

# Pigeons can learn to distinguish real words from non-words

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Dr Damian Scarf. Credit: University of Otago

Pigeons can learn to distinguish real words from non-words by visually processing their letter combinations, surprising new research from the University of Otago in New Zealand and Ruhr University in Germany shows.

The researchers found that [pigeons'](#) performance was on a par with that previously reported in baboons for this type of complex task. Their study, which is published in the prestigious international journal *Proceedings of the National Academy of Sciences (PNAS)*, is the first to identify a non-primate species as having "orthographic" abilities.

In the experiment, pigeons were trained to peck four-letter English words as they came up on a screen, or to instead peck a symbol when a four-letter non-word, such as "URSP" was displayed. The researchers

added words one by one with the four pigeons in the study eventually building vocabularies ranging from 26 to 58 words and over 8000 non-words.

To check whether the pigeons were learning to distinguish words from non-words rather than merely memorising them, the researchers introduced words the birds had never seen before.

The pigeons correctly identified the new words as words at a rate significantly above chance.

According to the study's first author, Dr Damian Scarf of the University of Otago's Department of Psychology, they performed this feat by tracking the statistical likelihood that "bigrams," letter pairs such as "EN" and "AL," were more likely associated with words or non-[words](#).

Professor Onur Güntürkün, one of the co-investigators from of Ruhr University's Department of Biopsychology, says "that pigeons—separated by 300 million years of evolution from humans and having vastly different brain architectures— show such a skill as orthographic processing is astonishing."

Another of the study's authors, Professor Michael Colombo of Otago's Department of Psychology, says "we may have to seriously re-think the use of the term 'bird brain' as a put down."

**More information:** Damian Scarf et al. Orthographic processing in pigeons (), *Proceedings of the National Academy of Sciences* (2016). [DOI: 10.1073/pnas.1607870113](https://doi.org/10.1073/pnas.1607870113)

Provided by University of Otago

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