The international workshop 2008

"Frontiers of comparative cognitive developmental neuroscience"

17th September at Kyoto, Japan (Shiran-Kaikan, Annex, Kyoto University)

Sponsored by
Kyoto University Global COE Programs
"Revitalizing Education for Dynamic Hearts and Minds"

Program

13:00 – 13:05 **Opening Remark** by *ITAKURA* Shoji (Kyoto University)

13:05-13:55 **Development of gaze following from a comparative perspective**
OKAMOTO-BIRTH, Sanae (*Maastricht University, The Netherlands*)

13:55-14:25 ***Behavioral and neurochemical changes induced by maternal deprivation in mice***
KIKUSUI, Takefumi (Azabu University)

14:25-14:55 ***Neural origin of cognitive control in young children; A NIRS study***
MORIGUCHI, Yusuke (University of Tokyo)

14:55-15:10 **COFEE BREAK**

15:10-16:00 ***The social cognitive neuroscience of infancy: The early development of social brain functions***
FARRONI, Teresa (Birkbeck College, London, University of Padua, Italy)

16:00-16:30 ***Imitation or Empathy ? : On false acid reaction in infancy***
KAWATA Manabu (Kagawa University)

16:30-17:00 ***Development of teaching behavior in children and adolescents with autism: In comparison to typical developing children***
AKAGI Kazushige (Mie Universiy)

17:00-17:30 **DISCUSSION**
Closing remark by *TOMONAGA* Masaki (Kyoto University)

18:00-20:00 **PARTY** at the restaurant '***Camphora***' (in front of Clock Tower Centennial Hall)

Abstract

Development of gaze following from a comparative perspective

,Sanae Okamoto-Barth
(Department of Economics, Faculty of Economics and Business Administration & Department of Cognitive Neuroscience, Faculty of Psychology and Neuroscience, Maastricht University, The Netherlands)

Gaze is an important component of social interaction. Humans are highly sensitive to the gaze direction of others. The sensitivity about gaze direction starts from early infancy. Infants start to follow the gaze of others in the first year of their life. Gaze following is also found in a number of nonhuman primates which construct complex social groups.From a developmental perspective, one of our studies showed that an infant chimpanzee starts to follow the gaze of an experimenter from the age of 13 months. In my talk, I will focus on three main aspects: 1. development, 2. environmental factors, and 3.maintenance of gaze following. In sum, a series of studies with an infant chimpanzee suggest that development of gaze following in chimpanzees is highly similar to humans in their early infancy. However, studies with all four great apes and with adult chimpanzees compared to human infants indicate that these cognitive skills take diverse forms in the later stage of development in these species.

Behavioral and neurochemical changes induced by maternal deprivation in mice.

Takefumi Kikusui
(Companion Animal Research, Azabu University)

In mammalian species, pups highly depend on their mother, not only for nutrition but also physical interaction. Therefore disruption of mother-pup interaction changes physiology and behavior of the pups. We have reported that early-weaning resulted in persistent increase in anxiety as well as aggression in mice adulthood. In addition, female mice weaned earlier showed lower maternal licking/grooming to the pups. These early-weaned mice also showed higher HPA activity in response to novelty stress. Neurochemically, precocious myelination in the amygdala, and a decrease of brain derived neurotrophic factor (BDNF) protein levels in the hippocampus and prefrontal cortex were observed in early-weaned male, but not female, mice. In addition, the early-weaned males, but not females, showed reduced BrdU immunoreactivity in the dentate gyrus. These results suggest that the deprivation of mother-infant interaction during the late lactating period induces behavioral and neurochemical changes in the adulthood, and that these stress responses are sexually dimorphic, i.e., male is more vulnerable to early weaning stress.

Neural origin of cognitive control in young children; A NIRS study

Yusuke Moriguchi
(JSPS Research Fellow / Interfaculty Initiative in Information Studies,
University of Tokyo)

Cognitive control is the ability to adapt to changes in the environment. Extensive research has revealed that the prefrontal cortex plays an important role in cognitive control. Indeed, adult neuroimaging studies have shown that the inferior prefrontal cortex is activated during cognitive control tasks. Developmental studies have shown that cognitive control ability changes significantly during preschool years. Indeed, 3-year-olds often perseverate to previous mental sets, whereas 5-year-olds do not. Developmental psychologists assume that maturation of the prefrontal cortex plays an essential role in the development of cognitive control; however, direct supporting evidence has been lacking. Using near infrared spectroscopy (NIRS), our research group examined whether lateral prefrontal activation is correlated with cognitive control in young children. In the talk, I will talk the preliminary results of our experiments.

The social cognitive neuroscience of infancy: The early development of social brain functions

Teresa Farroni (Birkbeck College, London, University of Padua, Italy）

Adults possess a network of cortical and sub-cortical structures that are engaged during the perception and processing of social stimuli, and interactions with other humans. Currently, very little is known about the early development of this important brain network. I will review our work, and that of others, that examines the precursors of the adult network during infancy in several domains: eye gaze processing, the perception of face identity, and the perception of emotions. We conclude that while adults have specialized neural routes for different aspects of social stimulus processing, infants appear to apply common processing and show evidence of a lack of neural and cognitive specialization.

Imitation or Empathy ? : On false acid reaction in infancy.

Manabu Kawata（Kagawa University）

未着

Development of teaching behavior in children and adolescents with autism: In comparison to typical developing children

Kazushige Akagi (Mie Universiy）

未着

● Map for Shiran-Kaikan, Annex, Kyoto University