

Exploring how birds use contractions

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Japanese tits combine alert and recruitment calls into alert-recruitment call

sequences when gathering other individuals to mobbing of a predator. Credit: KyotoU/Toshitaka Suzuki

Even birds value efficiency in communication.

A team of researchers at Kyoto University has found evidence that the wild passerine species *Parus minor* appears to merge two consecutive calls into a single vocal message.

The wide variety in human linguistic expression is thanks in part to the cognitive capability known as core-Merge, allowing us to generate and understand two words as one.

"Core-Merge allows us to distinguish a temporarily linked phrase that we might hear, regardless of the speaker's intention," says lead author Toshitaka Suzuki, a Hakubi scholar at KyotoU.

For example, when come and talk are uttered by a speaker, a listener hears and registers them as the phrase come talk. If those two words were independently uttered by two individuals, the listener would perceive each as two separate messages.

"This cognitive capability is considered to be at the core of human language but is not unique to us. Core-Merge has also been observed in *Parus minor*, also known as the Japanese tit," notes Suzuki.

Suzuki's team used this thinking to test whether *P minor* perceives a two-call sequence as a single unit when cooperating to ward off [natural enemies](#). Suzuki hypothesized that if the birds recognize a sequence of alert and recruitment calls as one unit, they should be able to distinguish between two-call sequences coming from an individual bird or the same

two calls from two individuals.

The team's results show that the wild passerines possibly decode the meaning of the sound sequence based on whether they recognize that the two calls are made together by a single individual. They do not simply respond to two temporally continuous sounds as might be in the case of two [birds](#) making independent calls.

"Although core-Merge is an ability we take for granted, our study demonstrates how [non-human animals](#) could utilize merging in their vocal [communication](#) as an aid to survival," concludes Suzuki.

The research is published in the journal *Nature Communications*.

More information: Toshitaka N. Suzuki et al, Experimental evidence for core-Merge in the vocal communication system of a wild passerine, *Nature Communications* (2022). [DOI: 10.1038/s41467-022-33360-3](https://doi.org/10.1038/s41467-022-33360-3)

Provided by Kyoto University

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