Vowel harmony is a phonological phenomenon, common in many languages (e.g., Finnish, Turkish, and others) in which some vowels cannot be together with some others in (monomorphemic) words. The reason for vowel harmony in these languages is that, because of the way vowels are pronounced in a word, it may be easier to combine some vowels with other (e.g., front vowels with front vowels, and back vowels with back vowels). For instance, in Turkish, which is the language used in the present experiment, there are four front vowels (i, ö, ü, e; [/i/,/ø/,/y/,/e/]) and four back vowels (ı, o, u, a; [/ɯ/,/o/,/u/,/a/]). Typically, monomorphemic Turkish words are composed of only front vowels (e.g. güven [trust] and ödül [award]) or only back vowels (e.g. karar [decision] and yakın [near])

As also happens in languages like Finnish, compound words may contain one word with back vowels and one word with front vowels (e.g. kitap [book]). There are, however, a number of words in Turkish in which vowel harmony does not occur—this is often the case of loan words (parti, [party]), but it may also happen in Turkish words (haber [news]).

There is some evidence of the effects of vowel harmony on spoken word recognition. Vroomen et al. (1998) examined whether vowel harmony was effective in the absence of word stress. In a study covering three languages; French (does not contain vowel harmony and initial word stress), Dutch (contains only initial word stress), and Finnish (contains vowel harmony and initial word stress). According to the results, absence of a stress cue, Finns harmonious words were segmented more easily than disharmonious words.

İn the second part of the experiment, examined whether vowel harmony is effective when there is a word stress. Results showed that when the initial syllable is stressed, Finns found easier the task. There is no difference between harmonious and disharmonious words that the study result means.

In the last part of the experiment, it was examined whether French, Dutch, and Finnish would benefit from word stress and vowel harmony in the produced artificial languages. According to the results, In Finnish and Dutch, the stress mark on the first syllable of the word was used, but the vowel harmony effect was only in words without a stress mark in Finnish. In French, however, neither existed. This is a result that is compatible with the phonological structure of languages. Looking at the overall results of the experiment, vowel dissonance and word stress were used as cues to determine word boundaries in Finnish in an interdependent manner.

The question here is whether the effects of vowel harmony also apply to printed word recognition. Indeed, the evidence of vowel harmony effect during visual word recognition is extremely scarce. In a recent lexical decision experiment conducted in Finnish, disharmonious pseudowords produced faster responses (i.e., it was easier to say “nonword”) than harmonious pseudowords (Perea et al., 2022). While these findings revealed that it is possible to find an effect of vowel harmony during printed word recognition, the focus was only on pseudowords. One might argue that disharmonious pseudowords may induce less word-likeness (because of the disharmony), producing faster “no” responses. Keep in mind that all words in the Perea et al. (2022) were harmonious, so that any disharmonious letter strings were necessarily pseudoword—note that it is extremely difficult to find disharmonious words in Finnish (beyond a small set of loan words). Notably, as indicated above, it is possible to find a reasonably large set of disharmonious words in Turkish, thus avoiding this interpretive issue. Furthermore, using Turkish allows us to manipulate vowel harmony for both word and nonword stimuli.

In the present lexical decision experiment, we selected two types of Turkish words: words that comply with vowel harmony (i.e., all front vowels, or all back vowels; resim [picture], takım [team]), and words that did not comply vowel harmony (i.e., containing both front and back vowels; beyaz, [white]). In addition, we created two types of pseudowords in Turkish: harmonious (düvem) and disharmonious (minya). In both types of sets, we controlled for the size of the orthographic neighborhood (e.g., OLD20, Yap et al., 2009).

The predictions are as follow. If vowel harmony plays a role during visual word recognition in Turkish, we expect to find: (1) faster responses to harmonious words than disharmonious words, and (2) faster responses to disharmonious pseudowords than harmonious pseudowords. This is actually the pattern reported by Kiliç (2017) in a lexical decision experiment that was part of an unpublished master’s thesis; however, this experiment did not contain the specific details of the manipulation.