

P-1

**Maternal mind-mindedness and interactive style with the infant:
Comparing 6-and 9-month-old infants**

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This study investigated the relation between mothers' mind-mindedness (the proclivity to treat one's child as an individual with a mind) and their interactive styles with their own infants. Twelve infant-mother dyads (six 6-month-old and six 9-month-old infants and their mothers) participated in this study. In the assessment of individual differences in mind-mindedness, at first, the mothers were shown several video segments of other infants than their own children, and then were interviewed regarding those infants' mental states. After that, maternal behaviors were observed in natural infant-mother play settings at home.

The relations among the mothers' mind-mindedness and their various behaviors to infants, especially maternal talking about each child's internal states and dialogical turn-taking which includes nonverbal acts, were explored and analyzed. In addition, those relations were compared between the 6-month-olds and 9-month-olds.

It had been reported that maternal mind-mindedness could provide some appropriate 'scaffolding' for the child to understand the mental world through optimizing the infant-mother social interaction. The results were discussed as to both of the consistent and inconsistent effects, with the preceding reports, of mind-mindedness on maternal behaviors and infant's early social and psychological development.

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P-2

**The rehabilitation program for the people with disfigurement:
a case study on a burn survivor**

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A rehabilitation program for a burn survivor was conducted at 'P' hospital in Osaka. The British charity, Changing Faces made this program for people with disfigurement. This program includes peer-counselling to facilitate the awareness of impacts from disfigurement, and social skill training especially focused on the skill to communicate with other people in order to restart his work after the accident. This patient is the 32-year-old male survivor from one explosion in Osaka city, 2002. And he was anxious about other person's reactions and suffered from awful flash back memories and had a difficulty in going outside. 6 months after the program, the patient could improve his social skill and decrease his psychological problems and could restart his work.

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P-3

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

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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 394 college students (average age: 21, male 191, female 203) to describe and rate about three kinds of triangle emotions (empathic joy, envy, and ambivalent/complicated feeling) that they might experience if some successful events happened to someone around them, and the characteristics of the situations that might bring about each emotion. As a result, we found that the qualities of such triangle emotions were related to emotion-experiencers' relationships to the others, 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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P-4

Meaning of death; perspectives from research interviews with the elderly

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Key words: meaning of death, life story, old-old

For living creatures, death is inevitable, and it is no exception even to human beings. It is no doubt that human beings are always concerned about their finitude, and thus, a way of making sense of their own death should be considered as well as death of other people; i.e. partner, children, parents, relatives, pets, etc. Although, so far, sufficient research has not been done about meaning systems of self-extinction except for a research area of “terminal care”. However, not only patients suffering from terminal illness but elderly people in general, especially old-old, strive to search for meanings of their own life through constructing the personal meanings of their death.

This research was focused on an old woman’s personal meaning of her own death through analyzing her life story and some answers to several focused questions. Focused questions were related to some categories; e.g. perspectives of her life, experiences of significant people’s death, religious trust, and so on. First of all, an interview guide was made on the basis of perspectives of preceding death anxiety researches and McAdams’s autobiographical research. Subsequently, semi structural interview was done using the interview guide. Then, obtained data was transcribed and coded in order to deeply understand the personal meaning system of death. 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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P-5

A Developmental Study of Self-regulation in Young Children: Self-control and Self-assertion

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Aim : This study investigated how related real behaviors in an experimental conflict situation and responses in a virtual conflict situation. Two aspects of self-regulation in young children, self-control and self-assertion were examined.

Method : One hundred and one young children (46 boys and 55 girls), 4, 5, and 6-year-olds, participated in this study. In the experimental conflict situation, they were prohibited from touching attractive toys for the purpose of observing whether they showed self-control behaviors. The experimenter intentionally broke a promise that they could play with these toys afterward for the purpose of observing whether they showed self-assertive behaviors. In the virtual situation, the participants were presented imaginary stories similar to the experimental conflict situations, and required to answer how to behave in such situations.

