

**Comparative performance by a polyglot on *Wordle* in four languages:  
Case study and observations on lexical access**

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*Abstract:* This paper reports a case study of the performance of a polyglot individual (DRL) who played the word game *Wordle* in four different languages every day for over a year. I show that there is no strong relationship between DRL's command of the four languages in question and his performance; for the most part, performance differences (which are in any case quite small) depend largely on the phonotactics and other linguistic properties of the four languages. Nevertheless, there is some evidence for age-of-acquisition effects and for a difference between the native language and languages acquired later. Moreover, individual games provide evidence relevant to known effects in lexical access, including the difference between content words and function words and the role of lexical stress.

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\* "Elizabeth Dwight" is a collective pseudonym for Anne Cutler and Bob Ladd, invented during a working visit sometime in 1982 or 1983. (It's based on their legal first names.) Elizabeth was intended to have a great career as a mystery psycholinguist, writing and publishing incisive articles without anyone being sure who she was. In the end she never wrote anything, but I have resurrected her name to capture the joint work behind the present paper, which was prepared for the Memorial Workshop for Anne held at the Max Planck Institute for Psycholinguistics in June 2023. This will be her only paper. RIP.

## 1. Introduction

The online word game Wordle became a worldwide sensation in late 2021 (Wikipedia, <https://en.wikipedia.org/wiki/Wordle>). As most readers will know, the game requires the player to guess a five-letter target word within six guesses. Feedback is given after each guess, allowing the player to identify letters that are not part of the target word (gray), letters that are present in the target word but in a different position in the word (yellow), and letters that are in the target in the same position as in the guess (green). A sample game is shown in Fig. 1.

**Wordle**

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P	E	A	L	S
M	O	I	S	T
S	H	U	C	K
S	H	R	U	G

*Figure 1: A sample game of Wordle (19 August 2022), showing the feedback provided by the colour of the letters after each guess*

The rapid rise of the original Wordle inspired a variety of spinoffs, including versions in numerous other languages. This led a polyglot acquaintance of the author's, referred to here as DRL, to play the game in the four languages that he speaks fluently, with a view to comparing his performance. It quickly became clear that there are two different (but not incompatible) types of explanations for any differences in his performance: differences based on his own language competence, and differences based on structural and other features of the languages that would make the game intrinsically easier or harder. In order to evaluate these two types of explanations, he continued to play Wordle in all four languages every day for more than a year; in the present report, this run of games is dignified with the description 'the study'. He also initiated an extended email correspondence with the late Anne Cutler (here referred to as EAC), in which they shared experiences with the game, discussed reasons for performance differences, and speculated about ways in which the game provides anecdotal evidence for psycholinguistic findings about the mental lexicon. This correspondence between the two, made available to the author, is the basis for much of the discussion here.

DRL opened the exchange this way (8 April)<sup>1</sup>:

Have you fallen victim to Wordle? I am already getting kind of bored with it, but I have to keep going for at least another 3 weeks or so. I started doing it in my 4 usable languages on the same day, and am keeping statistics on my performance

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<sup>1</sup> All dates relating to the email correspondence are in 2022.

in the different languages. I took stock after day 50, and need to keep going until day 100 so that I can see if there's any evidence of improved performance (I don't think there is, or if there is, I would need to keep going for many more months to get a big enough sample).

Clearly, at this point he was not yet thinking of a long-term study. However, he had already formed ideas about why the game was different in different languages, and was already thinking about how it reflects various known psycholinguistic phenomena:

But mostly I'm interested in the differences between languages. There is clearly a confound with my own competence in the four, although I suspect that is minimal, because already on day 50 it was clear that my best performance is in Italian, and that is a function of regular orthography and very restrictive phonotactics. My worst performance is in French, which mostly has to do with all the damn silent letters, which makes it harder to search the mental lexicon with the available letters after 3 or 4 guesses. I almost missed the ordinary word VINGT one time for exactly that reason. Anyway, the other thing that is very clear is that it is a lot harder to search your mental lexicon for function words. The people behind German Wordle (6mal5) exploit that a lot - several times the target word has been things like WORAN and DAHER. And the English one used SHALL sometime last week, which was also a bit tricky. Now that I'm alert to that, I try to see if there's an obvious function word I'm missing when I'm stumped after turn 4.

EAC's first reply (8 April) agreed with the speculation about function words:

Yes, I do Wordle, it's fun to do with a mate or 2. Only English, but yes - I knew back in the 70s already that readers/listeners have a scale of "wordiness" whereby function words are not "real words" like content words are, and yes, there is a very strong content/function effect in Wordle. THOSE and COULD showed it as well as SHALL.

The next day she returned to the question of what the game is about:

Doing Wordle with yourself alone, even in multiple languages and with the intention of writing an article about it after 100 days (please do) - fine, but it seems to me you're missing out on its principal source of delight, which is doing it with one or more buddies. ... Its function in my opinion is almost totally social. ... It just works to brighten your day.

Despite her insistence on the social aspects of the game, her parenthetical comment nevertheless makes clear that she liked the idea of taking a multi-language Wordle study as material for a paper, to which we now proceed.

## **2. Methodological notes**

Beginning in late January 2022, with only one missed day during the Northern hemisphere summer of 2022, DRL played Wordle every morning for over a year in English, French, German and Italian. He took note of his performance at the end of each 50-day period. He frequently took screen shots of games that were of particular interest for a variety of reasons. The present report summarises the quantitative data on DRL's performance in the four languages and discusses possible explanations for differences between the languages.

2.1. *Language competence*: DRL's acquisition of the three non-native languages was the result of biographical circumstances. He has presented talks and classes in all four languages and can carry on ordinary conversations in all four. In both French and German he has occasionally been taken for a native speaker. A summary is given in Table 1.

Language	Age of first exposure	Age of peak competence	Relative 'deep' competence	Relative fluency now
English	birth	70s	1	1
French	10	~25	2=	4
German	13	~45	2=	3
Italian	16	70s	4	2

*Table 1. DRL's language experience. Age of first exposure in non-native languages is based on the beginning of a period of regular classroom instruction; other columns reflect DRL's subjective assessment. 'Deep' competence reflects his confidence in (and accuracy of) grammatical intuitions, etc.; 'fluency' reflects his assessment of production accuracy and extent of cross-language interference.*

2.2. *Wordle sources*: DRL used the original English version of Wordle throughout the study; there was no apparent discontinuity when the game moved from the game's creator's website to the New York Times site a few weeks after the study began. The French, German and Italian versions used are the ones linked from a page on the Duolingo website (<https://blog.duolingo.com/wordle-in-other-languages/>). The French version ('Le Mot', <https://wordle.louan.me/>) and the Italian version (<https://sebastianomorando.github.io/wordle-it/> ('Verba')) remained constant throughout, though in the Italian version there was a change at some point in the way accent diacritics are treated, and possibly some change in the choice of target words. The German version linked from the Duolingo site completely changed after about the first five weeks, for unknown reasons; the rest of the games reported here are based on '6mal5' (<https://6mal5.com/>). There are now other versions of the game in all three of the non-English languages, none of which DRL has played. Minor differences between the different versions are described in Appendix 1.

2.3. *Play and record-keeping*: DRL normally played the game in all four languages first thing in the morning. For no particular reason, he always did each day's games in the order English, French, Italian, German. The daily Wordle session occasionally took as little as five minutes, but generally lasted 15-20 minutes.

All four versions of the game display cumulative statistics in the form of histograms showing the number of games where the target word was guessed in  $n$  turns. Examples from DRL's games are shown in Figure 2. It can be seen that in all four languages the modal value is 4 turns, and that in all four languages the distributions are roughly normal. It can also be seen that only the French game records the number of misses – games that end without guessing the target word. Cumulative statistics (including misses in the languages other than French) were transferred to a spreadsheet at the end of every 50-day period during the study.

