ANIMAL CULTURES
Major study groups: Primates and other terrestrial mammals
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Outline

• Observation in the wild
• Captive experiments
• Field experiments
Observations in the wild

Imanishi 1957 *Psychologia*
Whiten et al. 1999 Nature
4,300-year-old chimpanzee sites and the origins of percussive stone technology
Culture in other apes

van Schaik et al. 2007 *Science*

Robbins et al. 2016 *PLoS ONE*
Neighbouring group differences

Chapman & Fedigan 1990 *Folia Primatologica*

Perry et al. 2003 *Current Anthropology*

Mc Grew et al. 2001 *Current Anthropology*

Tan et al. 2015 *PLoS ONE*
27 putative cultural traits in three neighbouring chimpanzee communities

- Tool use
- Foraging
- Social interaction
- Communication
- Hunting behaviour
Peering as a proxy for social learning

Schuppli et al. 2016 Animal Behaviour
Animal cultures: how we’ve only seen the tip of the iceberg

Figure 4. Different operationalizations of culture. The cultural behaviors captured by the MoE ($C_{ME}$) are socially learned behaviors with a patchy geographic distribution but without ecological correlates (mostly conspicuous and/or high complexity behaviors such as tool use). The cultural behaviors with ecological correlates ($C_{Ecol}$) are socially learned behaviors that vary between populations because they are influenced by a population’s local ecology (e.g., feeding skills). The sum of $C_{ME}$ and $C_{Ecol}$ are all socially learned behaviors that vary across populations ($C_{var}$). Cultural universals ($C_U$) are socially learned behaviors and knowledge that we find consistently across populations (e.g., basic subsistence and social skills). The sum of all socially learned behaviors represents an individual’s cultural knowledge ($C_1 = C_{var} + C_U$). See supplementary Table S3 descriptions of the behaviors depicted on the pictures.

Schuppli & van Schaik 2019 *Evolutionary Human Science*
Matriarchs as repositories of social knowledge in African elephants

McComb et al. 2001 Science
Migration routes in bighorn sheep and moose

Fig. 3. Green-wave surfing knowledge and migratory propensity over time. (A) After translocation, populations of bighorn sheep (orange circles) and moose (purple circles) require decades to learn and culturally transmit information about how to best surf green waves, (B) eventually leading to the establishment of migration, which (C) takes many generations (the generation time for bighorn sheep and moose is ~7 years). Circles represent estimates of surfing knowledge and migratory propensity for a given population in a given year (i.e., a migratory event). Circle size depicts the amount of confidence (inverse variance) in each estimate. Black lines and gray shaded areas illustrate fitted generalized linear model predictions and their 95% confidence intervals. All relationships are significant at $P < 0.01$.

Jesmer et al. 2018 Science
Captive experiments

Whiten et al. 1996 *Journal of Comparative Psychology*

Voelkl & Huber 2000 *Animal Behaviour*
Conformity to cultural norms of tool use in chimpanzees

Amy Whiten

Whiten et al. 2005 Nature
Conformity in Norway rats?

Figure 1. Mean ± SE percentage of diet cin eaten by experimental and control subjects on days 1 and 2 of experiment 1.

Galef & Whiskin 2008 *Animal Behaviour*
Majority-biased transmission in chimpanzees and human children, but not orangutans

Haun et al. 2012 *Current Biology*
Diffusion dynamics of socially learned foraging techniques in squirrel monkeys

Claïdière et al 2013 Current Biology
Field experiments
Experimental evidence for social transmission of food acquisition techniques in wild meerkats

Thorton & Malapert. 2009 Animal Behaviour
Selective attention to philopatric models causes directed social learning in wild vervet monkeys.

van de Waal et al. 2010 *Proceedings of the Royal Society B*, van de Waal & Bshary 2010 *Folia Primatologica*
Imitation and traditions in wild banded mongooses

Videos!

Figure 4. Juveniles' Preferences for Opening Techniques
Percentage of test trials during which the smashing technique was preferred (black), the biting technique was preferred (white), or no preference occurred (gray). The "No opening" category combines categories Open and None. *p < 0.05.

Müller & Cant 2010 *Current Biology*
Evidence for social learning in wild lemurs
(Lemur catta)

Kendal et al. 2010 Learning & Behavior
Wild redfronted lemurs use social information to learn new foraging techniques.
Honey dipping experiment on wild chimpanzees

Gruber et al. 2011 Scientific Reports
Video demonstrations seed alternative problem-solving techniques in wild common marmosets

Gunhold et al. 2014 *Biology Letters*
109 trained individuals

N = 26

N = 24

N = 24

N = 35

LEMON TREE GROUP

ANKHASE GROUP

NOHA GROUP

BAIE DANKIE GROUP

1 km
Vertical social learning

van de Waal et al. 2013 Science
‘When in Rome, do as the romans do’

Aplin et al. 2015 Nature

Luncz et al. 2015 American Journal of Primatology

van de Waal et al. 2013 Science
Major phases in the ontogeny of social learning in primates

Phase 1. Learning from mother or other primary attachment figure. Baboon infant sniffs novel food mother is eating. Photo: A. Whiten


Phase 3. Learning from residents after migration. Male vervet switches to eat colored corn preferred by new group. Photo: E. van de Waal

Whiten & van de Waal 2018 Behavioral Ecology and Sociobiology