Result : The results showed that there was a developmental change in self-control but not in self-assertion. In self-control, the behaviors of children in the experimental conflict situation and reactions of the virtual conflict situation didn't correlate in 4 and 5-year-olds, but they did in 6-year-olds. The oldest children, 6-year-olds, could show self-control in both situations. On the other hand, in self-assertion the behaviors of children in experimental conflict situation and reactions of virtual conflict situation didn't correlate in all ages. Especially, there was a discrepancy between these situations in 6-year-olds. They didn't assert in the experimental conflict situation though they answered that they would assert in the virtual situation.

Conclusion : This study showed that it became easy for 6-year-olds to understand a prohibited behavior should be inhibited, and to do so actually. But it was difficult even for the 6-year-olds to assert their demands in the experimental situation, even if they could recognize that they should assert.

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P-6

The influence of entrenchment of existing knowledge on modification of students' naïve concept about an electric current

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Children have existing knowledge formed from everyday experience before they learn about science concept at school. Such knowledge is, however, often wrong scientifically, and called naïve concept. Naïve concepts prevent students from understanding science concept that is learned at school correctly because science concept often contradicts their naïve concept.

It is said that giving information which contradict such naïve concept is effective to modify it. However, some studies recently showed that students don't always modified their naïve concept easily when anomalous data was shown. Because some students ignored it, and the other students interpreted it incorrectly, and another students modified their concept peripherally.

In addition, another study indicated that the entrenchment of existing knowledge was one of factors that influence on modification of it by anomalous data. The primary purpose of this study is to investigate which factors influence modifying students' naïve concept about an electric current. Subjects were junior high school students in the first grade, and the students that had wrong knowledge about an electric current were presented anomalous data that was correct scientifically.

As a result, the students who used their wrong concept to interpret various phenomena were apt to modify it. And the subjective confidences of their concepts had no relation to modify it. The results suggest that one of the entrenchments of existing knowledge, which had relation to modify it, was the coherence of use. The implications of these findings for research and practice are discussed.

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P-7

Visual orienting occurs asymmetrically in horizontal vs. vertical planes

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Recent behavioral data have shown that central gaze direction triggers reflexive shifts of attention to the cued location. However, considering recent findings on ecological adaptation of human vision, it might be expected that such a cueing effect occur asymmetrically in horizontal and vertical planes. To address this problem, we carried out experiments following the paradigm developed by Langton & Bruce (1999). Participants detected a target letter appeared on a PC monitor after the brief presentation of a nonpredictive head-cue (Experiment 1), profile-cue (Experiment 2) or arrow-cue (Experiment 3) directed up, down, left, or right of fixation. In all experiments, a cueing effect was observed only when the cue directed horizontally, however, no significant effect was observed in the vertical plane. The results also showed that RTs to a target appearing horizontally were shorter than RTs to a target appearing vertically, irrespective of the cue direction. These results might reflect humans' adaptation for extension of the visual field in the horizontal plane, as a terrestrial primate species.

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P-8

**How do Pigeons (*Columba livia*) perceptually organize motions of
more than one objects?**

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We investigated how pigeons perceptually organize motions of more than one objects. We hypothesized that if pigeons organize components sharing a common movement vector to one group, the pigeons would perceive the relative motion of the components. 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. In Experiment 1, 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. We reduced the size and the speed of the stimuli to one half in Experiment 2 and changed the moving speed of the target to a sine-function in Experiment 3. In Experiment 4, we presented two accompanying dots. However, the results of Experiments 1 to 4 showed no evidence that pigeons perceived the relative motion. In Experiment 5, we replaced 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 organize a set of moving objects as one object moving relative to the other in some of the stimulus display in which the second one constitutes an explicit reference frame.

