Primate Society of Great Britain (PSGB) Winter Meeting, 2nd December 2015
Zoological Society of London, Regents Park

Primate Social Learning and Culture
http://synergy.st-andrews.ac.uk/solace/psgb-winter-conference-2015/

Programme (see below for talks abstracts)

09.00 Reception Desk open – Registration: Badges available.
10.00 Introductory Remarks: Andy Whiten, Kevin Laland

CHAIR – Andy Whiten

10.05 Plenary Talk : Erica van de Waal (Zurich)
"Field experiments reveal the scope of social learning in vervet monkeys"
10.50 COFFEE

CHAIR – Rachel Kendal (Durham)

11.15 Brendan Barrett (Davis California) (with S Perry)
"Identifying individual variation of social learning strategies in wild white-faced capuchin monkeys"
11.40 Nicolas Claidiere (Aix-Marseille) (with S Kirby, K Smith & J Fagot)
"Cumulative cultural evolution of systematically structured behaviour in a non-human primate"
12.05 Napier Medal - Lecture TBA
12.35 LUNCH

CHAIR – Bill McGrew (Cambridge)

14.00 Lydia Luncz (Oxford) (with R Wittig & C Boesch)
"Cultural transmission of percussive tool selection in immigrating chimpanzees (*Pan troglodytes verus*)"
14.25 Claudia Fichtel (Goettingen) (with A Schnoell & P Kappeler)
"The influence of social tolerance on social learning in wild Malagasy primates"
14.50 Amanda Seed (St Andrews) (with D Buchsbaum, E Tecwyn, A Gopnik , T Griffiths)
"How do manipulations of intentionality, pedagogy and causal plausibility affect copying behaviour in children and capuchin monkeys?"
15.15 *Folia Primatologica* AH Schulz Best Paper Award - Lecture TBA
15.45 TEA

CHAIR – Kevin Laland

16.15 Eduardo Ottoni (Sao Paulo)
"Cultured capuchins?"
16.40 Plenary Lecture : Rachel Kendal (Durham)
"Social learning strategies and cumulative culture in human and non-human primates"
17.25 Posters (n = 20) and wine reception
19.00 Leave: Dinner with speakers

NB "Back to back" Association for the Study of Animal Behaviour (ASAB) Winter Meeting, 3rd - 4th December 2015
Zoological Society of London, Regents Park
Social Learning and Culture
http://synergy.st-andrews.ac.uk/solace/asab-winter-conference-2015/
Speakers (19) include Lucy Aplin (Oxford), Neeltje Boogert (St Andrews), Thomas Bugnyar (Vienna), Etienne Danchin (Paris), Ellen Garland (St Andrews), Elli Leadbeater (R Holloway), Luke Rendell (St Andrews), Tore Slagsvold (Oslo), Claudio Tennie (Birmingham), Alex Thornton (Exeter) & Hal Whitehead (Dalhousie).

PSGB Winter Meeting Talks Abstracts (alphabetical, by speaker name)

Identifying individual variation of social learning strategies in wild white-faced capuchin monkeys

Brendan J Barrett & Perry S
University of California, Davis
bjbarrett@ucdavis.edu

Social learning is an important aspect of how many animals acquire information and adaptive behaviors from conspecifics. Understanding the mechanisms behind how animals learn when given the choice of multiple potential tutors is essential to more fully integrating social learning into behavioral ecology and conservation efforts. However, analyzing variation in learning strategies among individuals and between groups can be challenging, especially with observational data collected from wild populations. I will report on how wild white-faced capuchin monkeys, Cebus capucinus, acquire complex extractive foraging techniques of Sterculia apetala fruits from conspecifics with results from data collected in 2013-15 in Lomas Barbudal, Costa Rica. To analyze this data I built a series of hierarchical experience-weighted attraction models- a powerful, and increasingly used statistical tool that directly uses mathematical models of social learning strategies to estimate both individual learning strategies and population level dynamics. I will report how the use of both personal and social information and the type of social learning strategy observed is dependent upon age, individual success, and sociality.

