



Regular Article

# Song perception in the song sparrow: birds classify by song type but not by singer

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## Abstract

**Abstract.** Recent theories have identified song repertoires and song sharing among neighbours as potential obstacles to individual recognition. These obstacles can be at least partially overcome if the differing song types of an individual have common

'voice' or 'signature' traits, for these would allow a listener to discriminate between different singers' renditions of the same song type and generalize between the different song types of the same singer. Two perceptual experiments were carried out in the laboratory using operant conditioning methods, to compare the relative effects of song sharing and vocal signature traits on song discrimination. Song sparrows were first trained to classify the songs of several singers and then tested on unfamiliar song types of the same singers and unfamiliar shared songs of neighbours of the singers. Subjects failed to generalize from the familiar to unfamiliar song types of a singer, suggesting that 'voice' traits in song sparrows are non-existent or trivial at best. Subjects did, on the other hand, confuse the shared song types of different singers. These findings suggest that learning to discriminate between the shared song types of neighbours in the field may be no simple task, and that the songs of newcomers might be confused with those of residents, at least for a time.

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#### Song sparrows do not discriminate between their own song and stranger song

2020, Behavioural Processes

*Citation Excerpt :*

...In the present study we studied the same western population studied by Stoddard et al. (1992). Male song sparrows have a repertoire of about 9 distinct song types (median: 9, range: 6–13 songs) and in this population they show high levels of song sharing among neighbours (Beecher et al., 1994a, 1994b; Hill et al., 1999). This song sharing comes about by birds copying whole songs of older birds ('tutors'), who are often also neighbours (Beecher et al., 1994a, 1994b; Nordby et al., 1999)....

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#### The perception of self in birds

2016, Neuroscience and Biobehavioral Reviews

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#### Social cognition

2015, Animal Behaviour

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...Since sparrows apparently do not associate a particular male's song types based on common 'voice' characteristics (Beecher, Campbell, & Burt, 1994), listeners seem to learn each song type and associate it with a particular singer. During learning, when some song types or individuals are unfamiliar, subjects may make mistakes in their attribution of a shared song type (Beecher et al., 1994), but in at least one field study subjects responded strongly to an unfamiliar male's song even when this intruder mimicked the song type of a resident (Wilson & Vehrencamp, 2001). Faced with the problem of remembering large amounts of data, animals as diverse as rats, pigeons and humans search for a higher-order rule or pattern that makes the task easier (e.g. Macuda & Roberts, 1995)....

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## Learning and cultural transmission in chaffinch song

2015, *Advances in the Study of Behavior*

*Citation Excerpt :*

...In this, and in all subsequent studies, two chaffinch songs were considered to be of different types if one or more of their constituent syllables were judged to be of different types. This is a relatively stringent definition of song types compared to studies of other species, for example, song sparrows (e.g., Beecher, Campbell, & Burt, 1994). We collated similar published data sets from four other populations, and replicated the approach of Slater et al. (1980), estimating the mutation rates for each population over a range of simulated population sizes (Figure 10)....

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# Aggressive Signaling in Song Sparrows and Other Songbirds

2014, Advances in the Study of Behavior

*Citation Excerpt :*

...Territorial males also show evidence of individual recognition by song (Stoddard, Beecher, Horning, & Campbell, 1991). Song sparrows show no ability to associate together the different song types of one individual by common “voice” characteristics (Beecher, Campbell, & Burt, 1994), so recognition of individuals by song seemingly must involve learning and remembering each song type an individual sings. Song sparrows reared in acoustic isolation from other individuals develop abnormal songs (Kroodsma, 1977; Marler & Sherman, 1985), whereas young males exposed either to recorded songs or to live tutors produce songs that closely resemble species-typical adult song (Beecher, 1996; Marler & Peters, 1987)....

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2010, Brain and Language

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