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P-9

**Transitive inference in a spatial discrimination task in tree shrews
(*Tupaia belangeri*)**

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Humans easily infer that if A is taller than B and B is taller than C, A is taller than C. Such reasoning is called transitive inference. In nonhuman animals, this process has been examined in nonverbal transitive inference tasks, in the typical form of which animals were trained with 4 pairs of discrimination in 5-item series (A + B, B + C, C + D, D + E), then tested with a novel pair, BD. If the animals select B, their responding is called transitive. However, whether this task is a legitimate test of nonhuman analogue of the transitive inference of humans remains disputed. One reason is that this task does not necessarily posit the transitive relation between items that is essential for the real transitive inference. The second is that, though BD pair is novel, both items have their history of reward, so that the “transitive” responding can be easily explained by difference in the strength of association of each item with previous reward. To solve the problem, we gave tree-shrews spatial discrimination at a semicircular radial maze. The subjects were trained to select a more right arm out of adjacent two arms. Each arm was labeled A, B, C, D, E, F, G, and H. In Experiment 1, 4 tree-shrews were trained on A + B, B + C, C + D, and D + E discriminations, and tested on novel adjacent pairs FG and GH, which did not have the reward history, and a nonadjacent pair FH, which could not be solved by directly following the trained rule. All tree-shrews selected not only G in FG and H in GH, but also H in FH. The result suggests that the tree-shrews showed transitive responding. In Experiment 2, we tested the same animals on a triadic test that presented three alternatives, FGH, at a time. All tree-shrews showed transitive responding in the triadic test. These results suggest that tree-shrews can respond transitively in several novel situations, in which they did not experience reward, based on the rule.

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P-10

The effect of the conflicting cues when 3-year-old children switch the attention.

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Several studies have showed that 3-year-old children's inhibitory control is immature. For example, when they were asked to switch the dimension on the card sorting task (e.g. the color dimension to the shape dimension), they perseverated the old dimension and couldn't switch the dimension (Zelazo, Frye, & Rapus, 1996). However, Perner and Lang (2002) suggested 3-year-old children could sort the cards when they didn't detect the old dimension in the targets. These studies suggested 3-year-old children couldn't inhibit the preceding responses when they faced the conflicting situations. So, in the present study, we examined the effect of the conflicting cues with the card sorting task when 3-year-old children switched the dimension. In the Experiment1, we gave children three phases. On the first phase, children were asked to sort the cards which had two dimensions according to the one dimension. On the second phase, children practiced directing the attention to the new dimension. And on the third phase, children were asked to sort the cards according to the new dimension. In this experiment, most 3-year-old children couldn't switch the dimension. In the Experiment2, we gave children two phases. The first phase was the same as the Experiment1. On the second phase, the experimenter changed the targets and children didn't face the conflicting cues. In this experiment, they could sort the cards correctly. These results suggested children could switch the attention when they didn't face the conflict, and the conflict affected 3-year-old children's mental characteristic.

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P-11

Dogs recall owner's face upon hearing owner's voice.

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We tested whether dogs have multi-modal representations of human individuals. Dogs were tested in a sort of expectancy violation procedure. The task comprised of the voice phase, in which subjects were exposed to a voice, followed by the photo phase, in which subjects were exposed to a photo of a face. Four test stimuli were prepared for each subject. The first was a photo of the owner in an ivory-colored background (PO). The second was a photo of another person who was unfamiliar to the dog (PN). The third was the voice of the owner who called the dog's name (VO). The last was the voice of the unfamiliar person who also called the name of the dog (VN).

There were following four conditions of combination of voice and photo, VO-PO, VN-PN, VO-PN, and VN-PO. The agent of voice and photo matched in the former two conditions (Same Person condition: SP conditions) and mismatched in the latter two conditions (Different Person condition: DP conditions). Each condition was tested once for each subject.

We found that dogs looked longer at the face stimuli in DP conditions than in SP conditions. In particular their looking time was the longest at the VO-PN condition. This suggests that the dogs recalled their owner's face upon hearing the owner's voice. Dogs appear to have multi-modal representations of human individuals.

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Do infant chimpanzees categorize animate beings?

