

## The innovation problem: factors influencing innovative tool use in human infants and cockatoos

### Abstract

Behavioural innovations allow humans and animals to solve novel challenges and to create new opportunities. Tool innovations are particularly useful for amplifying access to environmental resources and have had an important role in human technical evolution. While children are proficient tool users from the age of two, they show a surprising inability to innovate new tools until they are eight years old. The reasons for this phenomenon are poorly understood, yet greatly important for our understanding of human cognitive architecture in the technical domain. Tool innovation is not restricted to humans but is also found in other taxa: recent research on children was motivated by studies on birds. Goffin's cockatoos are outstanding tool innovators that lack obvious inherited predispositions for using objects as instruments. Studying the capacity for tool innovation in a species distantly related to us will expand our knowledge on its mechanisms and origins. The proposed project will combine knowledge from developmental psychology and animal cognition to investigate the mechanisms and ontogenetic development of tool innovation in humans and Goffins. We will investigate motivational systems (exploration strategies, play) as well as cognitive means for innovative tool modification/manufacture and combinations of more than one tool. We will test specific hypothesis drawing on known similarities and differences.

### Scientific disciplines:

501030 - Cognitive science (40%) | 501005 - Developmental psychology (40%) | 106051 - Behavioural biology (20%)

### Keywords:

tool use; tool manufacture; innovation; problem solving; avian cognition, child development

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Further links about the involved persons and regarding the project you can find at

[https://archiv.wwtf.at/programmes/cognitive\\_sciences/CS18-023](https://archiv.wwtf.at/programmes/cognitive_sciences/CS18-023)