The 2nd International Workshop for Young Psychologists

on

Evolution and Development of Cognition

Program and Abstracts

November 13 (Sat) - 14 (Sun), 2004

Clock Tower Memorial Hall, Kyoto University

Program

November 13 (Sat)

09:15 -- 12:00 HOPE Special Lectures (Chair: Matsuzawa, Tetsuro)

Evolution of our moral faculty

Hauser, Marc *Harvard University, USA*

Brain mechanisms of monkey tool-using behaviour

Iriki, Atsushi *Tokyo Medical and Dental College & RIKEN*

Cognitive Developmental Robotics towards understanding of our brain and mind

Asada, Minoru *Osaka University*

12:00 -- 14:00 Lunch and Posters

14:00 -- 16:00 Session 1: Social Interaction and Social Intelligence (Chair: Fujita, Kazuo)

Oral-1 **The effect of social facilitation and social dominance on foraging success of budgerigars in an unfamiliar environment**

Soma, Masayo *University of Tokyo*

Oral-2 **Social brain and female choice in zebra finches**

Ikebuchi, Maki *Kanazawa Institute of Technology*

Oral-3 **Do dogs know what their cooperative human partner does and does not know?**

Virányi, Zsófia *Eötvös University, Hungary*

Oral-4 **Inequity averse responses in two nonhuman primates, capuchin monkeys and chimpanzees**

Brosnan, Sarah F. *Emory University, USA*

16:00 -- 16:20 Break

16:20 -- 18:20 Session 2: Views from Action (Chair: Koyasu, Masuo)

Oral-5 **Behavior of infant chimpanzees during the night in the first four months of life: Neonatal smiling and sucking in relation to arousal levels**

Mizuno, Yuu *Kyoto University*; Takeshita, Hideko *The University of Shiga Prefecture*; Matsuzawa, Tetsuro *Kyoto University*

Oral-6 **Infant motor patterns and cortical activation associated with event memory**

Watanabe, Hama *Japan Science and Technology Agency, CREST / University of Tokyo*

Oral-7 **Expertise in evaluating actors' performances from the viewpoint of the audience**

Brown, Deirdre *Lancaster University, UK*; Lamb, Michael *Cambridge University, UK*; Pipe, Margaret-Ellen *National Institutes of Child Health and Human Development, USA*; Orbach, Yael *National Institutes of Child Health and Human Development, USA*; Lewis, Charlie *Lancaster University, UK*

Oral-8 **Expertise of evaluating other's performance in acting: Role of assuming the viewpoint of audience**

Ando, Hanae *Kyoto University*

18:30 -- Dinner Party

November 14 (Sun)

09:00 -- 11:30 Session 3: Recognition of Physical Aspects of Environment (Chair: Tanaka, Masayuki)

Oral-9 **Ant-dipping behavior in chimpanzees: To what extent do micro-ecological influences explain variation within and between sites?**

Humle, Tatyana *University of Wisconsin, USA*; Matsuzawa, Tetsuro *Kyoto University*

Oral-10 **Quantity based discrimination in great apes**

Hanus, Daniel *Max Planck Institute for Evolutionary Anthropology, Germany*; Call, Josep *Max Planck Institute for Evolutionary Anthropology, Germany*

Oral-11 **Perception of shape from shading in chimpanzees and humans**

Imura, Tomoko *Kwansei Gakuin University*; Tomonaga, Masaki *Kyoto University*; Yamaguchi, Masami K. *Chuo University*; Yagi, Akihiro *Kwansei Gakuin University*

Oral-12 **Stimulus organization in pigeons' visual perception**

Ushitani, Tomokazu *Kyoto University;* Fujita, Kazuo *Kyoto University*

Oral-13 **The effects of auditory stimuli on the latency of visually triggered saccades**

Kato, Masaharu *Tokyo Women's Medical University;* Konishi, Yukuo *Tokyo Women's Medical University*

11:30 -- 14:00 Lunch and Posters

14:00 -- 15:30 Session 4: Language and Communication (Chair: Endo, Toshihiko)

Oral-14 **The more difficult to articulate, the more difficult to perceive？: Infants' discrimination of /ra/ and /da/ in words.**

Kajikawa, Sachiyo *Tamagawa University*; Sato, Kumiko *Tamagawa University*; Kanechiku, Kiyoe *Tamagawa University*; Imai, Mutsumi *Keio University*; Haryu, Etsuko *University of Tokyo*

Oral-15 **Native language specific development in infant's speech perception and production**

Mugitani, Ryoko *NTT Communication Science Laboratories*

Oral-16 **Personality impression formation from thin slices of nonverbal behavior: its bases and consequences.**

Sakaguchi, Kikue *University of Tokyo*; Hasegawa, Toshikazu *University of Tokyo*

15:30 -- 15:50 Break

15:50 -- 17:50 Session 5: Social Recognition (Chair: Itakura, Shoji)

Oral-17 **Cross-modal social category in monkeys and dogs**

Adachi, Ikuma *JSPS and Kyoto University;* Fujita, Kazuo *Kyoto University*

Oral-18 **Do humans and baboons use the same information when categorizing human and baboon pictures?**

Martin-Malivel, Julie *University of Southern California, USA., and CNRS, France, now at Emory University, USA*; Mangini, Michael *University of Southern California, USA*; Fagot, Joël *CNRS, France*; Biederman, Irving *University of Southern California, USA*

Oral-19 **Development of familiar face recognition: the processing of inner, outer, and isolated features**

Zhe, Wang *Zhejiang University of Sciences, China*; Lee, Kang *University of California, San Diego, USA*; Ge, Liezhong *Zhejiang University of Sciences, China*

Oral-20 **Ground Nesting in the Chimpanzees of the Nimba Mountains, Guinea, West Africa: Environmental or Social?**

Koops, Kathelijne *University of Utrecht, The Netherlands*; Humle, T. *University of Wisconsin, Madison, USA*; Matsuzawa, T. *Kyoto University*; Sterck, E. H. M. *University of Utrecht, The Netherlands*

Poster

P-1 **The exploration into the situational determinants of "triangle emotions": Empathic joy, envy, and ambivalent/ complicated feeling. Ⅱ**
Yamamoto(Nishizumi), Ryoko and Endo, Toshihiko *Kyoto University*

P-2 **The adherence to “maternal love”, and mothers’ emotional control toward children**
Egami, Sonoko *Ochanomizu University*, Endo, Toshihiko *Kyoto University*

P-3 **The meaning of death and dying of the elderly**
Kawashima, Daisuke *Kyoto University*

P-4 **The decline of circulating T levels and alteration on BIS-BAS sensitivity along with aging**
Oki, Mariko; Sakaguchi, Kikue ; Hasegawa, Toshikazu *Tokyo University*, Seijiro Honma *Teikoku Hormone*

P-5 **Decline of sensation seeking and self-monitoring scores in healthy men along with aging and the decline of testosterone levels**
Sakaguchi, Kikue; Oki, Mariko; Hasegawa, Toshikazu *Tokyo University*, Seijiro Honma *Teikoku Hormone*

P-6 **Action monitoring in preschoolers**
Moriguchi, Yusuke *Kyoto University*; Itakura, Shoji *Kyoto University*

P-7 **Developmental process of the integration of two representations in children. -False belief task and imaged object gesture task-**
Okamoto, Masahiko *Osaka Prefecture University*, Ayako Ogawa *Kyoto University*

P-8 **Infants’ sensitivity to social or physical contingency: Mother v.s. stranger.**
Okanda, Mako *Kyoto University*, Shoji Itakura *Kyoto University*

P-9 **Exploratory study on determinants of the individual differences in maternal reading of infant’s mind**
Shinohara, Ikuko *Research Fellow of JSPS/ Kyoto University*

P-10 **Effects of understanding other's mental states on moral judgment of commission and omission (2)**
Hayashi, Hajimu *JSPS Post Doctoral Research Fellow/ Kyoto University*

P-11 **Self-other differentiation and reasoning about desires in toddlers**
Hisazaki, Takahiro *Kyushu University*

P-12 **5 and 6-year old children can predict other's behavior during TV-game tag play**
Ishikawa, Satoru *Hokkaido University*; Shimotomai, Takayuki *Hokkaido University;* Sakamoto, Hiroyuki *Hokkaido University*; Oomori, Takashi *Hokkaido University*

P-13 **Distinguishing intentional actions from accidental actions**
Harui, Kousuke; Oka, Natsuki; Sakurai, Haruaki and Yamada, Yasushi *Kyoto Institute of Technology*

P-14 **Some modifications of social skills training for people with disfigurement to Japanese environment**
Matsumoto, Manabu *JSPS Research Fellow / Kyoto University*

P-15 **An electrophysiological study of human self-monitoring and social awareness.**
Fukushima, Hirokata and Hiraki, Kazuo, *the University of Tokyo*

P-16 **Social interaction between two chimpanzees for using tokens to get food**
Yamamoto, Shinya *Kyoto University*; Mizuno, Yuu *Kyoto University;* Tanaka, Masayuki *Kyoto University*

P-17 **Sequential analysis of grooming interactions in female Japanese monkeys (*Macaca fuscata*)**
Fujimoto, Mariko *The University of Shiga Prefecture*; Takeshita, Hideko *The University of Shiga Prefecture*

P-18 **Cooperation by tufted capuchin monkeys(*Cebus apella*):Spontaneous division of labor, communication, and reciprocal altruism.**
Hattori, Y., Kuroshima, H. and Fujita, K. *Kyoto University*

P-19 **Visual for photos of primates by mother-reared chimpanzee infants.**
Tanaka, Masayuki; Mizuno, Yuu and Yamamoto, Shinya *Kyoto University*

P-20 **Spontaneous food exchange with human caretakers by a capuchin monkey: Recognition of the opportunity for and the rates of exchange.**
Kuroshima, Hika *Kyoto University/ JSPS*; Hattori, Yuko *Kyoto University;* Fujita, Kazuo *Kyoto University*

P-21 **To eat or not to eat: infant response toward novel foods under social condition in captive chimpanzees**
Ari Ueno; Tetsuro Matsuzawa *Kyoto University*

P-22 **Sequential learning using Arabic numerals by chimpanzees**
Inoue, Sana and Matsuzawa, Tetsuro *Kyoto University*

P-23 **Stacking shaped blocks in chimpanzees**
Hayashi, Misato *Kyoto University*

P-24 **Contextual effects on the perception of the collision events in chimpanzees (*Pan troglodytes*) and humans (*Homo sapiens*).**
Matsuno, Toyomi *Kyoto University/ The Japan Society for the Promotion of Science*; Tomonaga, Masaki *Kyoto University*

P-25 **Advantage of color vision deficiency over normal trichromat in discrimination of color-camouflaged stimuli in humans**
Saito, Atsuko *The University of Tokyo*; Mikami, Akichika *Kyoto University*; Hosokawa, Takayuki *Kyoto University*; Hasegawa, Toshikazu *The University of Tokyo*

P-26 **Pictorial depth perception in squirrel monkeys (*Saimiri sciureus*): The effect of texture gradient cues on size discrimination.**
Sakai, Ayumi; Ushitani, Tomokazu; Adachi, Ikuma and Fujita, Kazuo *Kyoto University*

P-27 **Experimental observation of fear responses toward some kinds of objects in Japanese macaques (*Macaca fuscata*)**
Murai, Chizuko *Kyoto University*; Tomonaga, Masaki *Kyoto University*

P-28 **Elephant cognition: Understanding of a 'means-end' relationship by captive Asian elephants (*Elephas maximus*)**
Irie, Naoko *University of Tokyo*; Kobayashi Tessei *University of Tokyo/JSPS;* Sato, Takao *University of Tokyo;* Hasegawa, Toshikazu *University of Tokyo*