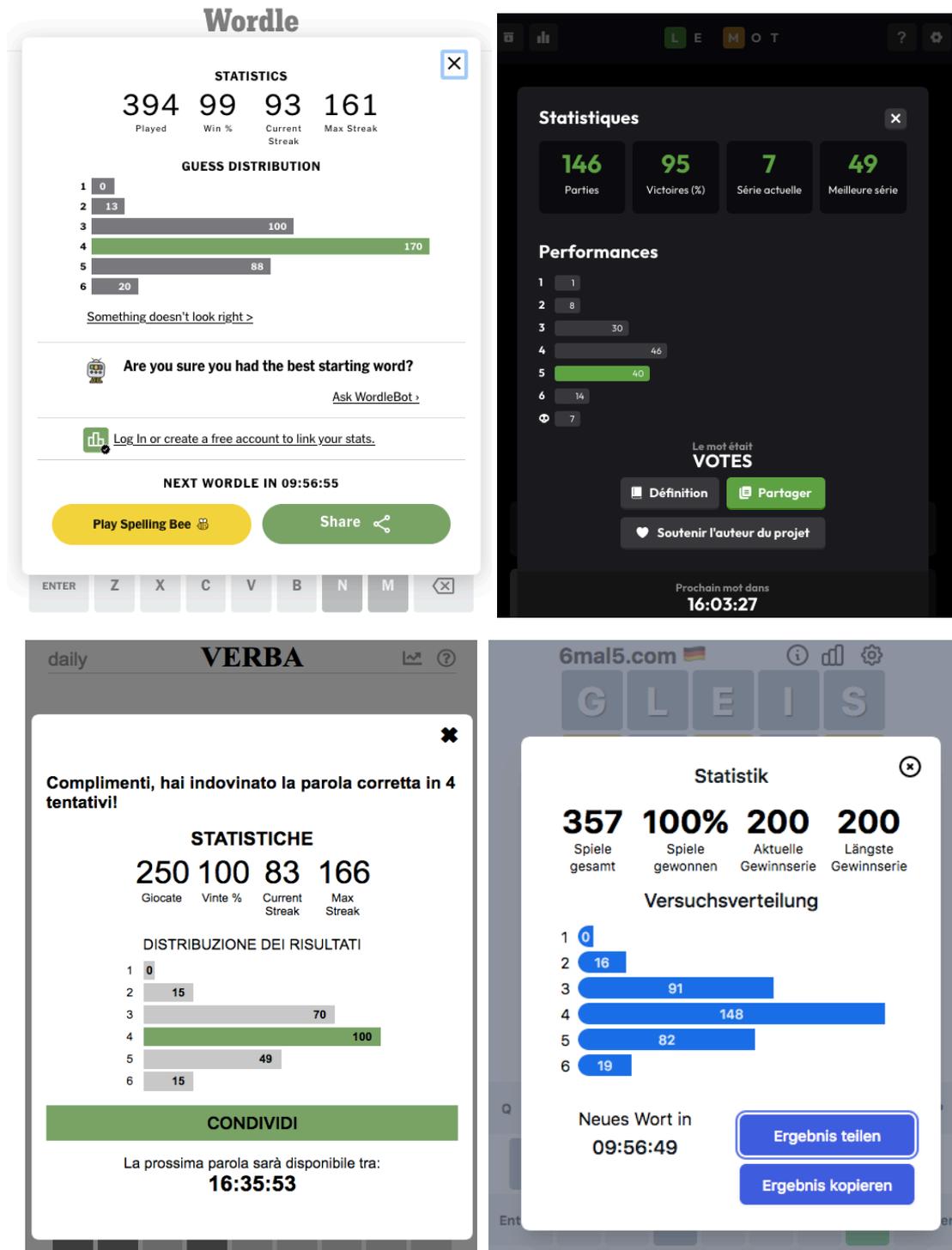


Figure 2: Cumulative game statistics as displayed on each of the four sites. Clockwise from upper left: English, French, German, Italian.

### 3. Results

3.1. *Overview:* The study was wound up after Day 400. Final cumulative performance statistics are displayed in Figure 3, in a uniform format that roughly follows the format used on the individual sites<sup>2</sup>. It can be seen that there are no substantial differences in performance in the four languages; the distributions of scores are all roughly normal, with a clear mode of 4. Table 2 provides some additional quantitative data, showing that mean scores are very similar in all four languages, though slightly higher (i.e. reflecting poorer performance) in French. Other obvious quantitative differences shown in Table 2 are fairly small. The ‘miss rate’ (the proportion of games that ended without guessing the target word) is noticeably higher in French than in the other three languages, which presumably contributes to the higher French mean. The ‘3/5 index’ (the proportion of 3-turn games to 5-turn games, a simple proxy for the skew of the distribution) is greater than 1.0 in all four languages (i.e. there are more 3-turn games than 5-turn games), but the proportion is smallest in French (i.e. French involves the fewest 3-turn games) and by far the largest (i.e. the most 3-turn games) in Italian.

Language	mean	miss rate	3/5 index
English	4.030	0.8%	1.124
French	4.243	3.8%	1.010
German	4.008	0.6%	1.076
Italian	4.030	0.8%	1.318

*Table 2. Summary descriptive statistics of performance over 400 days. ‘Mean’ is based on the number of turns required to guess the target word; misses (games in which the target word was not guessed) are scored as 7. ‘Miss rate’ is the total number of misses divided by 400, i.e. the percentage of misses over the whole study. ‘3/5 index’ is the proportion of 3-turn games to 5-turn games and is used as a simple proxy for the skew of the distributions shown in Figure 3.*

Plainly, there is nothing in the foregoing to suggest any direct link between DRL’s relative competence in the four languages and his performance over the 400-day study. His poorer performance in French might seem to reflect his assessment that French is now the least fluent of the four languages, but in that case we might expect to see better performance in Italian than in German, and would certainly expect to see better performance in English than in the three non-native languages. No such tendency is present. Instead, the data suggest rather that the difficulty of the game may be intrinsically different in different languages. We return to possible effects of language competence in section 4.2.

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<sup>2</sup> The statistics in Figure 3 for English and Italian are identical to the numbers shown on Day 400 on the respective game sites. In the case of French, the total number of games is undercounted by 1 on the game site, for unclear reasons; this happened sometime in mid-2022 and I have corrected for this by adding an additional 4 (the modal value) to the overall French results. In the case of German, the statistics from the first five weeks of the study, in which a different version of the game was used (see 2.2 above) were recorded separately and manually added to the statistics for the later version, which started from zero on Day 37.

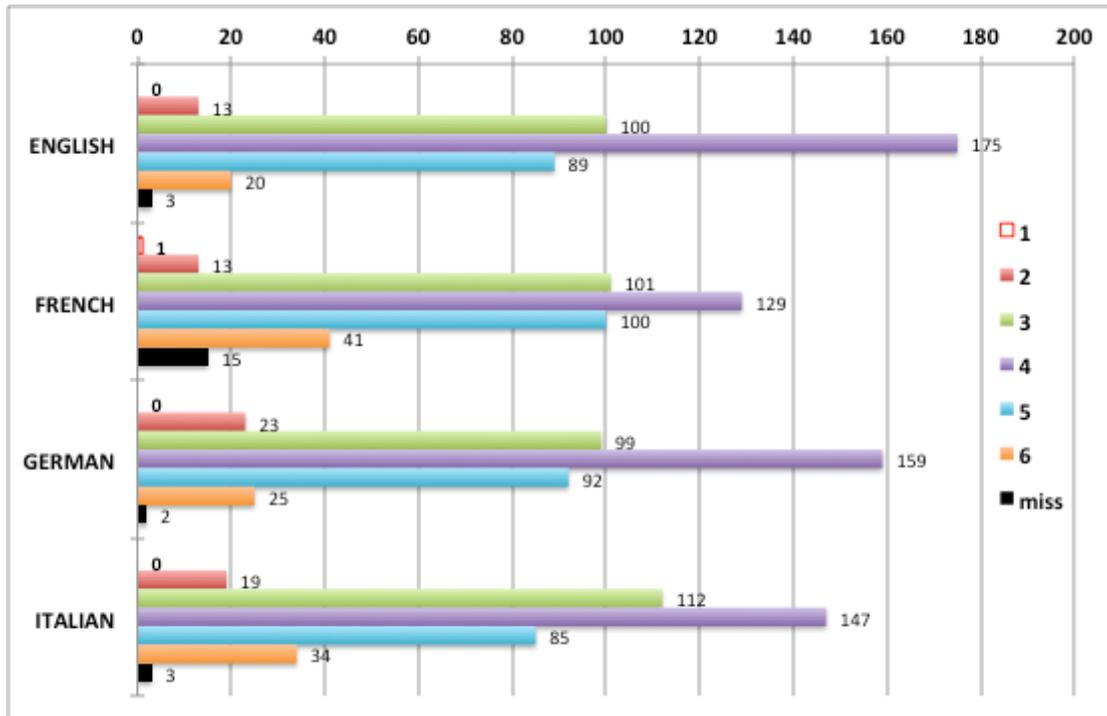


Figure 3: Cumulative 400-day game statistics. The black bars indicate 'misses', i.e. games where the target word was not guessed within the 6 turns allowed. The thin red-outlined bar in the French data shows the only game in the whole study where the target word was guessed on the first turn.

