was presented, and the participants decided whether the word orders in the two series were the same or different by pressing key "1" or "2", respectively; feedback was supplied in the practice block. Participants were instructed to read the stimulus silently throughout the experiment. The delay was manipulated between subjects, with 25 participants in each condition. The condition with a delay of 50 ms was considered a no-delay condition in this and the following experiments.

Each block consisted of eight trials with short words and another eight trials with long words.

In each of these eight trials, the word order changed in four trials, once for each of the four possible exchanges of two adjacent words. Words lists were constructed by selecting words from the specific set at random, with the constraint that every word appeared in five trials per block, once in each of the five possible positions in the study lists. At the end of the experiment, participants in the no-delay condition were interviewed about the use of a rehearsal strategy.

Results

A total of 9 participants were eliminated and were substituted by others because their number of correct responses were below 56 (the random level at a significance level of 95%), which was interpreted as instruction misunderstanding or careless performance (this preestablished criterion was applied in this and the following experiments). As expected, the interview showed that rehearsal had not been used in the no-delay condition (the same occurred in the following experiments, so this matter is not mentioned henceforth).

Table 1 shows the mean hit rates, false alarm rates and A' values (Pollack & Norman, 1964).² The A' values were analysed by a 2×2 mixed analysis of variance (ANOVA), in which word length (short or long) was the within-subjects factor, and delay (no delay or 3,000 ms) was the between-subjects factor. This analysis revealed a significant main effect of word length, $F(1, 48) = 35.509$; $MSE = 0.004$; $p < .001$, indicating better discrimination for short-word lists than for long-word lists. The main effect of delay and the interaction were not significant (in both cases, $F < 1$). A planned t test confirmed better performance for short words than for long words in the no-delay condition, $t(24) = 4.835$; $p < .001$; two-tailed. The size of the word-length effect (Cohen's d) was 0.97 in the no-delay condition and 0.72 in the delayed condition.

² A' ranges from 0 to 1, with 1 indicating perfect performance, and .5 representing absence of discrimination in the recognition task. For each A' analysis throughout this study, an analysis based on hits minus false alarms was also performed. Results of both analyses were equivalent.

Table 1. Mean hit rates, false-alarm rates, and A' values as a function of delay and word length in Experiments 1–3

Experiment	Delay	Word length	Hits	False alarms	A'
1	No delay	Short	.85 (.11)	.30 (.17)	.85 (.09)
		Long	.80 (.08)	.44 (.18)	.76 (.12)
	3,000 ms	Short	.83 (.09)	.30 (.16)	.84 (.10)
		Long	.74 (.13)	.34 (.14)	.77 (.10)
2	No delay	Short	.86 (.11)	.24 (.14)	.88 (.09)
		Long	.85 (.10)	.34 (.14)	.84 (.08)
	3,000 ms	Short	.84 (.08)	.25 (.12)	.87 (.07)
		Long	.78 (.12)	.32 (.15)	.81 (.09)
3	No delay	Short	.88 (.08)	.31 (.16)	.86 (.07)
		Long	.83 (.14)	.41 (.16)	.80 (.10)
	3,000 ms	Short	.86 (.09)	.24 (.14)	.88 (.06)
		Long	.77 (.15)	.33 (.13)	.81 (.10)
	6,000 ms	Short	.79 (.14)	.22 (.17)	.86 (.10)
		Long	.79 (.12)	.35 (.15)	.80 (.11)

Note: Standard deviations in parentheses.

Discussion

Contrary to the prediction, the results of Experiment 1 showed a reliable word-length effect on the serial recognition task when rehearsal was prevented by a fast presentation rate and no delay between study and test lists.³ Moreover, the word-length effect in this condition was not different from a delayed condition in which participants were able to rehearse between study and test lists. In principle, this result seems to show that rehearsal is not necessary for the word-length effect, contrary to the explanation of the effect provided by the phonological loop model. However, it could be argued that the word-length effect in this experiment is actually a consequence of the high presentation rate. Regarding the study by Coltheart and Langdon (1998), it has been discussed above that word-length effect with fast visual presentation of the stimuli could be attributed to greater encoding limitation for long words. In comparison, it seems plausible that the use of closed sets of stimuli and a slight slower presentation rate reduced the recoding problems in the present experiment. However, this problem cannot be completely ruled out. For the