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In our previous study, we examined whether infant chimpanzees spontaneously categorize stimulus objects (scale models of animal, vehicle, and furniture), with the familiar-novel preference task using subjects' looking with touching time as a measure. In this task, there were two phases. During familiarization, three infant chimpanzees were presented with four objects from one of three categories. In the test phase, they were presented with a pair of objects: a new object from the familiar category, and an object from a novel category. If they perceive these objects on the basis of category, their responses would decrease in the course of familiarization phase, then, they would show novelty-preference in the test phase. As a result, they showed significant novelty-preference in the test phase. These results suggest the possibility that infant chimpanzees respond to objects in terms of category. However, it was not indicated that they were familiarized with objects in the familiarization phase. In the present study, we focus on infant chimpanzees' ability of grouping objects, not simply discriminate them, and test with two infant chimpanzees with a habituation task using subjects' looking with touching time as a measure. In this task, there were three experimental conditions. In the basic-level category condition, subjects were presented with a set of four objects from one of four categories (mammal, bird, insect, or reptile) twice. In the animate beings category condition, they were presented with a set of four objects twice, and each object was from one of four categories (mammal, bird, insect, and reptile). In the global-level category condition, they were presented with a set of four objects twice, and each object was from one of four categories (animate beings, vehicle, tableware, and furniture). Subjects' habituation responses to objects across two presentations were assessed. If they could recognize and group objects, their responses toward objects would decrease in the course of presentation. I want to present progress reports in the poster session.

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P-13

Infant capuchin monkey's initial knowledge about animals: stones should not move even with eyes on, but starfish should if they have eyes

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Since acquired knowledge can not be passed on to the next generation through genes, infants are born with minimum crucial information about environment which is vital to survival. Recent research have suggested that human and nonhuman primate infants have some initial understanding about the relationship between self-propelled movement and animacy, but what properties define animacy is not yet known. Here we examined whether an infant capuchin monkey has an innate knowledge as to what are animals and what are not. At one month of age, the infant monkey looked at a self-propelled stone longer than self-propelled animal models such as a frog, snake, squirrel and starfish. The looking time did not decrease even when the stone moved with toy eyes on. However, the monkey looked at a starfish model shorter when it had toy eyes on. When the eye-ed models moved backwards, the monkey looked at them longer than when they moved forwards. This trend reversed at two months of age. These results suggest that infant capuchin monkeys might have an initial understanding about self-propelled movement and animacy, and that their expectation about how animals and non-animals should move may change through development. It was also implied that infant capuchins might have an innate knowledge about the relationship between direction of locomotion and position of eyes. It was further implied that the existence of eyes may be important, but not crucial, to define animacy. What the starfish had, and not the stone, were such features as softness, complexity of color and patterns. Which properties account for the decrease in looking time in eye-ed starfish, but not in eye-ed stones, should be further investigated as well as the generality of these findings.

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Development of schematic face preference in macaque monkeys.

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Human processing of faces is suggested to involve mechanisms specifically devoted to this job. Even newborns, who have little experience with faces, show a visual preference for schematic faces. This suggests that some mechanisms for face processing may exist innately. In the present study, we examined how infants of nonhuman primates recognized schematic faces. We especially investigated whether infants of nonhuman primates would prefer facial stimuli, and, if they do, the effect of whole and parts information of faces was investigated.

We tested 11 macaques (Japanese and rhesus monkeys). They were 0 to 9 week-old infants and most of them participated repeatedly. We showed them four stimuli; “face”, “symmetrical scrambled face”, “facial configuration”, and “linear configuration”. “Scrambled face” had the same parts as “face” (i.e. eyes, mouth, and nose), but they were placed irregularly and symmetrically. Facial configuration involved three black squares that arranged like a face. “Linear configuration” involved the same components as “facial configuration”, but arranged linearly. We divided four stimuli into two groups, “face set” and “config set”. Each stimulus was paired with the other within each set. The paired two stimuli shared the same complexity, therefore the arrangement (like / unlike face) was the only difference between them. As a procedure we presented a stimulus pair, and slowly moved from the front of a subject to left or right side respectively. Following response towards each stimulus was recorded by a video camera and scored from 0 to 3 points afterwards. As a result, infants showed preference for “face” over “scrambled face” in face set. This preference came to appear at one month after birth. In contrast, as for “config set”, there was no consistent nor significant difference between two stimuli. These results suggested that not only one but also two kinds of information (“whole” and “parts”) works together to trigger monkeys’ preferential responses. These developmental patterns were similar to human infants older than one month old. Primate species may share the same cognitive process in schematic face recognition at early developmental stages.

