Electronic Supplementry Material

An intentional vocalization draws others' attention: A playback experiment with wild chimpanzees.

Catherine Crockford[1,2,3]*, Roman M. Wittig[1,2,3]* & Klaus Zuberbühler[2,3,5]

[1] Max Planck Institute for Evolutionary Anthropology, Department of Primatology, Deutscher Platz 6, 04103 Leipzig, Germany

[2] University of St Andrews, School of Psychology, St. Mary's Place, St Andrews, Fife, KY16 9JG, UK

[3] Budongo Conservation Field Station, Masindi, Uganda

[4] Cognitive Science Centre, University of Neuchâtel, Switzerland

A. Video and sound files

Supplementary Video 1 (Filmed by Tobias Deschner, Tai National Park, Ivory Coast): Camouflaged rhinoceros viper spotted by chimpanzees.

The camera first focuses on a chimpanzee who has recently spotted a stationary rhinoceros viper (*Bitis gabonica rhinoceros)* amongst dried leaves on the ground. She has climbed up off the ground and has emitted a series of alert hoos before the video starts. An infant off-camera can be heard whimpering at the start of the video. The camera pans to show a party of chimpanzees in transit but temporarily halted. Many are searching the ground between themselves and the alert hoo signaler. Finally the

camera finds the snake and zooms in to the snake. Snake camouflage and chimpanzee behavior are remarkably similar in the Budongo Forest.

Supplementary Video 2: Chimpanzee (Squibbs) hears a rest hoo playback stimulus from higher-ranking male (Kato).

Squibbs is travelling along a path. After hearing a rest hoo from a hidden speaker 5 m and 45° to his right (1.5 s from video start), Squibbs stops travelling and looks and scans in the direction of the speaker. After 6 s, he then orientates his body in the direction of the speaker and continues scanning the speaker area. After 11.5 s, Squibbs turns his body back in his original travel direction and continues to travel.

Supplementary Video 3: Chimpanzee (Squibbs) hears a series of three alert hoos from higher-ranking male (Nick).

Squibbs is travelling along a path. After 2.5 s, he hears the first of 3 hoos from the hidden speaker 5 m and 45° to his right. Squibbs stops travelling and looks in the direction of the speaker. He scans the speaker area for the majority of the following 30 s. He also looks up and down the path as well as between his legs and elicits two hoos. 18.5 s after the start of the playback, he turns his body in the direction of the speaker.

Electronic Supplementary sound files a,b,c,d: correspond to Figure 1 spectrograms a,b,c,d.

B. Figures

Figure S1. (a) Snake Model used to Elicit "Alert Hoos" and (b) actual Rhinoceros Viper (*Bitis gabonica rhinoceros)* from Sonso Home Range for Comparison

a)  **b)** 

C. Measuring neutral social relationships

We assessed the quality of relationships by calculating 'all occurrence' rates of the following behaviours over the current and preceding annual quarters: coalitionary support, food sharing, grooming, staying in (<1 m) proximity and aggression. For all behaviours, each occurrence was recorded as a single event. From the resulting rates, we calculated the Composite Relationship Index (CRI), a measure of social bond strength. The CRI is calculated over periods of three months and gives socio-positive (given or received food sharing, coalitionary support, allo-grooming and resting in < 1 m proximity) and socio-negative (aggression given or received) behaviours equal weight. CRI = 0 occurred when the number of socio-positive interactions was in balance with the number of socio-negative interactions for each three-month period. Thus, dyads with a 'neutral' relationship were defined as dyads having neither a

strong socio-positive nor socio-negative relationship ($-2 \leq CRI \geq 2$) over ≥ 6 months (at least two consecutive blocks of three months).

D. Factor Analysis of Behavioural Variables

The factor analysis was justified as shown by the Kaiser-Meyer-Olkin measure of sampling adequecy (0.60) and the Bartlett test of sphericity (χ^2=95.6, df = 15, p = 0.000).

Factor Loadings of Behavioural Variables

Behavioural Variable	**Factor1**	**Factor2**	**Factor3**
Looks to Speaker	0.44	0.57	0.23
Looking Duration	0.61	0.39	-0.10
Pauses	0.10	0.71	-0.09
Steps	-0.10	-0.00	**0.99**
Scans	**0.98**	0.17	-0.10
Body Orientations	0.29	**0.72**	0.04