It should also be noted that there is nothing to suggest that DRL's results are atypical. On Day 100 (1 May), he wrote to EAC, attaching a graph like Figure 4.

I'm sure you've been waiting eagerly for the results of my 100-day Wordle self-experiment. Executive summary: no change in overall picture: Italian is easiest, followed by English, German, and French in that order. Between days 1-50 and days 51-100, slight trend to "improvement" in the mean number of turns per game (clearest in German) except in French.

Methodological note: I weighted a miss (failure to guess word) as 7 for purposes of computing means. The only misses were in French - but also the only got-it-in-one lucky guess.

EAC replied immediately:

Day 100, eh? - So, I just went to tally up mine (of course). Turns out my 100th go ... will be tomorrow!!

and the following day reported her results:

So I have today reached 100 (in the Wordlesphere), and the mean score, after carefully including two 7s [misses] acquired in the first fortnight, is 3.82. Our distributions are very similar, even unto me also having 38 4s

That is, it seems likely that in the English game, players with backgrounds comparable to DRL's and EAC's will achieve roughly normal distributions with means between 3.8 and 4.2 and a clear mode of 4.

3.2. *Changes over the period of the study:* The final cumulative statistics shown in Figure 3 and Table 2 conceal at least one clear difference between the languages, which strongly suggests that the Italian game is easier. Specifically, the skew shown by the 3/5 index in Table 2 was not always so uniform over the duration of the study. This can be seen from comparing Figure 3 to the cumulative data shown in Figure 4, from Day 100: at that point in the study only Italian exhibited a ‘negative’ skew, whereas in the other three languages there were more 5-turn than 3-turn games.

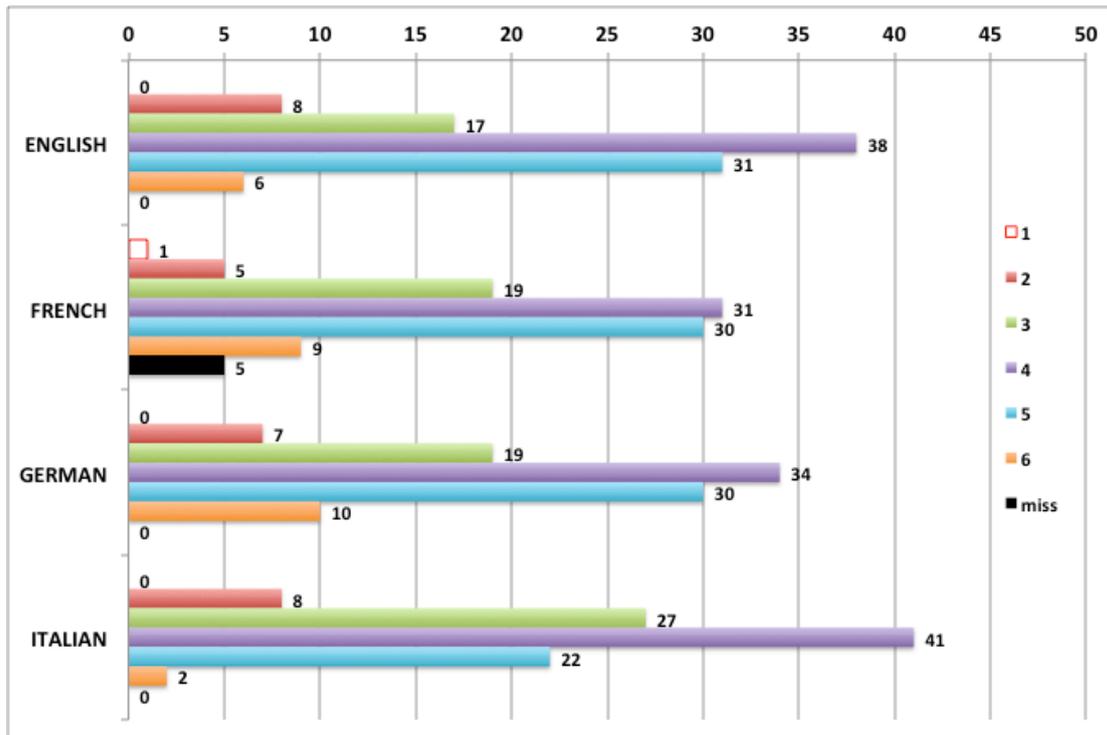


Figure 4. *Cumulative game statistics on Day 100. This figure is laid out identically to Figure 3 and the two figures should be compared to show the striking difference in ‘skew’: after 100 days, there are markedly more 5-turn games than 3-turn games in all languages except Italian, whereas at the end of the 400-day study there are more 3-turn games in all four languages. See further Figure 5. (For the red-outlined and black bars in the French data, see the caption to Figure 3.)*

Moreover, we can trace the evolution of the skew over time by plotting the cumulative 3/5 index as computed at the end of each of the eight 50-day periods of the study. This is shown in Figure 5. In English, French and German there is a steady increase in the proportion of 3-turn games until Day 250 or Day 300, after which it appears to level off, at least for French and German. In Italian, the proportion remains more or less unchanging throughout the study. This suggests that DRL was developing strategies for the game that improved his performance in the other three languages, but also suggests that the likelihood of guessing the target word in three turns in Italian was largely unaffected by these strategies. In the next section we consider the kinds of linguistic factors that might influence performance in different languages.

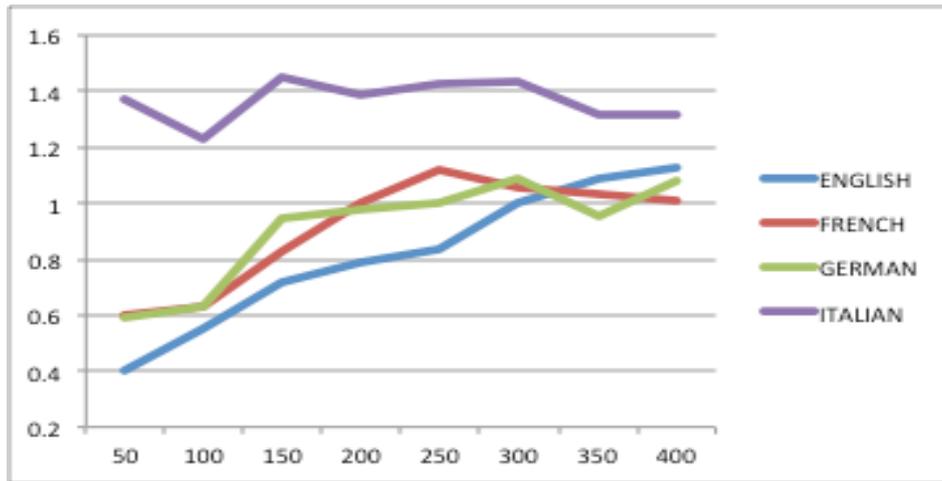


Figure 5. Change in the '3/5 index' (the proportion of 3-turn games to 5-turn games) over the course of the study. See further text, section 3.2.

#### 4. Discussion: Sources of performance differences

4.1. *Structural properties:* There are at least three obvious properties of a language that could affect the difficulty of the game. One is simply the number of five-letter words available. However, basic facts about the number of five-letter words in the four languages are not easy to establish, and depend to a considerable extent on how foreign words and multiple inflected forms of the same lemma are counted (see Appendix 1). Research-oriented databases such as Celex are generally more concerned with word frequency than with word length (especially orthographic length). Sites oriented primarily to crossword puzzles and games like Scrabble or Wordle often contain lists of words with specific numbers of letters or words containing specific letters, but they disagree quite substantially among themselves about total numbers, and seldom specify their sources. Nevertheless, informally putting together information from a range of sources, it seems likely that English has the most five-letter words and Italian the fewest, with German and French, probably in that order, somewhere in between. Several sources state that the original English Wordle is based on a list of nearly 13,000 allowable words; the number for Italian may be little more than half that.