P-29 **Mental rehearsal ability in pigeons (*Columba livia*) assessed by a maze task.**
Miyata, Hiromitsu; Ushitani, Tomokazu; Adachi, Ikuma and Fujita, Kazuo *Kyoto University*

P-30 **Auditory representational momentum in the rat (*Rattus norvegicus*)?**
Nakamura, Noriyuki and Fujita, Kazuo *Kyoto University*

P-31 **Inference in a social context: A comparative study with rats, hamsters, and tree shrews**
Takahashi, Makoto; Ushitani, Tomokazu and Fujita, Kazuo *Kyoto University*

P-32 **Infant macaques' theory of animacy: the role of eyes and fluffiness**
Tsutsumi, Sayaka *Kyoto University/ research fellow, JSPS*; Fujita, Kazuo *Kyoto University;* Tomonaga, Masaki *Kyoto University*

P-33 **Behavioral development of agile gibbons: From birth to late juvenile**
Uchikoshi, Makiko and Matsuzawa, Tetsuro *Kyoto University*

P-34 **Hand-raised wolves and dogs: attachment and communication with humans.**
Virányi, Zsófia and Gácsi, Márta *Eötvös University, Budapest*

P-35 **Bilingual word order comprehension and production from longitudinal observational data and development of experimental tasks.**
Kutsuki, Aya *Graduate School of Kobe University*; Ogura, Tamiko *Kobe University*

P-36 **Directional asymmetry in Japanese infants' discrimination of english /b/ and /v/**
Yoshida, Keiko *Kobe University*

P-37 **Effects of aptness and conventionality on grammatical form preference of metaphors**
Nakamoto, Keiko *Kyoto University*; Kusumi, Takashi *Kyoto University*

P-38 **Adult's auditory perception of infant's vocal sound**
Shimada, Yohko *Kyoto University*

P-39 **Construction of a computational model for the decision making by mind reading**
Takahashi, Hideyuki; Ishikawa, Satoru and Omori, Takashi *Hokkaido University*

Rooms

	Centennial Hall (1F)	International conference Hall 2 (2F)	International conference Hall 3 (2F)
13(Sat.)	HOPE Special Lectures IWYP Oral	SAGA and IWYP Poster	Dinner Party
14(Sun.)		IWYP Poster	IWYP Oral

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Talk and Poster Abstracts

Oral-1

The effect of social facilitation and social dominance on foraging success of budgerigars in an unfamiliar environment

Soma, Masayo and Hasegawa, Toshikazu

Graduate School of Arts & Science, University of Tokyo

Social foraging has both advantages and disadvantages, as numerous social interactions influence each individual's foraging success, either favorably or unfavorably. Social facilitation and social dominance are two major factors affecting individual foraging efficiency in an unfamiliar environment. Social foragers can improve their foraging efficiency not only by shared predator surveillance, but also by referring to helpful information conveyed by other individuals. Especially when animals encounter an unfamiliar habitat or unknown potential resources, information might be crucial. On the other hand, resources are not always equally accessible to all members of a group. The resources available to an individual are quite dependent on its social status. Dominant individuals often exploit discoveries of subordinates. This study investigated how these two factors affect the costs and benefits of social foraging. We presented a novel feeding environment to captive budgerigars, *Melopsittacus undulatus*, and then compared the latency to feeding and number of pecks at the food for social and individual conditions, and for high-, middle-, and low-ranking birds. When in the social condition, birds started foraging faster and pecked more food than in the individual condition. Presumably, this lowered neophobia and enhanced foraging efficiency in the social condition was caused by social facilitation. Low-ranking birds had less resource accessibility in the social condition, probably because they were constrained by the existence of higher-ranking birds when it came to accessing the feeder. Nevertheless, the food intake of low-ranking birds almost equaled that of high- or middle-ranking birds in the social condition. In summary, high status is definitely an advantage, while low status adds some costs to individuals. Nevertheless, low-ranking birds compensate for this through enhanced foraging. It was clear that social foraging provides a great advantage to foragers of each rank, because of social facilitation. The results of this study demonstrate the benefits of social foraging, rather than its costs, even for subordinate individuals.

Oral-2

Social brain and female choice in zebra finches

Ikebuchi, Maki

Human Information System Laboratory, Kanazawa Institute of Technology

Most social and sexual behaviors in birds are affected by emotional and motivational factors. It has been speculated that taenial amygdala (TnA), the avian amygdala homologue, may be involved in such motivational control. However, experimental evidence to show this is quite sparse. In this study, we asked female zebra finches to assess the attractiveness of male conspecifics with or without TnA lesions in two behavioral situations. If TnA is involved in the control of social behaviour, lesions should induce behavioral changes which are obvious to their female partners. Thus, when a lesioned male and a control male are presented to a female, she would choose the control bird for her partner.

In the first experiment, we determined whether the females in a simultaneous choice test without direct contact preferred a normal over a TnA lesioned male by measuring the time the females spent close to the cage of the lesioned or the normal male. After lesioned, female birds spend longer time in the control male side than the lesioned male side. Control males changed some behaviors after their cage mates received the lesion. This means control males also noticed changes in the behavior of the lesioned male. Small deviations in behavioral timing in the lesioned birds might affect
the perception of the females and the control males
. In the second experiment, the three birds, a female, a lesioned male and a control male were put into one cage and pair bonding was observed. Results showed that female chose the control male as partner as in the first experiment. This means that the females do perceive differences in the behavior of lesioned and intact males.

These results indicate that females can discriminate between lesioned and intact males and that they prefer and pair bond with the intact ones. Observation of the behaviour of the lesioned animals revealed that they show deviating behaviour which may be recognized by the female.

Oral-3

Do dogs know what their cooperative human partner does and does not know?

Virányi, Zsófia
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Since dogs seem to recognize the attentional focus of humans (Virányi et al., 2004, Behav. Proc. 66:161-172.) and to assess their visual perspective (Bräuer et al., 2004, Appl. Anim. Behav. Sci. 88:299-317.) the possibility arises that they are also able to make inferences about the knowledgeable states of humans based on these features. This was tested in three studies in which a human Helper's knowledgeable state regarding the whereabouts of different objects was systematically manipulated. The dogs observed the hiding processes but could not reach the objects, so they had to involve the Helper to retrieve the objects.

In Study 1 the Helper either participated or was absent during hiding a desirable toy and a stick (a tool necessary for getting the out-of-reach toy) and therefore she knew the place(s) of (1) both objects, (2) only the toy, (3) only the stick or (4) neither of them. The dogs did not show object-specific informing behaviour, rather they signalled the place of the toy preferably in each condition. At the same time however they signalled the place of the toy more frequently if the Helper had been absent during toy-hiding compared to those conditions when she had present.

In Study 2 the Helper either participated or not in hiding the stick but in both conditions subsequently she performed ignorance in her behaviour (searched for the stick in its original place), which was consistent with her previous absence but was inconsistent with her previous presence. The dogs signalled the location of the stick in the first case but did not adapt flexibly to the apparently changing knowledgeable state of the Helper in the second case.

In Study 3 the one-to-one correspondence between the Helper's previous presence/absence and her knowledgeable state was abolished by manipulating simultaneously also a second observable cue influencing the Helper's knowledge. According to our results although dogs may show more intensive informing behaviour about events during which their human partner was not present it is less likely to reflect attributing knowledge or ignorance to the human but can be explained by using a simple informing rule and tailoring the behaviour to the human's previous presence/absence directly. Using this simple rule, however, may be a good simulation of knowledge attribution in dogs' every-day life.

Oral-4

Inequity averse responses in two nonhuman primates, capuchin monkeys and chimpanzees

Brosnan, Sarah F.

Department of Anthropology, Emory University

During the evolution of cooperation, it may have become worthwhile for individuals to compare their own payoffs to those of others, in an effort to increase relative fitness. Humans do so, frequently rejecting payoffs that are perceived as unfair (even if they are advantageous). If a sense of fairness did evolved to promote cooperation, some nonhuman animals may exhibit inequity aversion as well. Here we examined the response of five adult capuchin monkeys from two social conditions and twenty adult chimpanzees from three social conditions to an inequitable distribution of rewards during experimental exchange with a human experimenter. Pairs alternated exchanging in situations in which 1) both received the same reward, 2) one received a superior reward, 3) one received a superior reward without exchange (e.g. no work), and 4) both observed a superior reward which was not given to the partner.

Both species showed a strong response to inequitable distributions. They were much less likely to complete an exchange when their partner received a higher-value food item than they, and they ameliorated their response if no other individual received the better reward, indicating that this response is due to a conspecific receiving the better reward rather than the presence of the better reward itself. Among capuchin monkeys, individuals responded more frequently when the partner received a superior reward for less effort, indicating that they monitor both reward and effort levels. Chimpanzees showed no such reaction to effort, however in this species there was significant variation in responses between the different social conditions. Individuals who had lived together for a relatively short period of time and those from a pair-housed situation showed strong levels of response, on par with those of the capuchin monkeys, while individuals who had grown up together showed virtually no response to the inequity. This response mimics the variation seen in human responses to inequitable treatment, which is proposed to be due to variation in quality and strength or relationships. Such an ability to modulate behavior contingent upon the social situation may be a key difference between monkeys, apes, and humans.

Oral-5

Behavior of infant chimpanzees during the night in the first four months of life: Neonatal smiling and sucking in relation to arousal levels

Mizuno, Yuu *1; Takeshita, Hideko *2 and Matsuzawa, Tetsuro *1

**1 Primate Research Institute, Kyoto University*

**2 The University of Shiga Prefecture*

Previous studies of behavioral development of chimpanzees have been conducted under two distinct situations: studies on mother-raised chimpanzees in the wild and human-raised chimpanzees in the laboratory. In exploring the cognitive development of chimpanzees, one can not neglect the importance of the biological mother. We aimed to establish a laboratory simulation of the mother-infant relationship and to study the cognitive and behavioral development of infant chimpanzees. This study reports the behavior of three newborn chimpanzees in the first four months of life, reared by their mothers and living in a community of 14 chimpanzees in a semi-natural enriched environment. We focused on spontaneous activity during the night partly because sleeping behavior constitutes an essential part of the infants' activity. Observation during the night also had the advantage of keeping the influence of the mothers' activity as well as the environmental stimulation constant through the observation period. The present study reports several interesting topics: 1) Arousal levels defined through behavioral features such as open or closed eyes were variable during the night, in which the REM and Non –REM sleep patterns alternated much as they do in human infants. Although crying is one of the distinctive arousal levels in the case of human infants, the chimpanzee infants did not cry like humans. 2) Sucking behavior was often accompanied by open eyes until the end of the first two months. Thereafter, sucking with closed eyes became more prominent. 3) Although there were no explicit stimuli, the newborns showed neonatal smiling with closed eyes during REM sleep periods. However, neonatal smiling disappeared within the first two months and was replaced by social smiling with open eyes. Taken together, the results suggest a strong similarity between human infants and chimpanzee infants in spontaneous activities such as neonatal smiling later replaced by social smiling. In addition, the present study also illuminates unique human characteristics in mother-infant relationships in comparison to chimpanzees. Mother and infant are physically separated. This physical separation is due to the stable supine posture of human infants and also results in the early development of vocal-auditory communication.

Oral-6

Infant motor patterns and cortical activation associated with event memory

Watanabe, Hama

Japan Science and Technology Agency, CREST / University of Tokyo

From the earliest days of life, infants learn and memorize to act on their environments in order to bring about desired consequences. In my talk, I focused on developmental changes in motor patterns of limbs during the conjugate reinforcement mobile task and cortical activities related their experiences.

