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Serial reversal learning using a colour discrimination task in two Ara species

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Abstract

Enhanced behavioural flexibility has been linked to relatively large brain size and social complexity. Aras exhibit both properties. We tested parrots of A. ambiguus and A. glaucogularis in a serial reversal learning paradigm, in which all the individuals completed an acquisition, and 10 reversal learning phases. Behavioural flexibility (and thus learning performance) was measured as the number of errors per trial. We also conducted social observations on individuals' social interactions. We found that both species made significantly fewer errors per trial during each reversal phase and over the course of ten reversal phases. All individuals gradually developed a generalised learning strategy i.e., 'win-stay-loose-shift', and thus showing 'learning to learn efficiently'. Our results also support the Social Intelligence Hypothesis whereby individuals' learning performance was positively related to social interaction. These results show that the two Ara species demonstrate behavioural flexibility, and social complexity provides one explanation for varied individual learning performance.