It might seem obvious that the game would be more difficult in a language with a larger stock of five-letter words: the larger the pool of possibilities, the greater the chances of needing more turns to guess the target word. But the question is more complex than that. EAC, citing Cutler et al. 2004, raised this point in an email to DRL (4 May):

The vocabulary is the source of impact for any particular word. The relative number of 5-letter words compared to vocabulary size is, for instance, very different across the languages you're working with... English has proportionally more. Wordle as it is is an English game. What we now need is a vocab-structure-based measure to apply!!

In the absence of such a measure, however, we focus here on two other sources of difference that in DRL's experience clearly influence the difficulty of the game, namely phonotactics and orthography.

The impact of phonotactics is obvious. Responding to DRL's report that after 100 days his best overall performance was in Italian, EAC put it this way (1 May):

Yes, no surprises there. Italian has the simplest phonology so each bit of information carries more weight.

Concretely, phonotactic restrictions mean that at any given position in the word, only a few letters may be possible, independently of the number of actual five-letter words in the language. Italian requires all but a few short function words and a small number of loan words to end in a vowel letter, normally excluding *U*. Moreover, restrictions on consonant clusters mean that a large proportion of Italian 5-letter words must be of the form CVCCV or CCVCV. This restrictiveness appears to be reflected in the different proportions of 3-turn and 5-turn games in the four languages, discussed above (Table 2 and Figure 5). On the other hand, phonotactic restrictions do also seem to lead to a corresponding disadvantage: if a player has failed to find the target word by the fourth turn, it may be difficult to test multiple new letters on the fifth turn. Consequently, it sometimes happens that on the fifth or sixth turn there is a random choice between three or four phonotactically legal words that differ only by one letter in a given position. This problem probably accounts for the fact that in Italian there are both more 3-turn games and more 6-turn games than in English or German.

As for orthography, the less consistent systems of English and French mean that rehearsing possible solutions aloud (which DRL often did) is less likely to inspire an appropriate guess. Moreover, as is commonly the case in text written in all capital letters, the French Wordle uses no diacritics. Consequently, a French form such as **ROUES** could represent either *roues* (with one syllable) or *roués* (with two). In the same way, **FIGUE**, **DIGUE**, **BAGUE**, and **VAGUE** all have one syllable (with the orthographic *U* signalling that the *G* is pronounced [g] before the silent *E*), while **AIGUE**, **RECUE**, and **REVUE** (respectively *aiguë*, *reçue*, *revue*) have two syllables and **DENUE** (*dénué*) has three.

Similarly, in English, contextually variable pronunciation of vowel letters can make it unproductive to search for rhyming words, as can be seen in Figure 6, from one of DRL's games (6 February 2023). After turn 4, the word had to be of the form **XINTX** or **XINXT**. All vowels other than *I* had been ruled out, so the most likely possibility was a word ending in **-INTH**. Running through rhymes based on the pronunciation [ɪnθ] (as in *plinth*) led nowhere, even when DRL tried [nɪnθ]. It took him some time to notice that using *N* as the first letter would yield a real English word after all, but only if pronounced [nɪnθ].

**Wordle**

L	A	B	O	R
F	I	E	N	D
P	U	N	K	S
T	A	N	G	Y
N	I	N	T	H

Figure 6. See text.

4.2. *Possible effects of language competence*: Is there any evidence for an effect of DRL's language competence? One indirect source of evidence for such an effect arises from the way DRL played the game: specifically, he allowed himself to consult a dictionary on fifth and sixth turns to check whether a phonotactically plausible guess was a real word – that is, he used the dictionary only to emulate native speaker players testing possible guesses against their mental lexicon<sup>3</sup>. This happened in perhaps 10% of games in Italian, less often in German, seldom in French and never in English. No record was kept of how often a dictionary was consulted, but DRL's impressionistic assessment of how often it happened in the different languages mirrors his age of acquisition of the four languages and is consistent with evidence that age of first exposure to a foreign language affects vocabulary size at ultimate attainment (e.g. Hellman 2011: 172).

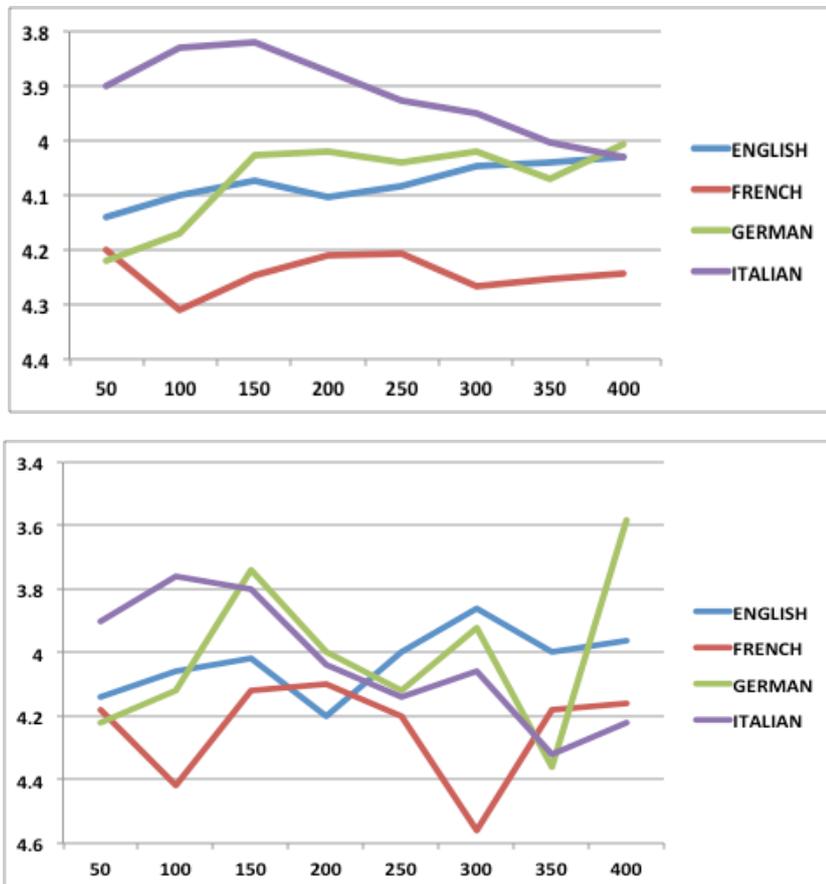


Figure 7: Mean data over time. Upper panel shows cumulative means for each language calculated every 50 days during the study; lower panel shows the means for each 50-day period. The y-axis is inverted in both panels so that values scaled higher in the graphs correspond to better performance (i.e. lower means).

<sup>3</sup> Note that this apparent 'cheating' should have little effect on overall performance statistics, because in all four versions of the game non-words are simply rejected and are not counted as turns.

There may also be some evidence for a native language effect in Figure 7, which plots the mean score over time. The upper panel shows the cumulative mean, calculated every 50 days over the whole period of the study. The lower panel shows the mean for the eight consecutive 50-day periods of the study. It can be seen that the cumulative mean shows a small but steady improvement in English, but a clear decline in Italian, no obvious trend in French, and what looks like an initial improvement followed by a levelling off in German. The consecutive 50-day means also show that performance in each 50-day period was more variable in French and German than in English. This may mean that any refinements to the way DRL played the game were most obviously and consistently reflected in improved performance in his native language. The same effect may also be what lies behind the differences in the cumulative 3/5 index shown in Figure 5.

## 5. Discussion: Anecdotal evidence for known lexical access effects

Anecdotal reports of individual cases in the exchanges between DRL and EAC are relevant to a number of phenomena in lexical access that are known from experimental psycholinguistic research, including: the different status of open-class and closed-class words (also known as content words and function words); the existence of distinct strata or subsets of the vocabulary, such as the difference between native and foreign words, or (in English and German) the difference between Latinate and Germanic words; and the limited relevance of lexical stress for lexical access in at least some languages.

### 5.1. *Open-class and closed-class:*

As we saw in the introduction, the difference between content words and function words as Wordle targets was part of the opening email exchange. DRL returned to the same topic a few weeks later (22 April) on the basis of a German game, shown in the left panel of Figure 8.

After our earlier exchanges, I can't resist sharing today's German one. As with a couple of previous cases, with the explicit knowledge that: (a) function words are less obvious but possible; (b) German has a whole bunch of compound adverbial thingies like DAMIT and HERAN that have 5 letters; and (c) that A and I only rarely occur next to each other in German, I managed to make what looks superficially like a daring leap to the answer.