Two- to four-month-old infants were examined with 3D motion analysis system to measure the motion of reflective markers attached to the infants' arms and legs. Infants were positioned spine with lines connecting each wrist to the overhead mobile or the unrelated hook. Analysis for velocities of each limb over some phases indicated that selected and retained specific motor patterns differed with age; 2-month-olds, 3-month-olds and 4-month-olds produced movements of all limbs, both arms, and a selective reinforced arm, respectively. In addition, the topographical patterns of inter-limb reproduced after the unrelated interference experience. From a dynamical systems point of view, the developmental changes in motor pattern from the undifferentiated form to the differentiated one can be characterized by freezing and freeing degrees of freedom in motor development. It seems a developmental process of intentional or cortically controlled movement patterns based on memory for spontaneous experiences.

Next study was conducted to clarify the question that how infants' previous motor patterns and memory for them affect subsequent learning for relation between infants' voluntary activity and movement of a mobile. Three-month-old infants were assigned to two conditions for order of reinforcement; 1) arm to leg, 2) leg to arm. For the organization processes of prior responses, the old arm activity was decreased quickly so soon as changing of the relation between a critical limb and movement mobile in the arm to leg condition. On the other hand, the old leg activity continued high level of performance after the changing of line from ankle to wrist. These results of infant movement patterns of limbs are construed as the stability and the flexibility of the memories in young infants.

To examine the cortical activation associated with event memory in infants, functional brain imaging technique by means of the near infrared optical topography (NIR OT) was used. The prefrontal area of awake infants aged 3 months changed by their spontaneously experience with the mobile. It suggested a possibility that the prefrontal cortex may play functional roles in relation to memory in early life.

Oral-7

Children's use of drawings to report touch: Implications for forensic interviews.

Brown, Deirdre
Lancaster University, UK
Lamb, Michael
Cambridge University, UK
Pipe, Margaret-Ellen
National Institutes of Child Health and Human Development (NICHD), USA
Orbach, Yael
National Institutes of Child Health and Human Development (NICHD), USA
Lewis, Charlie
Lancaster University, UK

Human-figure drawings are sometimes used in clinical and forensic interviews with children, despite limited research addressing their validity. A recent field study (Aldridge et al, 2004) showed that the introduction of a human-figure drawing at the end of a forensic interview led to children reporting a considerable amount of new information. In an analogue study, we examined the accuracy of the additional information elicited by drawings. Four to seven year old children participated in an event that included physical contact between the researcher and the child, and were interviewed using the NICDH interview protocol (Orbach et al, 2000) 4 -6 weeks later. Children were shown a human-figure drawing and asked to use it to indicate the occurrence of touch. Children were asked to elaborate on any reports of touch, using open questions. Preliminary analyses indicate children's memory for touch was poor. The majority of children denied touch occurred, however some children gave false reports of touch, with a small number reporting forensically relevant false information.

A follow-up study explored possible explanations for why the human figure drawings were not effective in improving children's recall. Condition 1 addressed the possibility that children were having difficulty in comprehending or performing the task itself. Children were therefore given a demonstration and practice in using the drawing to demonstrate the occurrence of touch, prior to using it to talk about the staged event. Condition 2 addressed the possibility that the problem lay with the drawing itself, and that it may have been acting as either a distractor to the process of recall, or encouraged reporting of information to satisfy what they thought was expected of them. Children in this condition were not shown a drawing, but asked a series of direct questions about the occurrence of touch. In both conditions children were asked to provide an elaborative account of any touch reported. Preliminary results indicate that although children were able to effectively use the drawing to demonstrate touch that had just occurred, the drawing nevertheless led to inaccuracies in reports of the staged event (including errors of both commission and omission). Children in condition 2 were also very inaccurate in reporting touch, but errors were typically those of omission, and errors of commission were rare. This suggests that firstly, the drawings themselves were having a negative impact on children's reliability, and second, children's recall for the touch itself was poor. The implications of these findings for forensic interviews will be discussed.

Oral-8

Expertise in evaluating actors' performances from the viewpoint of the audience

Ando, Hanae

Kyoto University / Research Fellow of the Japan Society for the Promotion of Science

When actors want to improve their performance through practice, they have to assume the viewpoint of the audience to objectively observe and evaluate their own performance. This study focused on the ability of actors to evaluate a performance and investigated the expertise in this ability.

In study 1, 10 non-experienced participants, 10 short-term experienced actors (-1 year's experience), 10 medium-term experienced actors (1-5 years' experience), and 10 long-term experienced actors (5- years' experience) watched and evaluated the performance of 12 actors; 4 novice actors (-1 year's experience), 4 intermediate actors (1-5 years' experience), and 4 junior expert actors (5- years' experience). Evaluations of superficial aspects of acting, such as facial expressions and body movements, showed an identical pattern in all 4 groups of participants (novice < intermediate = junior expert). General evaluations, such as attractiveness and techniques, of non-experienced and short-term experienced participants also showed the same pattern (novice < intermediate = junior expert). However, general evaluations of medium-term and long-term experienced participants showed different and diverse patterns. It is plausible that non-experienced and short-term experienced participants judge only superficial aspects of acting and therefore, their general evaluation scores were high when evaluation scores of superficial aspects were high. On the other hand, medium-term and long-term experienced participants might have taken account of other factors in addition to superficial factors when they evaluated a performance.

It is not clear whether the expertise found Study 1 was the result of acting experience, or experience in watching others' performances. Therefore, in Study 2, 10 theatergoers evaluated the performance of the 12 actors using the same procedure as in Study 1. Their evaluation patterns were similar to those of non-experienced participants, however, certain evaluation scores were lower than those of non-experienced participants. Theatergoers often watch good performances; therefore they may have used more severe criteria.

Non-experienced people and short-term experienced actors can judge only superficial aspects and these are all the criteria they use when they evaluate actors' performances. Long-experienced actors have other criteria; therefore they can evaluate actors' performances with greater diversity. It is concluded that expertise in evaluating actors' performance is supported by acting experience, not by experience in watching performances.

Oral-9

Ant-dipping behavior in chimpanzees: to what extent do micro-ecological influences explain variation within and between sites?

Humle, Tatyana [1] and Matsuzawa, Tetsuro [2]

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Dipping for driver ants, *Dorylus* spp., has often been cited as one of the best examples of culture in chimpanzees. We present a detailed study of this tool-use behavior in the wild chimpanzees (*Pan troglodytes verus*) of Bossou, in southeastern Guinea, West Africa. Chimpanzees at this long-term study site exhibit two ant-dipping techniques: 1) direct mouthing, and 2) pull-through. They also dip for several species of *Dorylus* ants, which were classified for the purpose of this study into two categories: Red and Black. A human experiment determined that the black type is more belligerent and/or more gregarious than the red type. We also found that regardless of species, dipping at the nest site incurred more risk than dipping on migrating or foraging ants. Observations of ant dipping within this community, based on video footage and direct behavioral records, suggest a strong influence of prey (*Dorylus* spp.) characteristics, including aggressiveness and/or gregariousness, on tool length and technique employed. Tool length was longer when dipping in higher-risk contexts, i.e., at the ants' nest site ($\rho<0.001$) or on Black ants ($\rho<0.01$). The pull-through technique was almost exclusively associated with dipping at the nest site ($\rho<0.05$). This latter technique was associated with tools over 50 cm long ($\rho<0.001$), whereas direct mouthing was the only technique observed with tools less than 50 cm long. Our experimental findings, together with our observations of this behavior, suggest that at the nest, the pull-through technique was a more efficient technique than direct mouthing. We review our results in the context of ant dipping observed at one other long-term chimpanzee study site, i.e., Taï, Côte d'Ivoire, West Africa, where differences in tool length and technique used have been reported, although the *Dorylus* species targeted are the same.

Oral-10

Quantity based discrimination in great apes

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The ability to estimate and differentiate quantities is advantageous to humans as well as nonhuman primates. Several studies have shown numerical competence in various primate species. However, little is known about the underlying mechanisms for numerical ability. This study addressed the degree to which this ability is not only perceptual but also based on mental representations. Representatives of three great ape species (bonobos, gorillas and orangutans) were tested in their ability to estimate and compare two sets of small quantities (up to six items). In the first experiment the subjects had to choose the larger of two quantities presented in two separate dishes. There were two types of presentation. In the "simultaneous condition" both quantities were concurrently visually available, whereas in the "successive condition" they were presented successively, so that they could not be directly compared. In the second experiment, the same food quantities were sequentially dropped into two opaque cups, thus none of the quantities was ever viewed in its totality and they could not be directly compared.

Orangutans, gorillas and bonobos were capable of selecting the larger of two quantities in Experiment 1 for both conditions. There was also some evidence from Experiment 2 (albeit weaker) that orangutans, gorillas and bonobos may mentally combine the single items in each cup to obtain the larger of two quantities.

The results suggest therefore that great apes are capable of distinguishing between small quantities when they are visually available at the time of choice and also when the decision is based on memory.

Oral-11

Perception of shape from shading in chimpanzees and humans

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We are investigating the perception of shape from shading in chimpanzees and humans from the comparative–developmental perspective. Previous studies show that human adults process the shading information based on two assumptions: single light source and lighting from above in the retinal coordinates. These assumptions are ecologically valid for humans lived in the environment with only one sun shining from above. However, nonhuman animals who live in the different environment or infants who have no experience to manipulate objects might not have the same assumption as human adults. In the present studies, we examined assumptions on the perception of shape from shading in chimpanzees and humans with various ages. In the first experiment, chimpanzee and human adults detect the texture display containing a target defined by oppositely shaded disks among disks put in the various directions of shadings. Both showed better detection when the disks were shaded vertically than horizontally. In the second experiment, human infants at 3 and 4 months were tested using modified preferential looking task. Infants were familiarized two displays containing homogeneous shading disks, and were tested the familiarized display and a novel display containing the oppositely shaded disks (target). Four-month-old infants, but not 3-month-olds, preferentially looked at the array containing the target in the vertical shading condition but not in the horizontal shading condition. The results of these two experiments suggest that adult chimpanzees and human infants might process shading information based on two assumptions. In the last experiment, chimpanzee infants from 4 to 10 months old were tested the ability to perceive depth from shading using preferential reaching task. They reached more to the photographic convex than to the photographic concave as to the real 3-D convex. This result suggests that chimpanzee infants perceive depth defined by shading in the first half year of life. Our results can be interpreted that without extensive postnatal experience with pictorial-depth cues great apes and human infants perceive the three-dimensional shapes from shading cues in the same way as human adults do.

Oral-12

Stimulus organization in pigeons' visual perception.

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Optical information of objects mapped onto our retina is fragmented into patches because objects usually occlude each other complicatedly. However, our brain reorganizes the whole, stable images of visual targets from such meager information. We report a couple of our studies examining whether pigeons experience perceptual completion and motion organization that may reflect object reorganization processes.

First, we tested if pigeons perceptually complete partly occluded figures in a situation simulating natural feeding context. We trained pigeons to peck at all of the photos of foods and none of those of non-food objects presented at a time on the computer display. At the tests, we presented both photos of food partly occluded by pigeon's feather and those truncated at the same part. We predicted that if the pigeons perceptually completed occluded portion, then they would peck at photos of occluded food prior to truncated photos. The result was that the pigeons pecked at truncated photos earlier than occluded photos. Pigeons' perceptual completion was not demonstrated even in a simulated ecologically significant situation.