Cumulative cultural evolution of systematically structured behaviour in a non-human primate

Nicolas Claidiere, Kenny Smith, Simon Kirby & Joel Fagot
Aix-Marseille University
nicolas.claidiere@normalesup.org

Cumulative culture, the accumulation of cultural modifications over time, is often seen as the pinnacle of human evolution. A wide range of other animals have culture too but often in a limited form that does not complexify through the gradual accumulation of innovations. Several hypotheses have been put forward to explain why humans have cumulative culture, but teasing apart these alternative accounts is difficult without positive evidence of cumulative cultural evolution in other animals. Here, we show that baboons can exhibit three fundamental aspects of cumulative culture: a progressive increase in performance, the emergence of systematic structure, and the presence of lineage specificity. In addition, we use simulations to show that the outcome of the evolutionary process cannot be predicted on the basis of the baboon's individual behaviour. These experiments are the first to study the effect of cumulative cultural evolution in a non-human primate, they provide a major step forward in understanding the evolutionary origin of cumulative cultural evolution and shed new light on human uniqueness: we share with our closest relatives most of the necessary requirements for creating human-like cumulative culture, but we are uniquely disposed to learn from others.

The influence of social tolerance on social learning in wild Malagasy primates

Claudia Fichtel, Schnoell AV & Kappeler PM
German Primate Center
claudia.fichtel@gwdg.de

The social environment an animal lives in can facilitate social learning because social tolerance may positively influence the spread of information. In this study we compared the spread of social information between hierarchically organized ringtailed lemurs (Lemur catta) and comparatively more egalitarian redfronted lemurs (Eulemur rufifrons). We first operationalized social tolerance in a co-feeding experiment, revealing that redfronted lemurs were more socially tolerant. We therefore predicted that social learning of a new foraging technique would be facilitated in the more socially tolerant redfronted lemurs. To test this prediction, we presented four wild groups of redfronted lemurs and three groups of ringtailed lemurs with a feeding-apparatus that could be opened with two different techniques. In two groups of each species we trained a demonstrator to use one of the techniques. The probability of learning the task was higher in the more tolerant redfronted lemurs. Interestingly, in the presence of a demonstrator redfronted lemurs were less likely and ringtailed lemurs were more likely to learn the task. However, the presence of a demonstrator did not influence the speed of learning and redfronted lemurs learned the task more quickly. Thus, social tolerance indeed influences the spread of a new foraging-technique in these primates.

Social learning strategies and cumulative culture in human and non-human primates

Rachel Kendal
Durham University, UK
rachel.kendal@durham.ac.uk

Cumulative culture requires individuals to build upon the knowledge of previous generations such that trait complexity/efficiency evolves across generations. Such cumulative cultural evolution is arguably unique to humans and is widely held to be responsible for our outstanding success in colonising virtually every terrestrial habitat on the planet and solving countless ecological, social and technological challenges. In contrast, social learning (learning from others) underlies the wide-spread occurrence of traditions or culture in all animals. Although social learning is a cheap and efficient form of learning, it is not adaptive to use social information indiscriminately due to its potential unreliability. Thus it is predicted that social learning strategies (heuristics / transmission biases) should evolve enabling individuals to avoid the costs associated with asocial learning and determine when they should use social information and from whom they should acquire it. I shall review several of my recent empirical studies, with young children and non-human primates, highlighting the role of socio-cognition, and in particular the potential role of social learning strategies, in humanity's striking capacity for cumulative culture.

Cultural transmission of percussive tool selection in immigrating chimpanzees (*Pan troglodytes verus*)

Lydia Luncz, Wittig R & Boesch C
Oxford University
Lydia.Luncz@rlaha.ox.ac.uk

Diversity in percussive tool selection among neighboring chimpanzee (Pan troglodytes verus) communities has been shown to be group-specific and independent of ecological or genetic diversity. Despite frequent female transfer between groups, differences remain stable between communities with no diversity in tool selection pattern between philopatric males and immigrated females, suggesting cultural transmission of tool use in adult group members. To further investigate potential cultural transmission in tool selection, we compared the past and present tool pattern of newly immigrated females and local residents of one long term study communities of the Tai National Park in Côte d´Ivoire, West-Africa. Due to limited information on behavior prior to immigration, we used archaeological methods to recover tool evidence at nut-cracking sites in the former home range of the immigrated females. This approach offers the unique opportunity to investigate cultural transmission through time and across space. After controlling for ecological differences between the former home range of immigrants and residents, our findings suggest that immigrants abandoned their previous tool preference and adopted the tool selection pattern of their new community, despite previous personal knowledge of nut cracking tools. This level of conformity has previously only been reported for humans.