aim of this study, it is important that a fast presentation rate prevents rehearsal of stored items between presentations, but it is also crucial that participants have time enough to recode each visually presented word into a phonological trace. For this reason, a new experiment was carried out in which participants were instructed to read the words aloud rather than silently so as to ensure that the items were phonologically recoded. In this experiment, presentation rate was slowed to a rate of one item every 500 ms, so that participants were able to articulate each item after its presentation. The fact the participants had to read aloud made it possible to prevent rehearsal in the no-delay condition despite the slower presentation rate (see, for example, Norris, Baddeley, & Page, 2004).

EXPERIMENT 2

Method

Participants

The participants were 50 undergraduates, 25 in each delay condition.

³ An independent study with the same materials and procedure showed that the word-length effect could be found with faster presentation rates, such as an item every 100 ms. Although a faster presentation rate assures rehearsal prevention, this extremely rapid rate heightens the problem of phonological recoding that is discussed in the text.

Materials and procedure

These were the same as those in Experiment 1, except that the words were presented at a rate of one every 500 ms (450 ms on, 50 ms off), and participants had to read all the words aloud as they appeared. A microphone, visible to participants, was used to monitor this reading from outside the booths.

Results

Mean hit rates, false alarm rates, and A' values are presented in Table 1. As in Experiment 1, the A' values were subjected to a 2×2 mixed ANOVA with word length (short or long) and delay (no delay or 3,000 ms) as factors. Again, there was a significant main effect of word length, $F(1, 48) = 16.959$; $MSE = 0.003$; $p < .001$, indicating better discrimination for short-word lists than for long-word lists. The main effect of delay and the interaction were not significant ($F < 1$ in both cases). A planned t test confirmed that performance for short words was better than the performance for long words in the no-delay condition, $t(24) = 2.699$; $p = .013$; two-tailed. The size of the word-length effect (Cohen's d) was 0.54 in the no-delay condition and 0.62 in the delayed condition.

Discussion

The results of Experiment 2 were equivalent to those obtained in Experiment 1. The fact that participants read all the words aloud makes it possible to rule out the effect being a consequence of greater limitations in the phonological recoding of long words. It could be argued, however, that the length effect in Experiment 2 was due to the fact that reading long words aloud at a fast rate is more demanding and leaves less time between items than does reading short words. For this reason, another experiment was carried out in which words were presented auditorily, and the physical duration of short and long words was made equal so that all temporal parameters were kept constant. Moreover, a new condition with a longer delay between study and test lists was

included in order to extend the intervention of rehearsal, which could result in a greater word-length effect.

EXPERIMENT 3**Method***Participants*

Participants were 60 undergraduates, 20 in each delay condition.

Materials

The words used in previous experiments, spoken by a female, were recorded and segmented into individual sound files using an audio recorder and editor software with millisecond precision. Special attention was paid to ensure that the physical duration of all the words was exactly 400 ms. This was achieved by asking the speaker to read the list of words again and again, so that a great diversity of versions of each word was available (the speaker was instructed to read naturally and in a neutral tone). Next, specimens slightly longer than 400 ms were selected, and the extra length was cut off at the beginning and the end of each word, provided the result did not sound unnatural. Abrupt beginnings or endings were rejected.

A preliminary study was carried out to check that the words could be correctly recognized. In this study, each word was presented once to 18 participants, using the same materials (e.g., computer, program, and headphones) as those employed in the experiment later. Participants had to write the words down as they appeared. Results showed 100% accuracy in the recognition of the stimuli.

Procedure

This was the same as that in Experiments 1 and 2, except that the words were presented auditorily (via headphones) at a rate of one every 450 ms (400 ms on, 50 ms off) and that there were three delay conditions: no-delay, 3,000 ms, and 6,000 ms.