Next, we investigated whether pigeons perceived relative motion of more than one object. We trained pigeons to match a white target dot moving vertically at a constant speed to one color and the same dot moving diagonally to another. We presented an additional yellow dot (accompanying dot) moving horizontally near the target. We hypothesized that the pigeons would match the diagonal motion to the color for "vertical motion" and vice versa if they perceived relative motion of the target and the accompanying dot, but the results showed no evidence that pigeons perceived relative motion. Then, we substituted a moving frame for accompanying dots. The pigeons tended to respond to the color corresponding to the relative motion. These results suggest that pigeons may perceptually organize motions of more than one object, as humans do, at least in a situation where an explicit frame of reference accompanies the target.

In summary, pigeons have difficulty in reconstructing complete surface or boundary from fragmented visual information, but they may be able to recognize some "coherence" between synchronously moving fragments. Such peculiar perception of pigeons might be one of the best solutions that they evolved in adapting to their own environment.

Oral-13

The effects of auditory stimuli on the latency of visually triggered saccades.

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The information sent and received by humans is multimodal; it is therefore reasonable to hypothesize that humans possess special mechanisms to process multimodal information. Indeed, numerous behavioral and physiological studies have reported that multimodal information is integrated within the brain [see (Stein 1998; Shimojo and Shams 2001) for reviews]. However, most such studies involved adult humans or animals, and little is known about the developmental aspects of multisensory integration. Here, we focus on the spatial interaction between audition and vision during early infancy. Can infants spatially coordinate auditory and visual stimuli? If so, is this ability different to that of adults? To that end, we measured saccadic response time (SRT). 4.5-month, 5.5-month, and 10.5-month-old human infants were exposed to auditory and/or visual stimuli while their eye-movements were monitored by an electro-oculographic (EOG) system and a video camera. There were five conditions: light only (only light was presented); sound only; congruent (both sound and light were presented from the same side); incongruent (sound and light were presented from opposite sides); and no-target (control). The analyses of SRT revealed two main results. First, SRTs for the congruent condition were shorter than for the incongruent condition. This effect was observed in 5.5-month and 10.5-month-old infants, but not observed in 4.5-month-old infants. Second, saccades were not automatically triggered by auditory stimuli alone. Therefore, the direction of auditory stimuli modulated saccades that were induced by visual stimuli, indicating that a mechanism of auditory-visual spatial co-ordination underlying saccadic eye movement may emerge around five months after birth. However, no differences in SRTs between the congruent and visual only conditions were found in all age groups, which suggests that the mechanism is not fully mature in 10.5-month-old infants.

Oral-14

The more difficult to articulate, the more difficult to perceive？: Infants' discrimination of /ra/ and /da/ in words.

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This study investigates how perception of minimal pairs develops. Particular focus was placed on minimal pairs that are phonetically similar and frequently mispronounced by young children. Japanese-speaking children before three years of age often say /daioN/ when they actually intend to say /raioN/ (*lion*). This kind of mispronunciation is caused by the similarity of a tap consonant, /r/, and a stop consonant, /d/, in the place and the manner of articulation. The phonetic similarity of /r/ and /d/ provokes replacement of these two consonants in some Japanese dialects (ex. /udoN/, *noodle*, is replaced by /uroN/). The replacement of /r/ and /d/ has also been observed in Taiwanese who learn Japanese (Liu, 2000). The correlation between articulation and perception has been shown for such minimal pairs. For example, after Japanese speakers were trained to discriminate /r/ and /l/, a minimal pair in English but not in Japanese, they improved production of these consonants (Bradlow et al., 1997). However, there seems to be a gap between the development of perception and that of production in early developmental stages. In perception, infants at around the age of four months are said to be sensitive to sound contrasts of every language and are tuned into their native language by the time they reach one year of age. In production, in contrast, even three-year-old children fail to pronounce similar-sounding words accurately. There would be two possible ways to explain this gap: (1) accurate pronunciation of similar sounds develops later than that of clearly different sounds, because similar sounds are more difficult to discriminate than clearly different sounds, or (2) accurate pronunciation of similar sounds develops independently of perceptual ability.

To examine whether ability to discriminate similar sounds develops later than clearly different words, we tested Japanese infants of five and nine months of age, on their ability to discriminate minimal pairs, /r/, /d/, and /h/, in nonsense words, /ramaku/, /damaku/ and /hamaku/. Both five- and nine-month olds distinguished /hamaku/ and /ramaku/. In contrast, only nine-month-old infants discriminated /damaku/ from /ramaku/. These results indicate that a phonetically similar pair /r/-/d/ is discriminated at a later age than a phonetically dissimilar pair /r/-/h/ in words. Based on these results as well as the results from some further analysis, we will discuss the relation between perceptual and productive development.

Oral-15

Native language specific development in infant's speech perception and production

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Language acquisition in infants is a developmental process based on abundant speech inputs and outputs in ambient language environment. Spoken language is composed of the two aspects of perception and production. It is well known that effects of one's native languages are shown in these two aspects of speech from an early phase of a developmental process.

In order to test how infants perceive speech surrounding them, simple but elaborated experimental techniques such as preferential listening, habituation-dishabituation and high-amplitude sucking procedures had to be developed. Using these methods, a lot of studies have been done to reveal infant's speech perception in prelinguistic period. These studies indicated even neonates have an ability to perceive speech components quite precisely. The first half of the year is dedicated to universal and language independent perception of speech. However, in next half year, infants start to attune and integrate their speech perception to their native language phonetic system. Evidence of the attunements can be seen in a level of phoneme and rhythmic perception, audiovisual speech integration, or in a strategy of word segmentation,

In speech production development, first word emerges usually around first birthdays. However, meaningless speech before first word has already had an important role in language acquisition. There are language universal characteristics in very early development of speech production due to anatomical restriction. Meanwhile, a language specialized speech production gradually appears from around 10 months of age in acoustic characteristics of vowels, ratio of consonants, and syllable intonation.

The talk will review relevant studies in order to interpret a speech acquisition in infants through dual aspects of perception and production with a focus on the effects of the native language. Most recent findings from research with Japanese infants will be also included in a presentation.

Oral-16

Personality impression formation from thin slices of nonverbal behavior: its bases and consequences.

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Personality estimation of strangers from short observation should have ecological significance, because it enables individuals to judge who is an appropriate target to initiate a certain interaction with. We demonstrate examples that individual personality traits associate with the frequency of their coming across approaches by strangers. College women were asked the frequency of experiences being approached by a stranger in sexual or nonsexual context. Sexual contexts were the cases in which they came to be a target for picking up unexpectedly, and groped. They also answered a questionnaire asking their personality dispositions. Frequently picked up women had unrestricted sociosexuality (inclined to impersonal, short-term mating strategy), and scored higher in extraversion and openness of the big five personality traits, that had been reported to associate with unrestricted sociosexuality. Women who experienced frequent nonsexual approaches scored higher in agreeableness.

Subsequently, we examined whether unacquainted raters can judge the appropriateness of a target for such approaches from nonverbal behavioral cues. College women (n = 23, 18-21 yr) served as walking models, and short video clips (M = 15.7 s) of their walking down in a concourse were used as target stimuli. College male students viewed the video clips and rated whether each walker was appropriate for (1) picking up, (2) groping, and (3) asking direction. They also rated several physical characteristics of a walker. Raters rated physically attractive, fashionably groomed walkers were appropriate for picking up and groping, but such characteristics did not predict the actual frequency of women's having been picked up unexpectedly. The strongest predictor of that frequency was a walker's self-rated self-monitoring (the strength of controlling expression of emotion) personality trait, which is reported to associate with unrestricted sociosexuality. We also examined whether male raters can judge the appropriateness of a target for the same social interactions from a point-light display of a walker. Raters discriminated low self-monitoring, introverted, neurotic, and shy walkers from point-light display and chose them as a target for groping. However, such judgment did not agree with the actual frequency women reported. In all, raters possibly were able to estimate personality traits that predict actual occurrences of interpersonal interaction, from nonverbal behavioral cues, but their choosing criteria differed from the ones used by approachers in real life.

Finally, we introduce some results from a currently working project, investigating hormonal correlations with personality traits relevant to variations in mating strategies.

Oral-17

Cross-modal social category in monkeys and dogs

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Categorizing things surrounding us is one of the most important abilities for humans. Our category has the following three major functions. First, it makes us perform the same response towards discriminable objects within a category. Second, a category we have contains exemplars from a variety of sensory modalities. Third, we do not only store such characteristics as a set but also actively recall a common representation of the object in mind upon perceiving any of its characteristics. It is already reported that categorization in non-human animals also has the first two functions. But there have been no studies that investigated the third one in nonhumans.

We conducted two experiments focusing on the second and third functions. Our subjects were three primate species and dogs. The categories we used for the experiments were different among the species, but all of them belonged to the social domain.

In Experiment 1, we tested Japanese macaques and dogs. We used a modified expectancy violation procedure. We prepared two voices and two photos from two different categories for each subject. We presented to the subject one of the photos after playing back a voice. A voice and a face matched in a half of the trials (Match Condition) and mismatched in the other half (Mismatch Condition). For all species, we found that subjects' looking time at the monitor in Mismatch condition were longer than those in Match Condition. These results suggest that they recall and expect the visual images of the category upon hearing voices.

In Experiment 2, we tested two squirrel monkeys using a symbolic matching to sample procedure. In the training phase, we trained them to discriminate photographs of two caretakers of them. After the subjects pressed down the lever, one of the caretakers' photographs appeared on the monitor. Five touches on this sample stimulus extinguished it and resulted in two comparisons. The subjects received a reward by choosing the right one that was corresponding to the sample stimulus. After reaching the criterion (80% correct for each face in two consecutive sessions), they were exposed to two test sessions. In these sessions, 32 all-reinforced test trials were interspersed among the training trials. In the test trials, a voice, either matching or mismatching to the sample photos, was played back after the sample stimulus disappeared. Their performances were better when the voice matched the photo. This suggests that they may have recalled the caretaker's visual images upon hearing his/her voice. More detailed results will be discussed.

Oral-18

Do humans and baboons use the same information when categorizing human and baboon pictures?

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What information do monkeys use when sorting pictures into categories? The following research was aimed at answering the following questions: (1) Do baboons process human and baboon pictures in a categorical way? (2) What is the information utilized by baboons when categorizing human and baboon faces? (3) Do baboons recognize humans and baboons in pictures?

(1) In Experiments 1 and 2 (visual-visual priming), four baboons and six humans were trained to sort, by species, pictures of humans and baboons (go/no-go task). They were then tested using a priming procedure, in which a (human or baboon) prime picture was briefly presented (120 ms) prior to a (human or baboon) target picture. For half of the trials, the prime and the target images belonged to the same category ("consistent"), whereas for the other half of the trials, the prime and the target images belonged to different categories ("inconsistent"). For both species, response times were shorter when the primes and targets were category consistent rather than category inconsistent (Experiment 1). Categorical priming remained with grayscale or cutout prime pictures (Experiment 2).

(2) In Experiment 3, an adaptation of the classification image (CI) procedure was used that produces an unbiased statistical process to define what information subjects are using to categorize human versus baboon faces. Subjects were trained to sort pictures of human and baboon faces on which random visual noise was superimposed. On ambiguous probe trials, a human-baboon morph was presented, eliciting human-responses on some trials, and baboon-responses on others. The difference in the noise patterns for the human-responses and baboon-responses constituted an estimate of the information mediating the classification. Compared to the humans, the information used by the baboons matched much more closely that of a Theoretical Observer (computational simulation), who responded solely on the basis of the pixel similarities to the training images. Thus, the baboons did not appear to rely on their extensive exposure to living humans and baboons to categorize the images.