Cultured capuchins?

Eduardo B. Ottoni
University of Sao Paulo
eduardo.ottoni@gmail.com

To what extent can we, based on available evidence, consider tufted capuchin monkeys' tool use as culturally shaped behaviours? Developmental studies show that infants' interest in nut-cracking and adults' tolerance to scrounging optimize opportunities for socially biased learning. The difference between forest populations lack of (customary) tool use and the typical savannah toolkit - stone "hammers" to crack open nuts - is sufficiently explained by terrestriality, and the diversification of lithic tool use may be related to local availability of proper stones. The narrower distribution of probe tools' use, though, cannot be accounted for by terrestriality, nor by environmental affordances or diet differences. Group size may influence toolkits' sizes (chances of innovation and social learning); social diffusion, however, may also depend on the conspicuousness and permanence of the tools, their use, and its remains. Nut-cracking is highly conspicuous, leaves lasting environmental changes, and frequently allows scrounging (enabling direct observation and late stimulus enhancement). Stick probes' production and use, however, are brief, less conspicuous events, which create fewer opportunities for social learning. Field

experiments provide further evidence on the socially mediated diffusion of new behaviours, and on the consequences of different toolkits in the solution of experimental foraging tasks.

How do manipulations of intentionality, pedagogy and causal plausibility affect copying behaviour in children and capuchin monkeys?

Amanda Seed, Buchsbaum D, Tecwyn E C., Gopnik A, Griffiths T L,
University of St Andrews
ams18@st-andrews.ac.uk

In studies of action imitation children 'over-imitate', while chimpanzees are selective and only copy necessary actions when this is transparent (Horner & Whiten, 2005). The reason for the difference is debated: is it driven by differences in causal reasoning or social cognition? In our study children (n=38) and capuchin monkeys (n=21) observed a human demonstrator perform two actions on a puzzle box. We manipulated how plausibly necessary the first action was across two dimensions: intentionality and causality. Intentionality was manipulated between subjects, in Unknowing, Intentional and Pedagogical demonstrations. Participants each received 2 conditions: in the Causally Plausible condition, both actions were performed on the box. In the Causally Implausible condition, the first action was performed on a separate box.

Both children and capuchin monkeys differentiated between different levels of intentionality and causal plausibility in similar ways, as revealed by the amount that participants performed the 'unnecessary' action, which approximated a model in which learners take all levels of intentionality and causal plausibility into account. However, children, but not monkeys, produced more sequences in the intentional and pedagogical conditions. We conclude that ostensive communicative cues might affect copying behaviour in both species, but suggest that perhaps only children interpret the demonstrations as instructional.

Field experiments reveal the scope of social learning in vervet monkeys

Dr. Erica van de Waal
University of Zurich, Switzerland
erica.vandewaal@uzh.ch

Behavioural tradition has been an active topic in animal behaviour since the renowned Japanese macaque studies of half a century ago, yet controlled field experiments to clearly identify social learning began only recently. In a field experiment inspired by this famous food cleaning study we found that naïve vervet infants match in some detail how their mother handles sandy fruits. We then used an established laboratory experimental paradigm, employing 'artificial fruits' to test for copying of different actions by wild vervet monkeys. This demonstrated social learning from high ranking female models as well as matching of the method used to access the reward inside. In another experiment, we showed that vervet monkeys will abandon personal foraging preferences in favour of group norms new to them. Groups first learned to avoid the bitter-tasting alternative of two foods. Presentations of these options untreated revealed all new naïve infants adopting maternal preferences. Males migrating between groups where the alternative food was eaten switched to the new local norm. Observing two group splits of low-ranking females, we found significant change in their foraging preference, converging on that of the previous dominant monkeys in their origin group, demonstrating how biased transmission may lead to population level traditions.