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Capuchin monkeys (*Cebus apella*) cooperate spontaneously

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In this study, we investigated whether pairs of capuchin monkeys (*Cebus apella*) can cooperate spontaneously by taking the partner's role into account, without explicit training. Before the test, subjects were individually trained to get a food reward by completing a chain of two different operations of the apparatus. The first was to pull a tub and the second was to push a block, each of which was attached to each of the tandem experimental boxes. During the training sessions, subjects were able to come and go freely between the two boxes. After training, we parted these boxes with a transparent panel. Then we placed each subject of the pair in each box, and tested to see whether they could allot each of two operations to each individual to cooperate for rewards. Three pairs of monkeys participated in the test, consisting of two sessions of 10 1-min trials. In the second session, the subjects were placed in the other box. The test was done twice. As a result, all pairs succeeded to cooperate. In all pairs, the time before obtaining the reward in each trial abruptly shortened after the first success. This pattern was not what is predicted by trial-and-error learning. Thus we suggest that they may have solved this problem by insight, though they may not have taken full account of each participant's role.

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Short term visual storage in chimpanzees

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Recently many researchers become interested in short term visual storage and its representation in the context of feature integration paradigm (e.g. Luck & Vogel, 1997; Wheeler & Treisman, 2002). The controversies were focused on whether short-term visual storage represents information as integrated objects.

In this presentation, I investigated capacity of the short term visual storage and organization of the visual representation during the term of storage in chimpanzees to test the phylogeny of such visual processing. Two female adult chimpanzees participated in the experiments. Matching-to-Multiple-Sample (MTMS) tasks, where multiple sample stimuli were briefly presented (100ms), followed by 2 alternatives (900ms delay), were given to the subjects.

In Experiment 1, number of the samples varied in the range of 1 to 5. Incorrect alternative was different from the correct one both in form and color. Chimpanzees showed comparable performances with human subjects.

Experiment 2, consisting of 4 conditions, was designed to test whether chimpanzees represent only a single feature (COLOR or FORM condition), both features in parallel (EITHER condition), or feature binded object (BIND condition) in the term of storage. Their performance suggested parallel feature representation.

The results of Experiment 2, however, could not be caused by their parallel storage but by the difference in task demands between EITHER and BIND conditions, which was originated in the difference in similarity of samples and alternatives. As a result of Experiment 3 using simultaneous MTMS tasks, this possibility was supported.

For further investigation of the chimpanzees' visual representation, we examined misconjunct MTMS task in which subjects were required to choose the alternative of the color of a sample and the form of a different one, both in simultaneous and delayed conditions (Experiment 4). The difference of the performance between normal and misconjunct MTMS tasks were evaluated as a reflection of their organization of visual representation. The details of the results will be shown on the poster.

Reference :

Luck & Vogel (1997), *Nature*, **390**, 279-281

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P-17

Stacking blocks and its development in chimpanzees

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Stacking blocks has been used to assess cognitive development in human infants. We applied stacking blocks for assessing the cognitive capability in chimpanzees. Human infants start to stack up blocks at the age of 1 year and 2 months and start to make a tower of 8 blocks at 2 years and 1 month on average. In Experiment 1, we examined developmental process of stacking behavior in two chimpanzee infants. One infant, Pal, spontaneously stacked up blocks at 2.5 years of age for the first time. Pal made a tower of 7 blocks in maximum. Another infant, Ayumu, did not stack up blocks during the first three years. However, when we introduced prompt and reinforcement for stacking blocks, Ayumu immediately started to stack up blocks. Ayumu made a tower of 6 blocks in maximum. The result suggested that three-year-old chimpanzees had the ability to stack blocks to make high tower. After acquiring the stacking behavior, human infants proceed to a more elaborated level in which infants can compose blocks at around 3 years of age. In the task of “composition of blocks”, a set of different colored blocks was given to a subject. The subject was required to focus on the relation among the colored blocks. For instance, a tester in a face-to-face situation stacked up a blue block on a yellow block, then, gave another set of a blue and a yellow block. The subject was required to copy the model, to stack a blue one on a yellow one. In Experiment 2, we examined the composition of two blocks in two adult chimpanzees, Ai and Pan. We presented two out of four different colored blocks; blue, yellow, red, or white. The size of the blocks was uniform (5x5x5cm). After intensive training, the two subjects succeeded to compose two blocks as a model. In Experiment 3, we used three blocks to stack up. The general procedure was identical to Experiment 2: the only difference was the number of blocks in a composition. The performance dropped to the chance level. Ai’s performance was not improved. In the case of Pan, the percentage of correct responses rose from the chance level to around 50% correct. However, the analysis of stacking patterns revealed that the chimpanzee focused on the color of top block in a model but not the other two blocks.