(3) Further experiments investigated the ability of baboons to recognize humans and baboons in pictures. In Experiment 4 and 5 (visual-auditory priming), subjects were trained to sort auditory targets (human vs. baboon vocalizations). They were then tested using a priming procedure, in which a prime picture was presented prior to the target sound. Categorical cross-modal priming with either color or grayscale primes was demonstrated in humans and in one of two baboon subjects, showing that at least one baboon recognized humans and baboons in pictures.

Results confirm categorical abilities of baboons and demonstrate that these animals have the ability to process pictures as representations of real humans or baboons, although they don't necessarily rely on a conceptual level to categorize images.

Oral-19

Development of familiar face recognition: The processing of inner, outer, and isolated features

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Many studies have proved that face information consists of configural information and featural information, and for children, featural information is more important. For studies on children face recognition, how to select experimental materials and control the familiarity is a big unresolved problem.

The study tried to discuss the function and developmental characteristic of the main facial features in the facial recognition by the photo-fit experimental method. In the experiment, a face was first divided into inner and outer face, then the three main organs (eyes, nose and mouth) were departed from the inner face. The functions and developmental characteristics of these organs together with the whole, inner and outer face in the facial identification were discussed.

In the experiment, 4- to 6-year-old, 7- to 9-year-old and 13- to 16-year-old children were taken as subjects, and the materials were photos of 30 children from them. The children of an age group were classmates for 3 semesters.

Through the absolute identifying experiment of familiar face, results indicated:

1. There are significant differences between the functions of every feature in the facial recognition. For 3 age groups, there is consistency in the functions of facial feature information. The order is whole face, inner face, eyes, outer face, mouth and nose in turn according to the discretion of the subject's performances. Of the main facial organs, the eyes have played the main roles in the facial cognition.

2. There exists an evident developmental trend in the children's cognitive ability from the 4-year-old children to the 16-year-old children.

3. In general, the girls' performance is better than the boys'. There is orderly difference between the capable developments as the boys and girls identify the face.

4. In general, there is no notable difference between the performances when the subjects identify themselves and others, but the performance of the 4-to 6-year-old children when they identify the whole faces and the inner faces of themselves is worse than when they identify those of others.

5. Familiarity is considered as an important factor to influence children face recognition.

Key words: facial cognition, featural information, photo-fit experiment, age difference, sexy difference, familiarity

Oral-20

Ground nesting in the chimpanzees of the Nimba Mountains, Guinea, West Africa: Environmental or Social?

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Nest or bed building is a behavior reported for all chimpanzee (*Pan troglodytes)* populations studied in the wild. Occasional construction of ground nests has been reported at several study sites. Chimpanzees *(P. t. verus)* in the Nimba Mountains, Guinea, West Africa, frequently construct nests on the ground, which can be as elaborate as tree nests. However, no studies to date have addressed the underlying factors influencing the occurrence of this behavior.

This study focuses on examining the environmental variables that may account for the relatively high frequency of ground nesting among the unhabituated chimpanzees of the Nimba Mountains. The two hypotheses proposed to explain ground nesting are considered (Matsuzawa and Yamakoshi, 1996): 1) a lack of appropriate nesting trees in areas where chimpanzees nest (e.g. steep slopes) results in the construction of ground nests, 2) climatic conditions, such as high wind speeds at high altitudes, may drive the chimpanzees to nest on the ground. This effect is expected to be stronger during the dry season due to the seasonal variation in wind speed. In order to test these two hypotheses we explore the effects of season, altitude, slope and tree availability on the proportion of nests constructed on the ground.

Data collection took place between August 2003 and May 2004. Nesting data were collected monthly along transects (7 km total length) as well as *ad libitum*. Quadrats (20 m x 20 m) were constructed around ground nests in order to assess tree availability (tree density, tree size, tree species). Two fixed weather stations, at low and high altitude, provided data on daily rainfall and maximum wind speed.

The environmental variables considered were not found to affect the occurrence and distribution of ground nests. Neither of the two environmental hypotheses was thus supported. These results suggest that the underlying factors for ground nesting in the Nimba chimpanzees may be social rather than environmental.

Reference:

Matsuzawa, T. and Yamakoshi, G. 1996. Comparison of chimpanzee material culture between Bossou and Nimba, West Africa. In: Russon, A.E., Bard, K.A. and Parker, S. (Eds.) *Reaching into Thought: The minds of the great apes*, pp. 211 – 232. Cambridge University Press, Cambridge.

Poster-1

The exploration into the situational determinants of “triangle emotions”: Empathic joy, envy, and ambivalent/complicated feeling. Ⅱ

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For these few decades, a lot of psychologists have been much interested in human emotions. Recently so much special attention has been paid to the emotions that people experience when they aren’t directly relevant to some events in terms of their own interests. In daily life, we often experience some emotions as observers when some events happen to others, not to ourselves. How might you feel if you heard of your friends’, your parents’ or your rivals’ good news? You might be delighted with it, or you might be envious of it, or occasionally you might have some ambivalent and complicated feeling.

In this study, we focused on the emotions that people experience when some good events happen to others, i.e. “triangle emotions” (the emotions occurring in the triangle of self, other, and event). We constructed original questionnaire items, and by using them asked 277 college students (average age: 20.9, male 101, female 176) to rate about the strength of both empathic joy (happy feeling to congratulate others’ success) and envy that they might experience if some successful events happened to someone around them. As a result, we found that most people really experience both empathic joy and envy in the same situation, the qualities of such triangle emotions were related to the attribution of the others’ events, meanings of the events for themselves, and the balance of well-being statuses between them and the others before the event-occurrences.

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Poster-2

The adherence to “maternal love”, and mothers’ emotional control toward children

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This study examined the influences of mothers’ adherence to “maternal love” on their emotional control during interactions with children. It was postulated that the adherence to “maternal love” (defined as the tendency of the adherence to maternal love that is sociocultural belief) would have both positive and negative effects on parenting, depending on other factors. In Study 1, instrumentation including reliability and validity assessment was conducted for an Adherence to “Maternal ove” Scale. Study2 tested the hypothesis that the adherence to “maternal love” would interact with appraisal of children’s developmental level, and thereby affect mothers’ emotional control over their children. The results showed that (1) when children’s developmental level was rated as high, the adherence to “maternal love” was positively associated with emotional control, and (2) when children’s developmental level was rated as low, the adherence to “maternal love” negatively affected their emotional control. These findings support the conclusion that the adherence to “maternal love”, interacting with other factors, has both positive and negative effects on parenting and therefore represent a “double-edged sword”.

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Poster-3

The meaning of death and dying of the elderly

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Although Death Attitudes studies has presented many factors which construct death attitudes by the use of questionnaire measures of death orientation, investigators should guard against the assumption that all relevant aspects of death studies can be evaluated by questionnaires (Neimeyer, 1997-98). Thus, we should return to studying people rather than variables, and we could capture their meaningfulness by focusing on their life story (Josselson, 1993).

This research was focused on an old man's personal meaning of his own death and dying through analyzing his life story. In other words, this study of death and dying was focused on personal meaning in order to shed light on the internal reality.

First of all, semi structural interview was done using the interview guide (Kawashima, 2003). Subsequently, obtained data was transcribed and coded in order to deeply understand the personal meaning of death and dying. Then, the assemblages of the meanings were captured and the association between the assemblages was also depicted through the Qualitative analysis. Furthermore, the results obtained from the interview were discussed in the light of the complex and various methodological issues that were likely to arise under this kind of study.

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Poster-4

The Decline of circulating T levels and alteration on BIS-BAS sensitivity along with aging

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A behavioral inhibition system (BIS)- behavioral activation system (BAS) is regarded to regulate aversive‐appetitive motives underlying behavior. In this study, we examined whether BIS-BAS sensitivity alters with aging and the change of T levels.

METHOD: Participants were healthy Japanese men (n=48, 16-66yrs). Saliva and blood samples were taken three times a day and BIS-BAS scales (Carver and White, 1994) were used. The concentrations of salivary T, serum total T and bioavailable T (bio-T, biologically-active part of total T) were measured by liquid chromatography-tandem mass spectrometry (LC-MS/MS).

RESULT: Circulating T levels decreased with aging. This was especially prominent with regard to salivary T and bio-T, which indicate bioactive part of T. BAS (total scale and fun seeking subscale) scores had positive correlations with salivary T and bio-T. This was likely to associate with the decline in bioactive T levels with aging.

DISCUSSION: We demonstrated that salivary T levels reflect bio-T levels better than serum total T. Besides, bio-T levels decreased with age especially in the morning. The decline of BAS sensitivity with age may associate with the decrease in circulating T levels.

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Poster-5

Decline of sensation seeking and self-monitoring scores in healthy men along with aging and the decline of testosterone levels

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Sensation seeking and self-monitoring (the strength of controlling expression of emotion) are personality traits that are suggested to indicate the disposition to short-term mating strategy. We examined whether these personality traits decline with aging, and with the decline of circulating testosterone (T) levels.

Participants were healthy Japanese men (n = 48, 16-66 yr). They gave saliva and blood samples three times a day, and filled in a questionnaire asking their personality dispositions. Salivary and serum total T levels were measured by liquid chromatography-tandem mass spectrometry.

Sensation seeking and self-monitoring scores positively correlated with each other ($r = .40$, $p = .005$). Among subscales of the Sensation Seeking Scale, disinhibition and experience seeking scores positively correlated with self-monitoring scores, indicating close relationships between these traits. Both sensation seeking and self-monitoring scores declined with the age of participants ($r = -.58$, $p < .0001$; $r = -.40$, $p = .0004$). These personality scores positively correlated with circulating T levels, especially salivary T levels taken in the morning.

Sensation seeking and self-monitoring personality traits, which are likely to help the practice of short-term mating strategy, were found to decline with aging. The decline of bioactive androgen levels may associate with such changes.

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Poster-6

Action monitoring in preschoolers

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Action monitoring is one important component for self-control and self-awareness. Most of the earlier studies investigated the evaluation of children's own behaviors after they finished some kinds of tasks (e.g. Tower of Hanoi), but there were few studies about on-line action monitoring. On-line action monitoring is important because evaluation studies might depend on the memory and some theorists suggested that on-line action monitoring ability might relate to the awareness of other’s mental state.

In the present study, we investigated preschooler’s action monitoring ability modifying the Cunningham’s study (1989). Children were introduced the computer game in which they should move the cartoon character to the targets using the mouse. In this game, the cartoon character did not move as children wanted him to: the character rotated clockwise by 45°, 90°, 135°or 180°.

The result showed that there was the different pattern between children’s performance and adult’s performance. Children tended to show difficulties with 180°rotation, but in the adults’ study, 90°rotation was most difficult. We discussed this discrepancy between children and adults.

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Poster-7

Developmental process of the integration of two representations in children. -False Belief Task and Imaged Object Gesture Task-

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Previous researches suggested that children could not integrate of two representations in various tasks; false belief tasks, spatial tasks, and imaged object gesture task. Some researches showed that children had difficulty in the integration of two representations in those tasks. We carried out to examine the developmental process of the integration of two representations with false belief tasks and an imaged object gesture task.

In Experiment 1, we examine how children play imaged object gesture with integrate representation in imaged object gesture task. Sixty-two children from 4- to 6-years-old were asked to pretend to guesture with objects (e.g. toothbrush) in three conditions sequentially: action, non-action, induced. The results indicated that children showed pretend play with integrate representation more frequently in induced condition than action condition.