This led to the following exchange:

[EAC to DRL]: That is really amazing. Even if I had stayed a German teacher for the past half century since I stopped, I doubt I would have come up with HINAB. It's like something pretending to be a word though it isn't (German has a lot of those too). I'm impressed.

[DRL to EAC]: If you look closely at my first three guesses, you'll realise that I had already ruled out the other vowels [*in fact O had not been explicitly ruled out, but it was effectively unavailable because of the presence of both A and I in the word*] and most of the other consonants - even Z. Both R and D were out of contention, which meant that HERxx and DAxxx were not possible, and H, N and

B were among the few available consonants. As soon as I realised that, HINxx suggested itself, and when I saw that B was still available I had it.

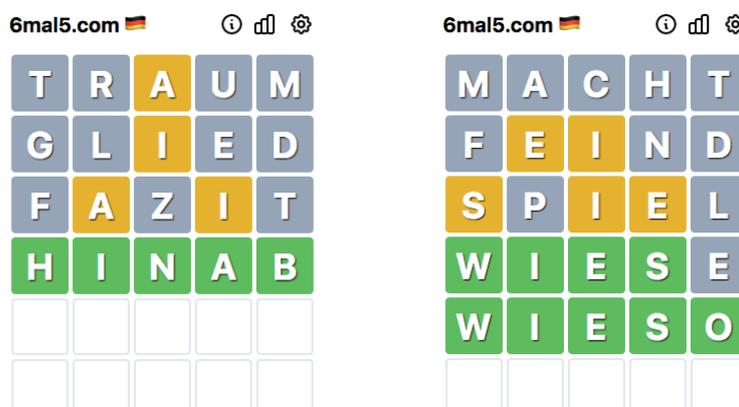


Figure 8: DRL's German games, 24 April 2022 (left) and 5 May 2022 (right), in which the target words were closed-class words. Further detail in the text.

About ten days later (5 May) DRL picked up the topic once more (Figure 8, right):

Meanwhile, I attach more evidence of the invisibility of function words to lexical search. WIESE was an educated guess - after SPIEL I was pretty sure that xIESx was the most plausible resolution - and when the green letters popped up one at a time I figured I had it, but then the last E stayed resolutely grey. WTF? None of the remaining consonants worked. It took me a good few seconds to realise that O worked just fine.

EAC responded in a practical mode<sup>4</sup>:

Ha, very revealing. We should keep these notes and files. I've needed some way to present the open/closed division in the past.

## 5.2. Different strata in the vocabulary:

DRL regularly observed over the period of the study that in the German game the effect of borrowings and classical/Latinate vocabulary on constraining potential guesses was substantial, meaning that such target words were often fairly easy to guess. Three examples are shown in Figure 9. In the left-hand panel, it becomes clear at turn 4 that the word has the form **xxNRE**, which would be impossible in a native German word; the French loan **GENRE** was an obvious solution. In the middle panel, the first two turns show that the target word contains both *O* and *I* but neither *A* nor *E*; knowing that *O* and *I* seldom if ever occur together in a syllable nucleus suggests a target word with **-OT** as the final syllable, which was virtually guaranteed to be a non-native word. Similarly in the right-hand panel, the first three turns show that *A* must occur as the last letter - all but impossible in a native word - and that the first syllable must have *O* or *U* (or perhaps *Y*) as its vowel. The guesses **IDIOT** and **KOMMA** followed easily.

<sup>4</sup> In response to EAC's suggestion, the full email correspondence is reproduced in Appendix 2.



Figure 9. Foreign words in DRL's German games. Left to right: 8 May 2022, 15 June 2022, 12 November 2022. For discussion see text.

By contrast, both DRL and EAC found that English loans used as target words in non-English Wordle games were more difficult to guess. This topic came up only once in the email correspondence; by coincidence, both on the same day (2 May):

[EAC to DRL:] I have done the Dutch one, but it drives me mad because there are SO MANY ENGLISH WORDS in what passes for a separate language!

[DRL to EAC:] I was just going to mail you to say EXACTLY THE SAME THING! Today's [*German*] word was BOXER! Others have included EXTRA and TRICK.

These reactions are consistent with the idea that when people who know more than one language use one of their languages, they may somehow actively inhibit the other(s); see e.g. Baum & Titone 2014 for a review. If both EAC and DRL were inhibiting their English lexicon when playing Wordle in Dutch or German, it would help explain their strong reaction to discovering that the target word was one they had implicitly ruled out.

### 5.3. *The role of word stress in lexical access:*

This topic also came up only once in the email correspondence, when DRL sent EAC the game shown in the left-hand panel of Figure 10, with the comment 'FYI. As you can see, the stress pattern must have had an effect on my lexical search.' EAC, known among many other things for work suggesting that word stress is irrelevant (Cutler 1986) or only marginally important (Cutler et al. 2004) in lexical access in English, did not respond to this comment, and the only other occasion where there seemed clear evidence of a role for word stress in DRL's performance (also shown in Figure 10) occurred after EAC's untimely death. It would have been interesting to discuss these cases further, and I regret that such discussions are no longer possible.

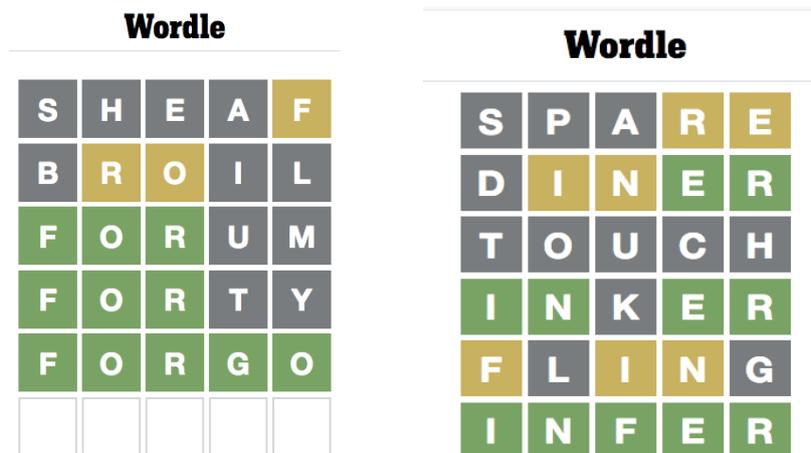


Figure 10: DRL's English games, 1 May 2022 (left) and 8 December 2022 (right). In both cases DRL initially restricted his mental search space to words with stress on the first syllable and it was only after noticing the possibility of stress on the second syllable that he found the target words.

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## Appendix 1: Differences between different versions of Wordle

1. *Acceptable forms*: The rules and the basic layout are the same in all four languages, with minor variations. The most obvious difference involves inflected forms, which in the three non-English languages would substantially increase the number of possible 5-letter words. The French version seems to accept non-finite verb forms (e.g. infinitives and past participles) but not finite forms (e.g. person-marked present tense forms); thus **ECRIT** is acceptable as a past participle ('written') but **ECRIS** (e.g. '(you) write') is not. However, the French version does accept adjective forms marked for gender and number, including past participles; thus **FINIS** – which could be a person-marked present tense form – is acceptable because it is also interpretable as a plural past participle. The Italian version originally seemed not to accept inflected finite verb forms but later did; the German version consistently does not accept inflected verb forms or oblique case forms of nouns.

2. *Acceptable words*: Aside from the observations in the preceding paragraph, I have no inside knowledge of which words are included in (or explicitly excluded from) the lists of target words, or to what extent words other than permissible target words can be used as guesses. From informal observations, all three non-English versions allow generally used foreign words as target words (e.g. **GENRE** or **PARTY** in German, **CLOWN** in French, **NINJA** or **ROBOT** in Italian). This is discussed briefly in section 5.2. At least the French and Italian versions accept some traditionally taboo words (e.g. **FOUTU** and **MERDE** in French). In Italian, over the course of the study there appears to have been an increased reliance on very low frequency technical terms as target words (e.g. **DICCO** '(geological) dike' or **UBBIA** 'phobia, anxiety'), but it is possible that this is simply an erroneous impression.

3. *Diacritics*: In French, in keeping with a common convention applying to words written entirely in capital letters, diacritical marks (including the acute, grave and circumflex accents, cedilla, and dieresis or *tréma*) are completely ignored. Thus **PECHE** could represent any of *pêche*, *pêché* or *péch  *. In German, also in keeping with normal orthographic practice, words that would normally have a vowel with an umlaut (dieresis) are respelled with an *E* following the affected vowel if the umlaut is not available; for example *bl  d* 'stupid' comes out as **BLOED**. Words containing umlaut are therefore effectively limited to four letters and are seldom used as target words. In Italian, the game originally had special keys for accented final *  * and *  * (in e.g. **CITT  **) but changed after a few months to eliminate them and added *W*, *X*, and *Y*, which are only used in foreign words.