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Crying in infants and mother-infant interactions in chimpanzees

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Infant crying has been considered to function as a signal for getting attentions of mothers and eliciting care from them. Crying occurs most often during the first few months of life in humans, which suggests that crying is effective adaptation particularly for ‘secondary altricial’ human neonates. In chimpanzees, the closest relative of humans, distress vocalizations can occur from birth and are accompanied with facial expressions (Bard, 2000). We conducted observations to clarify 1) when “crying” occurs in chimpanzee infants, 2) how their mothers respond to “crying” in infants. The subjects were three infant chimpanzees (1 male, Ayumu, and 2 females, Cleo and Pal) in captivity, which were born in the Primate Research Institute, Kyoto University, Japan, and were raised by their own biological mothers. We observed their spontaneous behaviors in their living room daily from 7:00 to 9:00 or from 17:00 to 23:00 through two remote-controlled infrared cameras during the first three months. The cameras were set on the ceiling of the living room and were remote-controlled by an observer in another room so that they were not influenced by the observer. We defined crying as specific facial expressions with relevant vocalizations, i.e., the pout face or the whimper face accompanied with ‘hoo’ vocalizations, and the scream face with screaming. Crying occurred in subjects from the first day of life. All subjects emitted crying upon separation from their mother, or upon physical discomfort, a lack of physical contact. Ayumu and Pal were often crying when they lost body contact with their mother. Cleo’s crying was typically associated with nuzzling and suckling, because her mother (Chloe) often rejected the nipple contact. This means that infant crying can be evoked by inadequate maternal behaviors. Mothers were sensitive to crying of their infants and maternal soothing (including repositioning the infant) was the immediate response to the infant’s crying and resulted in quick cessation of the crying. Our study suggests that infant crying occurs through mother-infant interactions and has function to elicit adequate maternal behaviors in chimpanzees as well as in humans.

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**Development of Joint Attention
in an Infant Chimpanzee (*Pan troglodytes*)**

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The ability of nonhuman primates to follow the gaze of other individuals has recently received much attention in comparative cognitive science. In humans, infants are able to localize the particular object at which the other is looking by the age of 12 months. By 18 months, infants can follow someone else's gaze into space that is outside their own visual field (cf. Butterworth and Jarrett, 1991). The aim of the studies presented here was to investigate the development of this ability in a male chimpanzee infant. In the first study, the subject was trained to look at one of two objects, which an experimenter indicated with one of four different cues: tapping, pointing, head turning, and glancing without head orientation. The infant showed reliable responses to the object that was indicated by the various cues, including eye gaze alone, by the age of 11 months. An additional test revealed that these following responses were not due to the non-social local-enhancement properties of experimenter's cues. In the second study, this infant chimpanzee's joint attention to objects behind him was investigated. The infant chimpanzee was tested at 15 months old to look at one of two identical objects, which an experimenter indicated with pointing or head turning. The objects were set in front of or behind the subject. We used moving or stationary objects (screensavers of the computer) as targets. Moreover, the experimenter manipulated the computers at the onset of each block of trials. The results show that by the age of 20 months, the infant reliably followed the experimenter's cues and looked back to the target behind him. Moving targets elicited more responses than stationary targets, and the subject showed more following responses after having seen the experimenter manipulating the computers. Our results suggest that the development of joint attention in infant chimpanzees was seemingly the same as in human infants.