In Experiment 2, we examine how children acquire other・s false belief with integrate representation in false belief task. Sixty children from 4- to 6-years-old were asked to answer both the Drawer task and the Smarties task. The Drawer task induces the integrate representation of false belief. The results revealed that 4-years-old children showed more error than 6-years-old children in the Smarties task, but 4-, 5- and 6-years-old children showed similar good performance in the Drawer task.

These results suggested that children from 4- to 6 -years-old had a difficulty in the integration of two representations, but some condition that related between two representations facilitated for children to integrate of those representations.

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Poster-8

Infants' sensitivity to social or physical contingency: Mother v.s. Stranger.

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Murray and Trevarthen (1985) originally reported that 2-months-olds are sensitive to social contingency in mother-infant face-to-face interaction via closed circuit TV system. In the present study, infants' gaze and smile at mothers and strangers were compared with two groups: under 2-months-olds and 4-months-olds. Our subjects showed sensitivity to social contingency to mothers, but not to strangers. With the DV live-replay paradigms in previous researches, gaze and smile have been considered as positive indices; however, we propose a completely different but new interpretation, which those indices do not always decrease at replay condition. We divided replay condition into two periods, and found that younger infants in our study showed gaze increase at last half replay condition. Gaze is used when infants show expectancy violation. Smile was not only a positive index but also a tool attempting to gain more social interaction from non-contingent adults. Older infants in our study showed more smile at last half replay condition as a social tool. We found that young infants are sensitive to social contingency from mother via DV live-replay paradigm, and there are age changes in reactions to non-contingent mother.

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Poster-9

Exploratory study on determinants of the individual differences in maternal reading of infant's mind

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It has been proposed that the parent-child social interaction has an important role in child's development of mind understanding. It is said that most parents were willing to read or interpret their infants' mental world. In this study, I focused on 'mind-mindedness' (Meins, 1997), that is the proclivity to treat one's infant as an individual with mind. Although several studies attempt to investigate the individual difference of such parental proclivity, little attention has been given to the determinants of them.

Thirty-seven mothers of 6-month-old infants were participated in this study. Individual difference of 'mind-mindedness' was assessed by video-based measurement. It is presumed that maternal individual differences were determined by multiple factors (e.g. maternal developmental history, empathy for others, view of infants etc.). Result of analysis indicated that mothers who thought infants were creative and could understand the world had high 'mind-mindedness' score. Yet no other factors had significant correlations with maternal 'mind-mindedness'. It was suggested that mind attribution and reading for infants could differ from that for adults or animals.

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Poster-10

Effects of understanding other's mental states on moral judgment of commission and omission (2)

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Introduction: This study examines the relationship between understanding other's mental states and moral judgment of commission and omission. If we can understand other's mental states, we can judge whether he/she foresees outcomes and, thus, whether his/her action is bad.

Design: Four tasks were composed of two levels of mental states (1st-order / 2nd-order) × two act types (commission / omission).

Methods: Participants were 142 elementary school children who were 7-, 9-, and 11-year-olds. All four tasks had two stories that were similar but differed in the protagonist's mental states. In Story 1 the protagonist could foresee the outcome, but in Story 2 the protagonist could not. Therefore, when participants judged the protagonist's action in Story 1 was worse than that in Story 2, they could recognize commission or omission. Two questions were asked: on the protagonist's mental state and on moral judgment.

Results: Seven-year-olds passed only 1st-order tasks in both questions, but 9- and 11-year-olds could also pass 2nd-order tasks. Act types did not differ under all conditions. Moreover, the two questions were correlated in all four tasks.

Conclusions: First, if we can understand other's mental states, we can judge whether his/her action is bad. Second, if we need to understand 2nd-order mental states, 7-year-olds cannot judge correctly. Third, 7-year-olds can already recognize commission and omission as being at the same level.

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Poster-11

Self-other differentiation and reasoning about desires in toddlers

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It was found that about 18-month-old children operate a doll as a passive recipient of self's act, but that over 20-month-old children do as an autonomous agent independent of self's act or desire. In other words, from 20 month-old, children become able to represent others as an autonomous agent having desires differing from self's ones and self-other differentiation develops. The development of self-other differentiation would affect children's communicative behaviors in social interaction involved inferring about desires.

Subjects were forty-two 16- to 24-month-old children in nursery school. Self-other differentiation level was measured by observation of children's re-enacting experimenter's pretend acts and its complexity is in proportion to the levels. Children's inferring about other's desires was explored by a food-request procedure. In this procedure, children observed the experimenter expressing disgust as she tasted one type of food and happiness as she tasted another type of food and were required to offer her which food she would desire.

When the experimenter's desire matched with children's ones, children who could represent others as an autonomous agent were more likely to offer her the food associated with her prior negative emotion than children who could merely represent others as a passive agent. When her desire mismatched with their own, the proportion of the children who offered the food associated with her prior positive emotion was not significantly correlated to self-other differentiation level. These results did not suggest that children who could represent others as an autonomous agent understood others' desires differed from self's one (the subjectivity of desires), but might suggest that they met their own desires with taking priority over others' ones.

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Poster-12

5 and 6-year old children can predict other's behavior during TV-game tag play

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One of important aspects of "theory of mind" is recognition of other's inner state (mind) from observation of other's behavior, and prediction of other's next behavior. We investigated in 5 and 6-year old children how predict other's inner state from observed behavior. In this study, we prepared one-to-one "tag" in TV-game situation and two game conditions. In the one of condition (invisible), the participants had to estimate own (or other's) role in the tag game ("it" or "non-it") from other player's (programmed computer) behavior. In the other condition (visible), the participants were able to see a "sign" that designated one of the player's roles ("non-it"), so the participants did not have to estimate the own role from observation of behavior, but just understand from observing the "sign". In the visible condition, there were no significant difference between 5 and 6-year old children's performance. In the invisible condition, however, the performances of 6-year old children were better than those of 5-year old children. The precise analysis of children's behavior suggested that seeing the "sign" designating the player's role made the children play the game easy, because the participants were able to confirm the player's role explicitly not from estimation and able to be aware the rule of the game.

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Poster-13

Distinguishing intentional actions from accidental actions

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Although even human infants have the ability to recognize intention (Meltzoff 95, Tomasello 97), its engineering realization has not been established yet. We believe that it is important to realize a man-machine interface which can adapt naturally to human by guessing whether the behavior of human is intentional or accidental.

Various information, for example, voice, facial expression, and gesture can be used to distinguish whether a behavior is intentional or not, we however pay attention to the prosody and the timing of utterances in this study, because when one did an accidental movement, we think that he tends to utter words, e.g. 'oops', in a characteristic fashion unintentionally.

In this study, we built a video game in which one can play an agent with a ball, and recorded the interaction between a subject and the agent. Then we built a system that learns to distinguish intentional actions of subjects from accidental ones, and analyzed which features of utterances are effective in learning.

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Poster-14

Some modifications of social skills training for people with disfigurement to Japanese environment

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It is often said that if people have facial disfigurement, they have difficulty in meeting new people, making and keeping friends, entering school, getting job, and get partner(Bull & Rumsey, 1988). One of the reasons of their psychological problem came from their own low social skills. (For exe.Rumsey, 1983) Partridge made Social Skills Training (SST) to get better social skills in order to get good adjustment for re-entering social situation. Matsumoto et al., (2003) made Social Skills Training for people with disfigurement especially for Japanese People (SST) on the basis of Partridge's SST. After running this SST, in order to run this sort of workshop ordinarily in this country, with using anecdotal episode during this workshop, the conditions for good modification of this SST for Japanese environment were discussed.

In Japan, especially before SST, the way of collecting participants should be done with paying attention to their meaning of their own disfigurement.

Another thing is the way how to organize client group during the workshop to empower each other.

In addition, the sequences of this SST were discussed. This sort of SST for disfigurement are usually very practical in UK, so that's why programs are not so clear when this program shall be done for the patients, and what sort of psychological condition will be fitted for which part of this SST.

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Poster-15

An electrophysiological study of human self-monitoring and social awareness.

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Functional relationship between human self-recognition and social cognition has long been a matter of debate. To approach this issue, we examined the brain activities by electroencephalography in evaluating the outcome of self-produced performance, and the effect of a social situation on the activities. There were two experimental conditions: pair and isolated setting. In the pair condition, a subject and an experimenter sitting across a table alternatively made a simple motor task, trial by trial. Here the consequences (feedback stimuli) of each performer were observed by both of the pair. In the isolated condition, the subject performed the same task alone in a room. Event-related potentials (ERPs) to the feedback stimuli of self-performed trials showed two distinctive periods around medial-frontal scalp sites: the early period (150 ? 250 msec post stimulus) was modulated by the contents of feedback stimuli irrelevant of social setting, and the later period (400 ? 600 msec) was modulated by the social setting irrelevant of feedback contents. This result indicates that the frontal brain region is one of the locus for two types of self monitoring (i.e. one is embedded in motor control and one is probably modulated by social awareness), and furthermore, these processes are somewhat independent. In this presentation, we will also show and discuss the direct comparison between the ERPs to perceive self's and other's performance, and the theoretical implication of these results.

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Poster-16

Social interaction between two chimpanzees for using tokens to get food

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The present study examined the social interaction of two chimpanzees when they used tokens to get food. The subjects were two adult males, two adult females, and three mother-infant pairs. They lived together in a captive community of 15 chimpanzees. The infants are four years old when the experiment started. The subjects were tested in a playroom (approximately 30 ㎡), in which two vending machines were placed 4m apart on a wall. We used 100yen coins as tokens. Forty coins are scattered on the floor equally distant from each vending machines. The subjects got a piece of apple by inserting a coin and pressing a button on the vending machine. We trained the four adults individually for 10 sessions and then put two individuals together. Five pairs of adults were made except for a male-male pair. The infants and their mothers were always put together without the third individual. The results were as follows. 1) Saving patterns of coins such as the number of coins they picked up a time were different among individuals. When two individuals were put together, the saving patterns did not change. 2) Subordinates more often approached and picked up coins when the dominant individual was away from coins. 3) One male invented a new behavior of raking up coins toward one of the vending machines. 4) When the dominant male was near coins, the subordinate females sometimes turned their back toward the male and picked up them. 5) The infants picked up coins in the face to face situation with their mothers and inserted them. However, the mothers sometimes prevented the infants from pressing a button. These are unique behaviors limited to the mother-infant pairs that were never seen in pairs of adults.

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Poster-17

Sequential analysis of grooming interactions in female Japanese monkeys (*Macaca fuscata*)

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We observed grooming interactions in a provisioned group of Japanese monkey, named "Arashiyama E" during the period from October 2002 to September 2003. The purpose of the study was to examine how communicative activities proceed and are regulated during specific dyadic interactions in the species. Ten adult females were selected as the focal animals. They were 10-12 years old from different lineages and varied in social ranks. A total observation time calculated with the focal animal sampling was 373.4 hours. Data from 743 grooming sessions between adult females were obtained. Sequential analysis of actions revealed that 1) more than 70% of grooming sessions were initiated with just grooming by the groomer not with solicitation by the groomee, 2) more than 90% of role changes happened after the groomer stopped grooming but didn't leave the groomee / and did solicit grooming, and 3) 40% of sessions were terminated with the groomer's action, leaving the groomee alone, and about 30% of sessions were terminated because of incidental affairs. The results suggest that in female Japanese monkeys the groomer who initiated the sessions tends to take initiative throughout following interactions. Once they change the roles, however, the next groomer takes initiative in the following interactions. In the present study, this tendency was found regardless of blood relationship or social ranks of the partners.