Results

Table 1 presents the mean hit rates, false alarm rates, and A' values. The A' values were subjected to a 2×3 mixed ANOVA with word length (short or long) as the within-subjects factor and delay (no-delay, 3,000 ms, or 6,000 ms) as the between-subjects factor. There was a significant main effect of word length, $F(1, 57) = 32.438$; $MSE = 0.004$; $p < .001$, indicating worse memory performance for long-word lists. The main effect of delay and the interaction were not significant ($F < 1$ in both cases). A planned t test confirmed better discrimination for short words than for long words in the no-delay condition, $t(19) = 4.915$; $p < .001$; two-tailed. The size of the word-length effect (Cohen's d) was 1.10 in the no-delay condition, 0.83 in the condition with a delay of 3,000 ms, and 0.50 in the condition with a delay of 6,000 ms.

Discussion

The results of Experiment 3 showed a reliable word-length effect when rehearsal was prevented. As in the previous experiments, the length effect in this condition was not different from delayed conditions where rehearsal was possible between lists, even when a condition with a longer delay was included in this experiment. Moreover, the auditory presentation of the words made it possible to guarantee a non-demanding phonological coding, whereas some temporal interpretations like longer interstimulus intervals can be ruled out because of the equalization of the physical duration of all the stimuli.

GENERAL DISCUSSION

Results from the experiments described show that the word-length effect was not eliminated or even reduced in conditions in which the opportunities for rehearsal, if any, were strongly minimized. This finding conflicts with the explanation of the

effect provided by the phonological loop model and leads to the idea that rehearsal does not play a central role in the genesis of the effect.

In addition to rehearsal, other temporal explanations of the length effect have been proposed. One of these time-based explanations locates the effect at the moment in which participants have to reproduce the list presented previously. According to this explanation, the word-length effect is a consequence of a longer delay during the report of long words, which causes a greater decay in the remaining stored items (Cowan et al., 1992; Doshier & Ma, 1998). Even though output delay may perhaps be relevant in procedures with written or oral recall, this factor cannot explain the present results because of the temporal control provided by the serial recognition task (Baddeley et al., 2002). This temporal control was particularly strong in Experiment 3, in which the physical duration of all sensory inputs was the same. This also makes it possible to rule out the possibility that the word-length effect is the result of differences in interstimulus interval (Cowan et al., 2000) or larger temporal retroactive interference caused by longer auditory inputs (Cowan, Wood, Nugent, & Treisman, 1997).

The fact that rehearsal and other temporal explanations of the word-length effect are not able to account for the present results is consistent with some previous experiments in which long words (words that take more time to be articulated) were not recalled worse than short words (words that take less time to be articulated) when short and long words did not differ in number of phonemes (Caplan, Rochon, & Waters, 1992; Lovatt, Avons, & Masterson, 2000; Neath, Bireta, & Surprenant, 2003a; Service, 1998). Service (1998), for example, manipulated the item duration either by employing long phonemes (/tepal/, /te:p:al/) or by adding phonemes (/tepal/, /tiempal/). Results showed that increasing item duration only resulted in worse recall when this increase involved a larger number of phonemes. In principle, this result is at odds with the original finding that word-length effect can be found when short and long words are matched for number of phonemes

(Baddeley et al., 1975). However, subsequent experiments have failed to replicate this result with a number of new sets of words (Caplan et al., 1992; Lovatt et al., 2000; Neath et al., 2003a), suggesting that the original finding might be the result of some special features of the stimuli unrelated to their duration (Lovatt et al., 2000; Neath et al., 2003a). Despite the fact that it is not possible to rule out the role of temporal factors in specific situations, all this evidence seems to indicate that, rather than item duration, the origin of the length effect is mainly the result of the number of phonemes or some related factor usually referred to as *phonological complexity* (Caplan et al., 1992; Hulme, Surprenant, Bireta, Stuart, & Neath, 2004; Romani et al., 2005). However, it remains to be elucidated the precise mechanism by which greater phonological complexity results in poorer recall.