## **Appendix 2: Email correspondence between DRL and EAC, April-May 2022**

The following is a complete record of what EAC and DRL wrote to each other about Wordle. The emails are reproduced as originally written; only material irrelevant to Wordle is edited out. Explanatory comments in square brackets are occasionally included to clarify sequences of overlapping replies. No explanation is given for obscure remarks and no translation is given for non-English words and phrases. Screen shots of games that were sent as attachments are included as small figures; subject lines are included only when they are integral to the message. Time and date specified for all messages refers to local time in the UK when the message was sent or received on DRL's mail server; all of EAC's replies were sent later the same day or early the following morning, Australian time.

### ***1. Scene-setting and general observations, 8 - 12 April***

*DRL to EAC, 08 April 2022 14:51*

Have you fallen victim to Wordle? I am already getting kind of bored with it, but I have to keep going for at least another 3 weeks or so. I started doing it in my 4 usable languages on the same day, and am keeping statistics on my performance in the different languages. I took stock after day 50, and need to keep going until day 100 so that I can see if there's any evidence of improved performance (I don't think there is, or if there is, I would need to keep going for many more months to get a big enough sample). But mostly I'm interested in the differences between languages. There is clearly a confound with my own competence in the four, although I suspect that is minimal, because already on day 50 it was clear that my best performance is in Italian, and that is a function of regular orthography and very restrictive phonotactics. My worst performance is in French, which mostly has to do with all the damn silent letters, which makes it harder to search the mental lexicon with the available letters after 3 or 4 guesses. I almost missed the ordinary word VINGT one time for exactly that reason. Anyway, the other thing that is very clear is that it is a lot harder to search your mental lexicon for function words. The people behind German Wordle (6mal5) exploit that a lot - several times the target word has been things like WORAN and DAHER. And the English one used SHALL sometime last week, which was also a bit tricky. Now that I'm alert to that, I try to see if there's an obvious function word I'm missing when I'm stumped after turn 4.

*EAC to DRL, 08 April 2022 22:28*

Yes, I do Wordle, it's fun to do with a mate or 2. Only English, but yes - I knew back in the 70s already that readers/listeners have a scale of "wordiness" whereby function words are not "real words" like content words are, and yes, there is a very strong content/function effect in Wordle. THOSE and COULD showed it as well as SHALL.

> The people behind German Wordle (6mal5) exploit that

Really???? People? They don't have an algorithm? I refuse to accept that.

*DRL to EAC, 09 April 2022 07:42*

People/algorithm. Come on, you know what I mean. I didn't mean that I thought there was a person sitting down each day to think of a five-letter word, but somebody had to set up an algorithm to choose words, and I'll bet they somehow prioritise functiony words and words that repeat letters (which I also find harder). There are definitely different algorithms for the different languages - the French one is happy to use inflected forms (more silent letters), whereas the German and Italian ones aren't. For example, this morning's French one is VECUE, rarely used feminine form of the past participle of VIVRE. (Note also that - consistent with general practice, the French one ignores diacritics because it's all capital letters, whereas in the German one you have to spell the umlaut in with an E (my starting guess yesterday was SPAET) - VECUE is really VÉCUE.) In today's French one, I knew it was \_EC\_E after my 4th guess, and I had ruled out enough consonants to be pretty sure that the 4th letter was U, so VECUE was an obvious guess, but it could also have been DECUE, i.e. DÉÇUE, and if I was wrong about the U I could have run out of guesses, so on guess 5 I tried DUVET. That confirmed U and V, so I was pretty safe guessing VECUE on my last try.) Anyway, there seems to be a real person behind the French one, because the game itself is called LE MOT, and it's visually very different from the other lgs I do, and there's a button "Soutenir l'auteur de ce projet" where you can, I assume, donate. (BTW the instructions for the French one say that there's a different word each day "choisi aléatoirement".)

*EAC to DRL, 09 April 2022 08:37*

Doing Wordle with yourself alone, even in multiple languages and with the intention of writing an article about it after 100 days (please do) - fine, but it seems to me you're missing out on its principal source of delight, which is doing it with one or more buddies. See social media (this statement based on zero personal knowledge). The originator made it as a gift to his beloved, no?? 'Nuff said. Its function in my opinion is almost totally social. ... It just works to brighten your day.

(P.S. Wordles, English, yesterday and today (Friday, Sat. [8-9 April])). You did them? Now guess what my everyday starter word is.) [*The thread from this PS continues below, 9 April at 09:39.*]

*DRL to EAC, 09 April 2022 09:27*

For me, Wordle is just competition with self, and revelling in the hidden curiosities of language. ... If I were doing it with someone else, I'd probably set things up so that we were competing AFTER the first word - that is, each start the game on separate devices and agree on the first word, then see whose tactics are more successful in getting the target word. I did do Wordle in English yesterday and today, but I find I forget them almost as fast as I do them, so I have no idea what your starter word is. I like to take inspiration from chance associations and use a different starter word every day, though I usually use consonant-heavy words - CCCVC, CCVCC, etc. - which tends to rule out lots of possible clusters pretty quickly.

*DRL to EAC, 09 April 2022 09:31*

PS: I attach today's German Wordle. Here I made explicit use of knowing that repeated letters are often the key to solving sequences that otherwise seem impossible.



*EAC to DRL, 09 April 2022 09:39*

*[Continues thread from previous PS, at 08:37]*

All right, here's my demo in a tinier form. Friday's Wordle was SCARE. Saturday's Wordle was - I hope you really have already done it - STAIR. What is my standard starter word?

*DRL to EAC, 09 April 2022 09:57*

I'm guessing your standard starter word must be SPARE, but if not I'm still missing the point.

At the risk of setting the poes among the duiven, see <https://woordle.nl/>

*EAC to DRL, 09 April 2022 10:01*

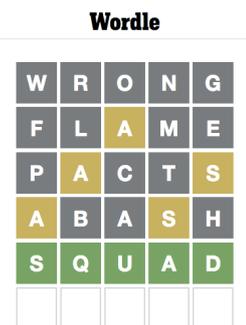
Even better, it's STARE. But you get the point – it's a possible question.

My Dutch colleague already introduced me to the Dutch version

*DRL to EAC, 11 April 2022 16:58*

I think it is now safe to send you the attachment - this is the English Wordle from Monday 11 April, which should now be history for you - but if for some reason I'm wrong and you haven't done the 11 April one, don't open the attachment yet.

Anyway, I just thought I would send it as an interesting case of the power of negative evidence, together with the value of a general strategic imperative to stay aware of the possibility that a low-frequency letter will provide an obvious key. My turn 5 was certainly not the only possibility (though I still can't think of anything else), but it was more than just a lucky guess.



*EAC to DRL, 11 April 2022 22:53*

Absolutely agree!

Mine was a 3 - STARE SALON SQUAD

STARE is my go-to starter, as you already know. The 2nd guess was mainly to test position for my yellow A, but of course I tossed up a couple of my favourite 2nd-guess letters too (L, N). After that, I made a list of words of the pattern S\_ \_A\_ and it was quite lengthy but ALL of them were ruled out for having a T or R or E or L (SPRAT STOAT SPRAY SPLAY SPEAK SCRAP SEDAN – on and on it went but only SQUAD didn't have any of those 4 letters. I reckon you actually didn't have any more options either). Yes, negative evidence is really powerful. Note that my captain's choice at move 3 was to go for A in 4th not last place. There are algorithms around that will generate these possibility sets for you but that would spoil the fun, no? Especially when you're comparing your performance across languages, I suppose.

*DRL to EAC, 12 April 2022 06:40*

Right - I enjoy the fun of having a non-fixed starter, but whatever I choose I always aim to test both L and R within the first two turns, because if you know they're NOT there you rule out almost all 3-letter onsets (except SQU and a few other oddballs). And in the present case, I also went for A in 4th rather than 5th place. I always only do Wordle in my head - I don't write anything down, though I do mutter possibilities to myself. VERY occasionally I check if a phonotactically legal word in one of my non-English languages is a real word, but actually yesterday's French word was unfamiliar (EPRIS, past participle of EPRENDRE) and I guessed it anyway. My previous guess (turn 3) was PIREs, which gave me all 5 letters in wrong positions, and as far as I could see there was no other possibility - I didn't think SPIRE was a word, and I was sure EPRIS would be the past participle of EPRENDRE if that actually existed, so I gave it a shot. It turns out SPIRE *is* a word, but I still had a couple of guesses to play with if EPRIS didn't work.