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Poster-18

Cooperation by tufted capuchin monkeys(*Cebus apella*):Spontaneous division of labor, communication, and reciprocal altruism.

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We investigated whether three characteristics representing human cooperation, namely division of labor, communication and reciprocal altruism, would also appear in capuchin monkeys. Three experiments on cooperative problem solving were conducted with three pairs of tufted capuchin monkeys. In experiment 1, we tested whether the monkeys, trained individually a two-response sequence necessary to obtain rewards, could solve a cooperation task, by spontaneously dividing the sequential roles into two. As a result, all of the three pairs of monkeys solved the task spontaneously. In experiment 2, we asked whether there were any differences in communicative behaviors between the cooperative task and a solo task in which they were able to obtain the food by themselves.The monkeys significantly looked at their partner in cooperative task than in solo task.In experiment 3, we tested whether the monkeys altruistically participate in cooperation, even when they could not get reward but their partners could. All of the pairs altruistically maintained cooperation for their partner obtaining a reward, when the roles were switched every trial within a session. These results suggest that in cooperatively acting together, capuchin monkeys show several characteristics common with human beings (188 words).

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Poster-19

Visual for photos of primates by mother-reared chimpanzee infants.

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With a free-choice task, visual preference was estimated in captive chimpanzees. In Tanaka (2003), five adult chimpanzees that were reared by humans showed strong preference for photographs of humans. The present study investigated an effect of social experience on visual preference in three infant chimpanzees (3y4m – 4y3m) and seven adult chimpanzees. The infant chimpanzees were reared by their own mothers just after their birth, and the adults that were reared by humans and had been in captivity for more than 19 years. The subjects were members of a captive community of 15 chimpanzees. The subjects were tested individually. They were presented with digitized color photographs of various species of primates on a computer screen. Their touching responses to the photographs were reinforced by food reward irrespective of which photographs they touched. The results revealed that six of seven adult chimpanzees touched the photographs of humans more than any other species. In contrast, two infant chimpanzees showed no preference for particular species, and one infant chimpanzee touched the photographs of chimpanzees and humans. This tendency was consistent across different stimulus sets in each subject. The results suggest that social experience during infanthood might have made the visual preference that the chimpanzees showed.

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Poster-20

Spontaneous food exchange with human caretakers by a capuchin monkey: Recognition of the opportunity for and the rates of exchange.

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One tufted capuchin monkey (male, 8 years old) spontaneously began to hand his monkey chow to his caretakers, apparently expecting to exchange it with his favorite food (sweet potato or scrambled egg). We investigated his rule of this exchange. In experiment 1A, the subject was given opportunities to exchange his chows with various foods from one of the caretakers. During initial few sessions, this monkey would hand a chow to the female experimenter (HK) regardless of whether she showed the food or not. Over the sessions, however, the subject came to hand his chow to the experimenter only when she showed her food. In experiment 1B, in which people unfamiliar to the monkey worked as the experimenter, he did not apply this acquired rule to the novel experimenters; he again handed his chows regardless of whether they showed the food or not. In experiment 2, we investigated whether and how the subject rated the value of each food. The subject had stable value for each kind of foods. In experiment 3, we reversed foods the experimenter and the subject kept. When the subject kept his favorite food, he exchanged at rates lower than the original situation. These results indicate that the subject learned to recognize the opportunity to exchange and spontaneously attributed differential values to each food according to the situation.

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Poster-21

To eat or not to eat: infant response toward novel foods under social condition in captive chimpanzees

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Many animal species hesitate to eat novel foods at their first encounter. To expand the food repertoire efficiently beyond such a neophobic propensity, social context may play an important role. In the present study, we investigated infant response toward novel food in captive chimpanzees under the condition in which they can explore such items freely together with their mother. In particular, we focused on the following two points. 1) Do infant chimpanzees exibit neophobic responses toward novel food? 2) Do they refer to their mother for some kind of cue before ingesting novel food? Infants first approached novel foods rather than familiar ones when presented simultaneously. However, they did not ingest novel food immediately, but always sniff-licked it first. Infants took significantly longer time till ingesting novel foods than familiar ones. Infants tended to pay attention to their mothers before mouthing or ingesting novel foods themselves, but never did so with familiar ones. In response to the infant's activity, mother chimpanzees were tolerant rather than actively interfering. Those results imply that chimpanzee infants respond to novel foods in a neophobic way and refer to their mother for some kind of cue before attempting to ingest them. By socially referring to their mother, chimpanzee infants possibly cope with novel resources and expand their food repertoire efficiently beyond their neophobic propensity.

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Poster-22

Sequential learning using Arabic numerals by chimpanzees

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In order to compare symbol manipulation with humans and chimpanzees, the previous studies have investigated numerical concept using Arabic numerals in a chimpanzee called Ai. To extend and verify the evidence obtained from Ai, we started a new series of experiments: a sequential learning task of Arabic numerals with naive 6 chimpanzees including 3 infants. The subjects were required to touch the numerals appearing on a touch-sensitive monitor in an ascending order. If the subjects touched all numerals in correct order, they got food reward. Otherwise the monitor turned black with a buzzer sound. A new number was introduced when the subject reached to the criteria of learning. All of the subjects mastered the skill of touching from 1 to 9 to some extent. When we introduced a new maximum number N, chimpanzees tended to keep N minus 1, the maximum number in the previous stage, to the last position of sequence. The results suggest that the last number of the acquired sequence functioned as a terminator. We also focused on the parameters to facilitate the sequential learning as follows: 1) The correction method that means to repeat the same trial until the correct response occurs. 2) Manipulating Inter-trial-interval (ITI) or Time out. 3) Mixing a new sequence into old and easier sequences that had been already learned by the subject.

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Poster-23

Stacking shaped blocks in chimpanzees

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Stacking blocks was used as an indicator of cognitive development in humans and chimpanzees. Stacking blocks is considered as a form of object-object combination, a precursor of tool-using behavior. Developmental study of object-object combination in chimpanzee infants showed that the onset of stacking blocks was delayed in chimpanzees compared to humans. However, chimpanzees more than three years old have the ability to stack up blocks like humans. In this study, I presented shaped blocks (cylinder and triangle) to the chimpanzees (two adults and three infants) who had already acquired the skill to stack up cube blocks. Adult and one infant chimpanzees stacked up the cylinder blocks with adjusting the direction of the blocks from the beginning: stacking with the flat side of the cylinder. Two other infants initially had difficulties to stack up the cylinder blocks. Then, they gradually acquired the skill to adjust the direction of the blocks in an appropriate way. The behaviors of the subjects were described in sequential codes using a notation system of object manipulation for the further analysis. In sum, the present study proposed a new method to assess cognitive development in non-human primates using the paradigm of stacking blocks.

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Poster-24

Contextual effects on the perception of the collision events in chimpanzees (*Pan troglodytes*) and humans (*Homo sapiens*).

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Identical visual objects move directly toward and the two objects overlap completely before they past one another. Such an ambiguous display appears either to stream past one another or to bounce off each other. Previous studies on human perception had revealed some experimental manipulations (such as synchronized sounds or flashes) turn the perception of passing into that of bouncing. Scholl and Nakayama (2002) reported a new type of contextual effect on the perception of the ambiguous events. When a distinct collision event occurs nearby, the ambiguous test event too is now seen as collision. In this study, I investigated this "causal capture effects" in the comparative perspective using chimpanzees and humans as subjects. The task given to the subjects was to track and indicate an object cued in advance of the event. In the tests of the perception of the ambiguous events, humans tended to perceive passing, replicating the results of previous studies. On the other hand, chimpanzees did not show such a tendency. In the test of contextual effects, chimpanzees' responses were affected by the type of the context events as observed in humans. The present findings suggest that chimpanzees and humans partly shared the mechanisms to perceive these kinds of causal events.

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Poster-25

Advantage of color vision deficiency over normal trichromat in discrimination of color-camouflaged stimuli in humans

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To explain the relatively high frequency of congenital red-green color blindness, the suggestion has been made that dichromats might be at an advantage in some visual tasks. We investigated whether color vision deficiency had visual ability superior to normal trichromat in breaking color camouflage. The participant's task was to discriminate a circular pattern from other patterns in which textural elements differed in orientation and in thickness from the background. In one condition, stimuli were single colored (green or red), in the other condition, stimuli were color camouflaged with a green/red mosaic overlaid onto the pattern. Color vision deficient participants selected the correct stimuli in the color-camouflaged condition as quickly as in the single-colored condition, while normal participants took longer to select the correct choice in the color-camouflaged condition than in the single-colored condition. These results demonstrate a superior visual ability to discriminate color-camouflaged stimuli in color vision deficiency.

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Poster-26

Pictorial depth perception in squirrel monkeys (*Saimiri sciureus*): The effect of texture gradient cues on size discrimination.

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Our perceptions of the size of objects are relatively constant despite the fact that the sizes of objects on the retina vary greatly with distance. Studies of this ‘size constancy’ have demonstrated that the object apparently located far away by pictorial cues is perceived larger than its real size. The purpose of this study is to investigate whether squirrel monkeys see a size constancy illusion influenced by pictorial depth information in two-dimensional (2-D) displays. If this species retrieve depth from 2-D patterns depicted by pictorial cues such as shading and texture gradient, they should overestimate the size of an object located “far” on the textured surface. Two female squirrel monkeys were trained to discriminate the size of two discs different in size on a matching-to-sample task. After the subjects attained 80% correct in two consecutive sessions, they were tested in nonreinforced probe trials with the discs presented on textured surfaces that recede toward the top or the bottom of the display. The latest data will be reported at the poster.

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Poster-27

Experimental observation of fear responses toward some kinds of objects in Japanese macaques (*Macaca fuscata*)

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We conducted the experimental observation to investigate whether three 1-year-old Japanese macaques showed avoidance responses toward some kinds of objects. The subjects were presented with scale models of animals (mammals, insects, birds, fish, reptiles), vehicles, and wooden-bricks (neutral stimuli) in their home-cage. Then, we assessed how the subjects avoided the object by measuring the distance between the subject and the object when they were presented with the objects. Also, we assessed the time that they spent to examine the objects during the presentation. As a whole, the subjects spent the longer time in nearer position from the object when they saw vehicles and wooden-bricks than they saw animals. On the contrary, they spent the longer time in further position from the object when they saw animals than they saw vehicles and wooden-bricks. Also, their examination time to vehicles and wooden-bricks were longer than that to animals. These results indicated that our subjects showed distinctive avoidance responses to animals, and that they regarded animals as 'fear objects'. The present study would help to know spontaneous recognition of object kinds in Japanese macaques.

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Poster-28

Elephant cognition: Understanding of a 'means-end' relationship by captive Asian elephants (*Elephas maximus*)

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The present study explores the issue of to what extent elephants are sensitive to a 'means-end' relationship. We used a 'support' problem, originally employed by Piaget (1952), which involves a goal object (a piece of banana) that is out of the elephant's reach, but is resting on a support (a cardboard) within their reach. Subjects were required to draw the support using their trunk to obtain the goal object. This allowed us to address the issue of whether they are capable of understanding that pulling the cardboard is the 'means' for achieving the 'ends' of obtaining the food. In this study, we used captive Asian elephants (N = 2, 6 year-old and 10 year-old females) to conduct two types of 'support' problems. In the first task, subjects were simultaneously presented with food on the cardboard and food off the cardboard ('on-off' task). In the second task, they were simultaneously presented with food on a continuous board and food on a discontinuous board with a small gap ('connectedness' task). The results showed that the elephants performed both tasks significantly above chance after several sessions, suggesting that the elephants are capable of understanding the means-end relationship in the support problems. These findings are discussed in relation to the cognitive ability/problem-solving performance of nonhuman primates and human infants.

