**Discussion Questions**

to accompany

***Animal Behavior,* Eleventh Edition**

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**Chapter 2**

**The Integrative Study of Behavior**

2.1 Male white-crowned sparrows (*Zonotrichia leucophrys*) must learn to sing a particular dialect of the full song of their species. But this fact does not mean that genetic information present in the cells of white-crowned sparrows is irrelevant for the development of the bird’s singing behavior. Why not? In this regard, remember that white-crowned sparrow males can learn their species’ song far more easily than the song of, say, the white-throated sparrow. What about the finding that white-crowned sparrow males that hear white-crowned sparrow song only during a 40-day period early in life can nevertheless generate a complete song, although they do not start singing themselves for several months after their early exposure to a tutor’s song?

2.2 If you were to say that the scientific conclusion of Marler’s research on young captive white-crowned sparrows was that the birds could pick up a dialect by listening to tapes of white-crowned sparrow song in the laboratory, we would say that you were mistaken. What is the real point of this and all other scientific experiments?

2.3 The song of the white-crowned sparrow is composed of several parts or phrases, one of which is the “note complex” and another, the terminal “trill.” In playback experiments testing the aggressive response of male birds to modified songs, the researchers found that changes to the trill were more likely to reduce the male’s aggressive reaction than were changes to the note complex component (Nelson et al. 2004). With this background, predict how much improvisation will be done to the note complex versus the trill by young captive hand-reared birds exposed to social tutors in the lab. What is the basis for your prediction?

2.4 William Searcy and colleagues played recorded songs to captive female song sparrows (*Melospiza melodia*) that had been given hormone implants shortly after being taken to the laboratory from the wild (Searcy et al. 2002). The recorded songs came from male song sparrows that lived in the females’ population, as well as from males living various distances (18, 34, 68, 135, and 540 kilometers) from that population. Songs from males living 34 or more kilometers from the females’ population were not nearly as effective in eliciting the precopulatory display as songs from local males. However, songs from males living only 18 kilometers away were about as sexually stimulating as local songs. These data have relevance for more than one ultimate hypothesis on song learning by male sparrows. What are the hypotheses, and what importance do these findings have for them?

2.5 Parasites are often microscopic in size but have large negative effects on their hosts. If this is true for the parasites of songbirds, what predictions follow about their effects on male song performance, and how should females respond to the song of infected males as opposed to uninfected individuals (Garamszegi 2005)?

2.6 Both young males and young females of the sac-winged bat (*Saccopteryx bilineata*) appear to learn and eventually reproduce the territorial songs of harem-controlling males that associate with groups of females (Knörnschild et al. 2010). Why might males imitate a song tutor of this sort? And why might females do the same?

2.7 What features of language learning in humans are similar to song learning in birds? What do these similarities suggest about the genetic and developmental bases of human language learning? Do comparisons with birds also suggest some interesting hypotheses on the adaptive value of learned language for members of our species?

References

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