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Questionnaire research of behavioral re-enactment procedure

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Two studies were conducted to examine developmental emergence of the infants' ability to respond to the other's intention that cannot be observed from the surface of the act, taking behavioral re-enactment procedure developed by Meltzoff (1995). In Study 1, as a part of the questionnaire, we asked 156 caretakers to test their infants with the modified and simplified version of re-enhancement experiment. In Study 2, on the basis of the finding of Study 1, we directly tested 33 infants younger than ones tested in Meltzoff (1995) and confirmed that 15-17month olds could perform responding to the other's intention. The good agreement of results between these different procedures suggested validity of the procedure taken in Study 1. This procedure might work as a serviceable tool to assess infants' ability to read others' intention, which opens the possibility to use it as a part of test batteries for assessing infants' development.

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**On the early development between locomotion and social development:
In relation to change into parenting.**

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Although locomotion development of infant has been an object of study for a long time, there is little agreement as to understand how the acquisition of locomotion skill orchestrates psychological change. The possible role of locomotion development on psychological function is once again a topic of great theoretical and practical importance. Recently, some researchers suggest that when the human infant begins to locomote there is dramatic change in the infant's psychological development (e.g., Campos, 2001).

There is no doubt about the fact being true, however, there is a further question which needs to be asked. That is change of parenting. Change of parenting offers the key to an understanding of relation between locomotion development and psychological change, especially, social development of infant.

In this presentation, the data from cross-sectional research using checklist that consists of 4 factors, motor development, object operation, social development, and change of parental behavior/coconsciousness will be presented. Participants in the research were 190 mothers who have infants from 5 to 9 months. It applied pass analysis after dividing three groups (prelocomotion ; creeping locomotion ; crawling locomotion). Results showed that social development of crawling locomotion group was influenced more immediately by changing of parenting than other groups. The present results imply that parental change is released by definite locomotion experience of infant. As a consequent of these, there is a possibility of promoting infant's social development.

Finally, I give some consideration for a chain mechanism between infant and parent as mentioned above.

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The development of joint attention behaviors in daily life

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Purpose

Joint attention is the essential concept in discussing infants' mental development. This study was conducted to create developmental assessment tool from viewpoint of joint attention behavior. We'd like to make the following clear: 1) to verify the typical developmental order of joint attention in daily life, 2) to propose the developmental measurement of joint attention which could be compared with other measurements for infants, 3) to enable to find children with development delay of joint attention.

Method

Subject: 1518 infants (from 8- to 18- month-olds) and their mothers participated in this study, and 5876 data were used for standardization. In add, this study is a part of the longitudinal cencuc in some local government, which is in progress.

Questionnaire: 17 items about joint attention behaviors that were considered to appear by 18 months.

Procedure of Standardization: We implemented standardization procedure referring to standardization process of *Kyoto Scale of Psychological Development (Ikezawa & Shimazu, 2001)*.

Calculating passing-rate of each item in each month-age.

Estimating 50% passing-age of each item.

Making the items ordered according to the 50% passing-age, and dividing them into month-period.

Calculating score of each item per month-period.

Result and Discussion

As a result, the developmental order of joint attention became clear, and it came to be possible to calculate developmental age of joint attention. Therefore, we could make it easier to identify children with development delay of joint attention.

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Children's Understanding of the Relationship between Live Video Image and Current Reality

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The purpose of the present study was to investigate how children understand the relationship between live video image and current reality. Specifically, the study aimed at examining following three points;

- (1) Can children who pass the mirror mark test also pass the live video mark test in the same age?
- (2) Are there any differences in performance on the mark tests under the two conditions where the seal has been covertly placed on the visible place (shoulder) and on the invisible place (head)?
- (3) Is there any association between performance on the live mark test and that on object retrieval task?