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Poster-29

Mental rehearsal ability in pigeons (*Columba livia*) assessed by a maze task.

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Mental rehearsal is the ability to mentally practice or plan a particular problem before actually solving it (Dunbar, 2000). To examine this ability in pigeons, we used a maze task on a touch monitor. Four pigeons were trained to move a small computer-generated red square (the target) to another blue square (the goal) by pecking responses. After this "navigation" training, these pigeons were exposed to a variety of maze tasks, in which there were white bars that obstruct the movements of the target. We introduced two conditions: in the "with preview" condition, the maze task was presented for several seconds in pale colors, during which pigeons were not allowed to peck at it. In the "without preview" condition, the stimulus was not shown in advance. We made the task gradually more complex and found that pigeons came to take shortcuts at a higher rate, though we obtained no evidence of mental rehearsal. Then, using the previously learned tasks, we examined if pigeons are capable of "task-choice" rehearsal. In the "same task" condition, the preview stimulus and the actual task were the same, while in the "task change" condition, those two were different. We found that pigeons' performance was worse in the "task change" condition than in the "same task" condition, which suggests pigeons' planning ability on the "task-choice" level.

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Poster-30

Auditory representational momentum in the rat (*Rattus norvegicus*)?

Nakamura, Noriyuki and Fujita, Kazuo *Graduate School of Letters, Kyoto University*

When we observe a moving object vanishing at a point, memory for the final position is often displaced in the direction of motion. We examined this phenomenon named representational momentum, which has been mainly studied in the visual modality in humans, in the auditory modality in rats. We used two sound stimuli, both of which were an exponential frequency glide containing a sudden frequency change. One of the stimuli changed in the direction of the glide (forward change condition) and the other changed in the opposite direction (backward change condition). Four rats were trained to remove their nose upon detecting a frequency change. We compared the reaction time in hit trials between the two conditions. In Experiment 1A, in which there was a large change in frequency, there was no significant difference between the two conditions. In Experiment 1B, in which the frequency change became smaller, the reaction time in the forward change condition became significantly longer than that in the backward change condition for the ascending glide. There was no significant difference between the two conditions for the descending glide. These findings suggest that rats might experience representational momentum-like phenomenon in the auditory modality.

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Poster-31

Inference in a social context: A comparative study with rats, hamsters, and tree shrews

Takahashi, Makoto; Ushitani, Tomokazu and Fujita, Kazuo *Graduate School of Letters, Kyoto University*

Imagine that there are two feeding sites that expire after the food is eaten. It should be adaptive for an individual to visit the other site after seeing another individual visiting one. We compared the ability for such inference in a social context in rats, hamsters, and tree shrews. In experiment 1, rats explored a cross maze that had a piece of food in each arm. In the test, the rats were tested which arms they would choose after observing another conspecific selected two of the arms. The rats showed no evidence of inference in this situation. In experiment 2, we tested all of the 3 species in a two choice situation. Only tree shrews avoided the arm that another had selected. These results may suggest that a habit of tree shrews that do not live group is suited to evolve this inference ability.

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Poster-32

Infant macaques' theory of animacy: the role of eyes and fluffiness

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Research has suggested that human and nonhuman infants understand the relationship between self-propelled movement and animacy, but does this mean that they have a concept of what should and what should not be a living being? What properties define animacy? We first investigated whether infant Japanese macaques have an innate knowledge as to what are and what are not animals. We then asked whether specific properties, such as the eyes and fluffiness, account for defining animacy. 15-day-old and 16-day-old infants showed a different behavior towards a fur-ed stone, compared to an eye-ed and a naked stone. This was the case with 1-month-olds too, but 4-month-olds behaved differently only towards the naked stone. The results may suggest that Japanese macaques may have an innate concept of animacy and that the template property for defining animacy may be the texture, followed by the role of eyes at a later stage of development.

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Poster-33

Behavioral development of agile gibbons: From birth to late juvenile

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Two agile gibbons (Hylobates agilis) have been observed from their birth: one is for six years and another one is for five years. We carried out the “participant observation” study for collecting data. They were rejected by the biological mother and reared by human caretakers. We observed them for five hours per day on average and kept daily records about their tooth eruption, body weight, positional behavior, locomotion, object-manipulation, and vocalization in particular. The social contexts of these behaviors were also identified. We tried to clarify the cognitive and behavioral development of gibbons, and to put it in the comparative framework with the other primates. The results can be summarized as follows. Firstly, the body growth of gibbons is more similar to that of macaques than that of chimpanzees. Secondly, behavioral development in gibbons is in general slower than that in macaques but faster than that in chimpanzees. However there were some behaviors that had occurred in the later in gibbons than in chimpanzees and humans, such as the touch by the extended index finger and the orienting or combinatory manipulation. Finally, there were some unique behaviors developed in gibbons: brachiation, throw-and-catch behavior, song development.

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Poster-34

Hand-raised wolves and dogs: attachment and communication with humans.

Virányi, Zsófia and Gácsi, Márta *Department of Ethology, Eötvös University, Budapest*

Several recent studies have suggested an unusual competence of dogs in social interactions with humans but comparative experimental approach involving dogs and wolves seems to be unavoidable in order to find out the significance of domestication-related changes in the evolution of dog behavior. In our study dogs and wolves were hand-raised individually and intensively in human families from their first week of life and their attachment to their hand-rearers and communication with humans in cooperative situations were compared between these two groups.

Their attachment behaviour was tested in the Strange Situation Test but only in case of the dogs was a significant difference found in the level of proximity and contact seeking and efforts for the maintenance of contact between the hand-raiser and an unfamiliar person in the same novel situation.

Regarding the communicative skills the animals were tested both in using human-given cues and in showing communicative behaviour toward humans. In a two-way object choice test the dogs proved to have superior performance compared to the wolves in utilizing human distal pointing gesture to find the hidden food. Also significant difference was found between the gazing behaviour of the dogs and the wolves in a problem situation in which the animals were given the possibility to ask for food from an out-of-reach hiding place from a cooperative human partner. Whereas looking behaviour of the dogs reached a criterion for functionally referential communication that of the wolves did not.

These results reveal some genetic divergencies between dogs and wolves within the context of the interspecific relationship with humans at the behavioral level but it is still question which of the underlying mechanisms are affected by the evolutionary process of domestication in what extent.

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Poster-35

Bilingual word order comprehension and production from longitudinal observational data and development of experimental tasks.

Kutsuki, Aya *Graduate School of Kobe University*
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Bilingual children who have two different linguistic inputs might display comprehension and production that differ from those who get only one type of linguistic input: monolinguals. The first part of this presentation is about the data from one Spanish-Japanese bilingual infant/child who have been observed longitudinally for about two years (1;05-3;07)and from the analysis of this suggests this particular child may have two unstable word orders due to the two languages the child has been exposed to and a necessity to develop a measure to experimentally examine such unstable state of the two languages in young bilingual children. Thus the second half of the presentation is about the attempts to come up with such methods and the pilot results. The point of the interests in this study is mainly the word order in nominal modification in Japanese and Spanish between which the nominal modification word order is known to be typo-linguistically reverse. More specifically, for the experimental method, the word order in the N+N compound noun(this also follows the nominal modification word order pattern in each language) has been tested for both comprehension and production tasks as in Nicoladis (1989) and applicability and validity of this method is considered for future research.

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Poster-36

Directional asymmetry in Japanese infants' discrimination of English /b/ and /v/

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Discriminability of English speech sounds, /ba/ and /va/, by Japanese infants in two age groups, young group (6-8 months old) and old group (10-12 months old) , was examined to see at which point during the first year of life their innate perceptual sensitivity toward universal speech sounds declines. The Conditioned Head Turn Procedure (CHT), which Kuhl and Wereker originally developed in 1990s, was employed. As a result, young group showed the better discrimination of the speech contrast with the average hit rate of 45.40%, compared with that of 20.56% by old group. It was also found that in both age groups, the infants discriminated the two sounds better when /ba/ was presented first as a background stimulus and then changed to /va/ than when /va/ was changed to /ba/. The hit rate in the order of /ba/->/va/ and that of /va/->/ba/ were around 60% and 30% respectively in young group. In old group, the hit rate in /ba/->/va/ and that in /va/->/ba/ were around 25% and 15% respectively. Since 2000 the author and her co-researchers have been conducting the experiments regarding Japanese adults' discrimination and the stimulus order effects. Interestingly the results from those studies showed opposite stimulus order effects, which means that adults can discriminate better when /va/ was presented as the first stimulus of the contrast than when /ba/ comes first. In this poster session the author will put focus on the researches on infants' perception.

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Poster-37

Effects of aptness and conventionality on grammatical form preference of metaphors

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This study explored the effect of aptness of the comparisons and conventionality of figurative meaning of base terms on preference for the grammatical forms of metaphoric statements. Two experiments were conducted for these purposes. In experiment 1, three different groups of participants rated the metaphor form preference, the aptness of the comparison, and the conventionality of the figurative meaning of the base term. The results showed that both of the aptness and the conventionality positively correlated with the metaphor form preference. However, the evidence is somewhat indirect for the effect of conventionality, which is supposed to be caused by the repeated use of the word in a specific figurative meaning. Therefore, we conducted an experiment based on Bowdle & Gentner(1999)'s procedure. The experiment was consisted of the learning and the test phase. In the learning phase, participants repeatedly read the base terms of the comparison in a specific figurative meaning in simile forms. In the test phase, they were required to rate which grammatical form, metaphor or simile, was more preferable. The results suggested that the repeated use of the base term significantly affected the metaphor form preference. The results were discussed in terms of the career of metaphor hypothesis proposed by Gentner & Bowdle (2001).

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Poster-38

Adult’s auditory perception of infant’s vocal sound

Shimada, Yohko *Graduate School of Letters, Kyoto University*

The purpose of this study is to see the difference of human’s auditory perception, which is matured along with the individual ear's experience through the life and may affect his/her social behavior directory without their idea. In this pre-experiment I researched the difference of auditory sensitivity to sound of infant's vocalization between mothers who have babies in their 9 month-old or earlier and other females. Each participant (7 mothers and 8 others) listened to the sound stimulus without any information that those units of sound were baby’s voice. And they rated degree of feeling Noisy / feeling Weird / sounds Like human’s voice on 5-points scale rating. It represents their degree of tolerance and affinity to the sounds. Stimuli are consisted with 14 units of sounds from infant's voices and 5 for the control. The result shows that there is significant difference of auditory sensitivity between the mothers and the other women. This may be because of their short term experience listening to baby’s voice, which could be alter the women’s auditory perception. I’m gathering more data, which contain a participant group of mothers who have their 2-4 years old children.

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Poster-39

Construction of a computational model for the decision making by mind reading

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One of aspects of "Theory of mind" is defined as the ability to estimate other's mind from indirect observation of other's sequential behavior (mind reading) and to make own decision on the basis of estimated other's mind. The goal of our study is to explain this ability with a general computational model. In this study, we prepared the air hockey like video game. The opponent player in this game (computer) sequentially changed it's behavioral strategies, so the human player needed to play with estimating it's internal strategies. We set two experimental conditions differing in the duration among the opponent player's strategies, and we investigated how subjects played this game in the each condition. As a result of this experiment, the subject's behavioral tendencies were widely different between two conditions. Then we tried to propose a computational model for decision making by mind reading that can explain this difference. We explain this ability as the interaction between the hierarchical context recognition mechanism and the reinforcement learning mechanism.

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