In this regard, Romani et al. (2005) have suggested that, whatever the forgetting mechanism in short-term memory might be (decay, interference, or capacity limitations), there is a greater probability that forgetting affects longer (more complex) words. The reason for this is that each constitutive element of a stored word can be lost with certain probability. Longer words contain more elements, and, therefore, it is more likely that they will lose some of their elements, with the consequence of lowered recall rates (for an equivalent time-based suggestion, see Brown & Hulme, 1995). Lists of long words, therefore, would yield a lower rate of recall merely because each individual long word would be less recallable. The problem with this account is that it would predict a lower recall rate for long words regardless of the length of the other items in the list. In contrast to this prediction, Hulme et al. (2004) have showed that long words are not recalled worse than short words when both long and short words are presented in mixed lists (see too Cowan, Baddeley, Elliott, & Norris, 2003). Local explanations based on individual lower level of recallability of long words do not seem, therefore, a plausible account for the length effect.

An alternative suggestion is that the effect is, at least partially, a result of retroactive interference

derived from the mere presentation of each new input. The idea that previously stored contents could be damaged by the presentation of new inputs is present in different memory models (Davelaar, Goshen-Gottstein, Ashkenazi, Haarmann, & Usher, 2005; Doshier, 1999; Nairne, 1990, 2002; Neath & Nairne, 1995; Usher & Cohen, 1999). In the *context-activation model* (Davelaar et al., 2005), for example, new information displaces previous contents as a result of lateral inhibition. According to this model, representations in short-term memory are prepared to compete with each other by lateral inhibition in order to prevent uncontrolled spread of activation. With the presentation of each item, the representation of the new stimulus reaches a high level of activation because of sensory input, but the activation of previous items diminishes as a result of the increase in the amount of global inhibition. A different retroactive interference mechanism is proposed within the *feature model* (Nairne, 1990, 2002; Neath & Nairne, 1995). According to this model, items in primary memory are represented as vectors of features. The presentation of new information results in the overwriting of some of these features, with the consequence of a degradation of the information about previous items and, therefore, a lower probability of correct recall for these items.

Whatever the mechanism of retroactive interference might be (displacement by lateral inhibition, overwriting, or other factors), it could be conjectured that some of the word-length effect is perhaps a result of a larger level of retroactive interference when longer words are presented. Evidence supporting this possibility emerges from a recent study (Campoy, 2007) in which participants had to recall the first three items of auditorily presented six-word lists. The key aspect of the procedure was that these to-be-remember items were always drawn from a single set of middle-length words, whereas short and long words always occupied the last three positions and never had to be recalled. In order to avoid recall being affected by the inclusion of long and short words in a rehearsal loop, articulatory suppression was employed throughout each trial.

Congruent with the idea that longer words generate larger retroactive interference over the previously presented items, results showed that middle-length words were recalled worse when they were followed by long words than when they were followed by short words.

In summary, the present work, together with other previous studies, supports the idea that the word-length effect does not depend on rehearsal or other factors related to time. Phonological complexity (some to-be-determined variable related to the number of phonemes) appears as an alternative causal factor, though the precise manner in which phonological complexity has an effect on recall is yet unknown. In this regard, it is proposed that phonological complexity could be related to the magnitude of retroactive interference that new inputs exert over previously stored contents.

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APPENDIX

Stimuli used in Experiments 1–3

<i>Short word</i>	<i>Phonetic transcription</i>	<i>English translation</i>	<i>Long word</i>	<i>Phonetic transcription</i>	<i>English translation</i>
BATA	/ˈba.ta/	dressings gown	BIGOTE	/bi.ˈyo.te/	moustache
FOCO	/ˈfo.ko/	spotlight	BUTACA	/bu.ˈta.ka/	seat
JEFE	/ˈxe.fe/	boss	CENIZA	/θe.ˈni.θa/	ash
LAZO	/ˈla.θo/	bow	DINERO	/di.ˈne.ro/	money
MESA	/ˈme.sa/	table	GARAJE	/ga.ˈra.xe/	garage
NIDO	/ˈni.ðo/	nest	MOLINO	/mo.ˈli.no/	windmill
NUCA	/ˈnu.ka/	nape	NOVELA	/no.ˈβe.la/	novel
PILA	/ˈpi.la/	battery	TEJADO	/te.ˈxa.ðo/	roof