Thirty-six 2 and 3-year-old children (MA=34, range=29-40) participated in the experiment. The two tasks were given to each of the subjects; first, self-recognition task on live-video image and on mirror image, and object retrieval task where children were asked to guess the correct place of the concealed object and to retrieve it from there. The latter task was designed to investigate whether children can use a video image as a source of information about current reality. The results showed the three points. Firstly, the live video mark test was more difficult for children to pass than the mirror mark test. Secondly, the difference in body positions on which the seal was placed (shoulder and head) had no effect on the performance of the mark test. Finally, there was a positive correlation between performance on the live mark test and that on object retrieval task. In conclusion, younger children appear to have some problems with reasoning how is the current reality from the live video feedback information. This fact might be related to younger children's difficulty of having dual representation, importance of which was revealed by DeLoache(1991,1997).

Key words: self-recognition, live video image, dual representation

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Self-recognition in Young Children Using Mosaic Feedback

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This study aimed at investigating how the two factors, the feature similarity and the contingency, affect self-recognition of video image in young children. Nineteen 4-year-old (M=49 month) and 21 5-year-old (M=61 month) children were given video feedback of their own image to test whether they would provide the image with a correct verbal label (their own name or the first personal pronoun). The study was a mixed design experiment(2 X 2 X 2). There were two age groups as between subject. There were two within subject factors(2 X 2). One was the feature similarity which consisted of mosaic versus without-mosaic condition. The other was the contingency which consisted of delayed versus live images. In the mosaic condition, video feedback was processed with mosaic effect to reduce feature similarity cues. As for the delayed condition, video feedback was given 3 minutes later to remove contingency cues.

In case of the without-mosaic condition, surprise-mark test was also conducted to compare with the results of previous studies.

The mosaic delayed condition was the most difficult for both age groups to identify themselves. It was followed by the mosaic live condition, then without-mosaic delayed condition in difficulty. This result showed that young children used the visual similarity cues more dominantly than the contingency cues. As to the surprise-mark test in the without-mosaic delayed condition, the results that 5-year-olds performed better than 4-year-olds were consistent with the previous studies. In the without-mosaic condition, the surprise-mark test was more difficult than the self-identification for both age groups. This fact suggested that to pass the surprise-mark test required some additional abilities to the one that was required to identify one's own image.

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**“I know You are the Talker!”
Lip-Voice Matching in 8-month-old infants.**

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Using vowel “aH”, “iH”, Lip Vibration and Whistle, we tested infants' lip-voice matching ability. 72, 8-month-old infants were participated to the study. The participants were seated in front of a TV monitor, which displayed identical faces side by side pronouncing “aH” and “iH” (or Lip Vibration and Whistle) in precise synchrony. A dubbed voice pronounced an utterance that corresponded to one of the two faces on the monitor, but which was synchronized with both.

The results showed that infants looked significantly longer at the face with matched sounds than that with mismatched sounds for “aH” and Lip Vibration, although there was no such difference in “iH” and Whistle. This finding suggests that infants can tell the speaker of vowel “aH” and Lip Vibration by matching auditory and visual information. In consideration of the fact that vowel “aH” and lip vibration are frequently occurred in babbling of 8-month-olds, motor experience of production may play a critical role in lip-voice audiovisual integration of speech.

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The effect of cast shadows on pictorial depth perception in chimpanzees and humans

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Shadows are regions of a surface, which receive no illumination from a light source. We can perceive shape or depth of the objects from shadows. Shadows are classified in two types depended on how they are formed on surfaces. One is 'attached' shadow formed when a surface obstructs the light itself. The other is 'cast' shadow formed when one surface obstructs another surface from the light source. In humans three-year-old children can use cast shadows to identify the shape, distance and size of the object. However, there are no studies about perception of cast shadow in nonhuman animals. In the present study we investigated the effect of cast shadows on the pictorial depth perception using a visual search task in adult chimpanzees and humans. Subjects were trained to select an odd item (target) which had opposite luminance pattern among shaded disks (distractors). We examined whether detection of the target become easier when cast shadows were added to distractors. If cast shadows are informative about pictorial depth perception, performance should be improved. On the other hand, if cast shadows were added inappropriate positions, such as opposite side of light source, performance should become worse. As the results the detection of target became easier when cast shadows were added natural position, on the contrary the performance interfered when cast shadows were added inappropriate position in one chimpanzee. However, in another chimpanzee and humans showed consistently interfered or facilitated performance irrespective of position of the cast shadows.

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