*EAC to DRL, 12 April 2022 13:17*

I am sometimes tempted to vary my Wordle starter, but it has served me well and created so many memories of useful fragments that I am sure losing it would cost me time (I know people who spend serious time on this game - and I don't mean you but ordinary one-language users. I am still deeply impressed with your multi-lingual record!!) Also, I don't write down much, but I love the way I get prompts from skeletons of words of the kind I reported in an earlier mail. For a generally auditory person, it reveals to me that even the NYMPHS and EPOXYs of this vocabulary have pegged out their little turfs. The game is just fun in many differently engaging ways. That guy really deserves what he earned from the NYT.

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## II. Literary interlude, 22 April

*DRL to EAC, 22 April 2022 09:22*

After our earlier exchanges, I can't resist sharing today's German one. As with a couple of previous cases, with the explicit knowledge that: (a) function words are less obvious but possible; (b) German has a whole bunch of compound adverbial things like DAMIT and HERAN that have 5 letters; and (c) that A and I only rarely occur next to each other in German, I managed to make what looks superficially like a daring leap to the answer.



BTW, I used TRAUM as the starter word because the Italian target that I had just (barely) guessed was SOGNO. I often let my starter words be inspired by that kind of thing.

*EAC to DRL, 22 April 2022 12:48*

That is really amazing. Even if I had stayed a German teacher for the past half century since I stopped, I doubt I would have come up with HINAB. It's like something pretending to be a word though it isn't (German has a lot of those too). I'm impressed. (Does German wordle give you comments like "impressive"?)

*DRL to EAC, 22 April 2022 13:54*

Yes, though to my way of thinking they don't match the number of guesses very well, and I can't remember which is which. One is "bemerkenswert", another is "weiter so!", and another is "wow!". I can't think of the others.

If you look closely at my first three guesses, you'll realise that I had already ruled out the other vowels and most of the other consonants - even Z. Both R and D were out of contention, which meant that HERxx and DAxxx were not possible, and H, N and B were among the few available consonants. As soon as a realised that, HINxx suggested itself, and when I saw that B was still available I had it.

*DRL to EAC, 22 April 2022 14:51*

PS: And come to think of it, I'm not sure if there's any such thing as long-term priming, but roughly a year ago I was in the middle of a few months preparing for one of the two online concerts that our choir did during the pandemic, including Brahms's setting of Hölderlin's "Hyperions Schicksalslied", which you must have read in one of your undergraduate literature courses. The first two verses talk about how easy life is for the gods, and then the third and final verse contrasts that with how shitty everything is for us mortals:

Doch uns ist gegeben  
auf keiner Stätte zu ruh'n.  
Es schwinden, es fallen  
die leidenden Menschen,  
blindlings von einer  
Stunde zur andern,  
wie Wasser von Klippe  
zu Klippe geworfen,  
jahrelang ins Ungewisse  
hinab.

I remember that verse made a big impression on me when I read it in one of \*my\* undergraduate literature courses, and after last spring I can once again recite it from memory - so that final dramatic "hinab" must have more than a few synapses connected to it in my lexical wetware.

*EAC to DRL, 22 April 2022 23:21*

Of course if you can recite it in poetry, the word is in your active lexicon and no priming is required. And you are right, the probability of my having read the Hölderlin verse is high. Now I read it, I want to keep it, it's beautiful, but I fear that it didn't make it into active availability all those decades ago, and so hinab was definitely not there for me to react to as a lexical reality!

But, thanks for the poem!

\*\*\*\*\*

### **III. Results and Discussion, 1 & 2 May**

*DRL to EAC, 01 May 2022 09:18*

[Attachment: graph similar to Fig. 4. of main paper.]

I'm sure you've been waiting eagerly for the results of my 100-day Wordle self-experiment. Executive summary: no change in overall picture: Italian is easiest, followed by English, German, and French in that order. Between days 1-50 and days 51-100, slight trend to "improvement" in the mean number of turns per game (clearest in German) except in French.

I haven't decided how long I will continue to do this, but at least now I know that my impressions are borne out by the data.

PPS - Methodological note: I weighted a miss (failure to guess word) as 7 for purposes of computing means. The only misses were in French - but also the only got-it-in-one lucky guess.

*EAC to DRL, 01 May 2022 09:36*

Yes, no surprises there. Italian has the simplest phonology so each bit of information carries more weight.

Day 100, eh? - So, I just went to tally up mine (of course). Turns out my 100th go (in a streak, overlooking just one case where I was so busy that I completely forgot to do the game that day), will be tomorrow!! That is, I discovered Wordle only in January and started playing regularly only after mid month.

Since you are now on your Sunday, tell me what you think of Sunday's word - it was unusually uninformative, I found. (And that of a word which is so familiar, starring in one of my standard Rare Stress Pairs of English !!)

I will see how much info I have from the 100 days and get back to you. (Tomorrow, when I can include #100).

*DRL to EAC, 01 May 2022 10:02*

FYI. As you can see, the stress pattern must have had an effect on my lexical search.

**Wordle**

S	H	E	A	F
B	R	O	I	L
F	O	R	U	M
F	O	R	T	Y
F	O	R	G	O

*EAC to DRL, 02 May 2022 04:25*

So I have today reached 100 (in the Wordlesphere), and the mean score, after carefully including two 7s acquired in the first fortnight, is 38.2. Our distributions are very similar, even unto me also having 38 4s.

*DRL to EAC, 02 May 2022 07:12*

You mean 3.82? In which case you did considerably better than me (4.10). But I wasn't quite sure of the best way to quantify the central tendency.

Funny story from today: playing tactically vs. what-the-hell guessing. My first guess was CURSE (R and S both OK but in the wrong place) and my second was BROAD (R still in the wrong place, and O in the right place). I figured it was very likely SxORx, and the second x had to be either Y or a consonant (e.g. STORK or SCORN), so I was all set to guess STORY, but then to constrain subsequent guesses I wanted to rule out I (while still testing -Y), so I went for SPIKY instead. That confirmed SxORY, so I got STORY in 4, but could have had it in 3 if I had thrown caution to the winds.

*EAC to DRL, 02 May 2022 07:22*

Indeed I meant 3.82, typing too fast. Here's today's confirmation that how you get there doesn't matter, it usually comes out the same whatever route you choose : mine was STARE STORK STORM STORY - and exactly as you had, my initial list included the answer. I've done this before - set a rule (e.g., go alphabetical, or go by frequency) and wished I'd chosen otherwise. Well, it IS fun, just for a few seconds or minutes of an otherwise too stressful day.

*DRL to EAC, 02 May 2022 07:24*

*Subject line:* Sequel to mail just sent. [07:12]

I started the Italian game with STARE, which gave only S in the wrong place (but ruled out A and E and anything of the form cvSTv). So I tried DISCO, which revealed xxSCO as correct (and ruled out I). Phonotactically, that required xOSCO or xUSCO, so I was all set to guess BOSCO ('woods'), but then thought I should test something impossible that would rule out more of the still available consonants. But then I remembered what happened with STORY in the English game a few minutes earlier and figured what the hell and consequently got BOSCO in 3.

*DRL to EAC, 02 May 2022 07:29*

So clearly I should go for STARE as a fixed opener, given the difference between 3.82 and 4.10. But I have too much fun choosing openers on a whim, and letting the languages cross-fertilise. (After STORY was the English word just now, I started the French game with STORE.)

*EAC to DRL, 02 May 2022 07:33*

Bravo on today! I have done the Dutch one, but it drives me mad because there are SO MANY ENGLISH WORDS in what passes for a separate language!

*DRL to EAC, 02 May 2022 07:47*

Having finished my daily series with the German one, I was just going to mail you to say EXACTLY THE SAME THING! Today's word was BOXER! Others have included EXTRA and TRICK.

However, I did learn a new real German word the other day, namely KNIFF (which actually means something like German TRICK).

Enough for now...

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**IV. Meta-Wordle, dialect differences, and more examples, 4-14 May**

*DRL to EAC, 04 May 2022 06:27*

Sometimes in my daily series I let the solution to Language  $n$  inspire the starter word for Language  $n+1$ . Today I got a perfect chain. I'll send the details in the next message, which you shouldn't read if you haven't done today's (4 May) already.

*EAC to DRL, 04 May 2022 06:29*

I have done it - one of those cases where I had a list differing only in the final letter, with more list members than remaining guesses....

*DRL to EAC, 04 May 2022 06:39*

In English today, for no particular reason, I started with SMEAR and got to TRAIN. Just for the hell of it, I then started French with TRAIN and got to the solution LONGS (plural of LONG - I told you all the silent letters make the French one harder). So I went on to start Italian with LUNGO and got to the solution REGNO (kingdom). I realised I could continue in German with REICH, and actually got to the solution MACHT on the next turn. It's not easy to find (near-)synonyms that have 5 letters in two languages, so the chain is quite unusual. The final lucky guess is irrelevant to the point of this story, but it occurs to me I could try tomorrow starting English with POWER and see if I can stretch the chain over two days.

*DRL to EAC, 04 May 2022 06:56*

Yes, I first guessed TRAIL, but TRAIN was the only alternative I could think of so I went for it - I had already ruled out TRAIT with my second guess (CRYPT).

Sometimes in that situation I put in a tactical wrong guess that eliminates more than one of the possible single letters that I haven't got enough guesses left for. But that's quite difficult in Italian, where the restrictive phonotactics increase the possibility of rhymes or other sets differing in only one letter (e.g. today's REGNO, but also DEGNO, LEGNO, SEGNO).

*EAC to DRL, 04 May 2022 07:03 [replies to DRL's message of 06:39]*

Inventing games that no-one has ever played, just for one's own amusement! I love it!

That is such a nice progression across today's lot.

But - as your following mail [*refers to DRL's message of 06:56*] makes clear!! - what I always say is also true: The vocabulary is the source of impact for any particular word. The relative number of 5-letter words compared to vocabulary size is, for instance, very different across the languages you're working with (see also attached). English has proportionally more. Wordle as it is is an English game. What we now need is a vocab-structure-based measure to apply!!

*DRL to EAC, 04 May 2022 09:09*

I agree that it's probably no accident that Wordle was invented in English. I've often wondered what a 6-letter version of Italian Wordle would be like, because it would open possibilities well beyond CCVCV and CVCCV - there are some with only 5 letters, but you'd get a lot more with 6, including CVCVCV, CVCCCV, etc. On the other hand, it might turn out to be too hard with only 6 guesses. The German VE convention for V-umlaut seriously restricts the number of possibilities with umlaut (in effect, to only four letters), but 6 letters would give you far too many non-umlaut possibilities. (Whenever I'm in the US and see a US newspaper, I always do the "Jumble" game on the comics page. Invariably they have two 5-letter words and two 6-letter words in addition to the hidden clue, and I always find the 5-letter words MUCH easier than the 6-letter ones. Combinatoric explosion, or whatever they call it.)

It occurs to me that a way to make Wordle competitive on a day-by-day basis (as opposed to long-term average scores) would be to confer ahead of time to agree a starting word. After that, chance plays far less of a role, and you could see who "won" each day.

BTW if you haven't tried Eldrow, it almost always guesses your word in 3 or 4 turns. I've occasionally held it to 5, but not often. I got bored with Eldrow pretty quickly as a result.

*DRL to EAC, 05 May 2022*

Meanwhile, I attach more evidence of the invisibility of function words to lexical search. WIESE was an educated guess - after SPIEL I was pretty sure that xIESx was the most plausible resolution - and when the green letters popped up one at a time I figured I had it, but then the last E stayed resolutely grey. WTF? None of the remaining consonants worked. It took me a good few seconds to realise that O worked just fine.



*EAC to DRL, 05 May 2022 08:43*

Ha, very revealing. We should keep these notes and files. I've needed some way to present the open/closed division in the past.

*DRL to EAC, 05 May 2022 15:45*

Attached is my English effort from today. Shows the folly of merely guessing at the gaps once you've got 3 green letters. In fact, thanks to my American background, I was probably lucky to have guessed HOMER at all. But I should have made a few more strategic attempts along the lines of RIVEN to eliminate more consonants before trying to guess the two missing letters that I got by chance on guess no. 1. (If you have been following closely - and you could be forgiven for not having done so - you will remember that POWER was my attempt to keep yesterday's chain (based on German MACHT) going for another day. HOMER certainly put paid to any attempt to continue the chain!)

#### Wordle

P	O	W	E	R
R	I	V	E	N
F	O	Y	E	R
L	O	S	E	R
B	O	X	E	R
H	O	M	E	R

*EAC to DRL, 05 May 2022 20:56*

Indeed, pity about the chain, but it does emphasise where the possibilities come from, and it ain't anything to do with meaning! Meanwhile, I felt aggrieved by homer's very existence, and fought against it:

STARE MINER COMER HOMER

*DRL to EAC, 06 May 2022 11:01*

Sorry, can't resist. The first guess was luck, of course, but still.

*EAC to DRL, 06 May 2022 12:58*

Far out!

6mal5.com    

H	E	R	A	N
A	H	N	E	N

*DRL to EAC, 08 May 2022 07:58*

More loan words!

*EAC to DRL, 08 May 2022 08:11*

It's like the game is playing the players!

6mal5.com    

F	R	I	S	T
H	A	B	E	N
V	O	R	N	E
R	U	N	D	E
G	E	N	R	E

daily

**VERBA**

T	E	R	Z	O
L	A	M	P	O
D	I	S	C	O
F	U	N	G	O
N	U	O	V	O
B	U	O	N	O

*DRL to EAC, 11 May 2022 06:50**Subject line: what are the chances?*

Three consecutive guesses with no hits at all except the final vowel! All completely ordinary words.

When the N showed up on guess 4, I defaulted to onset-based lexical search and tried NUOVO, never even having spotted that BUONO was just as possible given what I knew. When that didn't work, I still had my last guess.

*EAC to DRL, 11 May 2022 08:51*

OMG! With the answer being one of the few Italian words even I might come up with spontaneously!

Meanwhile.... (Have you done Wed's English yet? If so, see further below, if not, PUT THIS AWAY FTTB)

I had the English answer as a very early guess but then I thought: no, it's spelt differently, I'll try another word with the one letter I got from my starter in that position - where it was green; then another 2 words with not that much progress... till I thought - hey, maybe it \*IS\* spelt that way in America???

*DRL to EAC, 11 May 2022 08:51*

I assume you're referring to the FETUS/FOETUS issue. (In the UK, today's word was FARCE, which I've never seen spelled/spelt any other way.) But I read a thing about FETUS/FOETUS the other day - apparently they decided to pull FETUS as being too hot a political potato after the Supreme Court leak, but didn't do so everywhere. Is that what you're talking about? If not, please amplify your comments!

*EAC to DRL, 11 May 2022 10:33*

No, sorry, I meant Tuesday's word, GECKO. Our geckos here are gekkos, spelt thus, a South Asian variant according to Wikipedia. My first thought of it was ruled out on spelling, but later with the options disappearing it finally occurred to me to check how it was spelt in US.

*DRL to EAC, 11 May 2022 11:05*

Oh, OK. ... I didn't keep a copy of what I did with GECKO yesterday, but I got it, in 4 if I recall correctly. I had ruled out A and I, and had E and O but in the wrong places. I don't remember which consonants I had, but I remember thinking that GECKO was a mildly inspired guess but by no means a brilliant leap in the dark, so I didn't keep a screen shot.

*DRL to EAC, 14 May 2022 07:30*

Don't read further if you haven't done the Wordle for Sat. 14 May.

Meanwhile you can enjoy my deductions on the attached German one. I didn't know the German word PRALL either, but I figured that it was highly plausible given what I had ruled out, and thought it sounded like it might be a real word. Apparently it means tight or taut.



Anyway, PRALL was the end of a chain that began with my starter for today's English one. Scroll down for details.

CHAOS – METAL

METAL – ODEUR

ODORE – LATTE

MILCH – PRALL

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### **V. Postscript**

*DRL to EAC, 28 May 2022 08:37*

I thought you might like today's German Wordle (attached). After three tries with only one vowel hit, I had ruled out an alarming number of the remaining vowels and consonants. Try 4 was designed to test the remaining vowel and four more consonants. There were hardly any possibilities left after that, but I suddenly realised that using \*three\* of the same consonant did the trick.

