



# Lancaster-Kyoto Joint International Symposium

*Towards an empirical understanding of cultural,  
social and evolutionary perspectives in  
psychological science*



LANCASTER  
UNIVERSITY



**D18, Fylde College, Lancaster University  
Lancaster, U.K.  
24th & 25th November 2011**

Sponsors: Department of Psychology, Lancaster University  
Kyoto University Global COE Programme "Revitalizing  
Education for Dynamic Hearts and Minds"

## **Lancaster-Kyoto Joint International Symposium**

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### ***Programme***

**Thursday, 24th November** – Chair: John N. Towse (Lancaster University, U.K.)

13:00 – 13:10 Opening Remarks: Linden J. Ball (Lancaster University, U.K.)

13:10 – 13:45 *Joint executive control: Exploring thought contagion in generating random sequences among groups*

John N. Towse (Lancaster University, U.K.)

Satoru Saito (Kyoto University, Japan)

13:45 – 14:20 *The good stranger: How Lancaster research on human interaction is helping shape ‘civilian engagement’ within law enforcement and the military*

Paul J. Taylor (Lancaster University, U.K.)

14:20 – 14:35 Break

14:35 – 15:10 *Reasoning from two biological points of view: Evolutionary psychology and behavioral genetics*

Kai Hiraishi (Kyoto University, Japan)

15:10 – 15:45 *Metabolic fuel, hormones and mental performance: from benefit to damage*

Sandra I. Sünram-Lea (Lancaster University, U.K.)

15:45 – 16:20 *The interplay of genetic and environmental influences on prefrontal function and self-regulation of impulsivity*

Michio Nomura (Kyoto University, Japan)

**Friday, 25th November - Chair: Satoru Saito (Kyoto University, Japan)**

10:00 – 10:10 *A brief introduction to the emergence of face processing research in psychology*

Dennis Hay (Lancaster University, U.K.)

10:10 – 10:45 *Face recognition and cultural influences*

Diana Su Yun Tham (Lancaster University, U.K.)

10:45 – 11:20 *Different Visual Scanning Patterns for Goal-Directed Actions in Humans (Homo sapiens) and Chimpanzees (Pan troglodytes)*

Masako Myowa-Yamakoshi (Kyoto University, Japan)

11:20 – 11:35 Break

11:35 – 12:10 *Effects of media exposure on executive function and “theory of mind” in seven and eight-year old elementary school children: From a Japanese longitudinal follow-up study*

Masuo Koyasu (Kyoto University, Japan)

Toru Goshiki (Shizuoka University, Japan)

12:10 – 12:45 *How social engagement explains the “infant false belief” effect*

James Stock (Lancaster University, U.K.)

Charlie Lewis (Lancaster University, U.K.)

12:45 – 12:50 Closing Remarks: Masuo Koyasu (Kyoto University, Japan)

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*Joint executive control:*

*Exploring thought contagion in generating random sequences among  
groups*

John N. Towse

Department of Psychology, Lancaster University, U.K.

Satoru Saito

Graduate School of Education, Kyoto University, Japan

This talk describes executive function research and investigates how this skill is affected by sharing a task among individuals in a social context. In a series of experiments, we examined a paradigm in which two individuals share a common task goal, and perform a complex together, in order to elucidate cognitive bases of joint cognition. The target executive task is random number generation. We explored random generation under joint instructions; pairs of participants combine through turn-taking to compile a response sequence. We demonstrate costs and benefits to group performance; whilst individuals modify their choices in a dyadic situation and group performance shows some advantages, there is also evidence for immediate contagion of sequence stereotypy. Moreover, participants show group effects even when they know their partner is not interacting with them, indicating the power of the social dynamic. The results both constrain models of random generation per se and illuminate processes of executive control in social context.

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***The good stranger: How Lancaster research on human interaction is helping shape 'civilian engagement' within law enforcement and the military***

Paul J. Taylor  
Department of Psychology, Lancaster University, U.K.

An area of dramatic growth in psychological research at Lancaster relates to security, or more specifically to the social cognition of human interaction and the question of how best to engender cooperation from others. As an example of this research, I will report a study that has changed our understanding of the link between people's language use and deception. In this research, participants from four cultural groups completed a catch-the-liar task in which they provided genuine and fabricated statements about either past experience or an opinion/counter-opinion. Analysis of their statements showed that some linguistic indicators (e.g., inflated positive affect) occurred more often in deceptive statements regardless of culture. However, the occurrence of other indicators (e.g., self-references, contextual embedding) was reversed across cultures, with indicators of deception in some cultures acting as indicators of truth in others. These differences, which are consistent with individualism-collectivism theory, have not previously been observed and suggest that current investigative practice must be changed. I will conclude by demonstrating an analytical tool and online training package that has been developed from this and related research to support this change.

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***Reasoning from two biological points of view:  
Evolutionary psychology and behavioral genetics***

Kai Hiraishi  
Kokoro Research Center, Kyoto University, Japan

In this talk, I will present two reasoning related studies conducted from two different biological points of view: Evolutionary psychology (EP) and behavioral genetics (BG). From the EP point of view, I will present data on the Wason selection task, a reasoning task, with group sharing scenarios. One of the distinctive uniqueness of human being lies in the fact that humans construct and maintain highly cooperative groups. Since cooperative group formation cannot be explained as a simple extension of dyadic reciprocal social exchange, it was predicted that the “logic” in a cooperative group context will be different from the logic of social exchange or “cheater-detection” (Cosmides, 1989). Specifically, I will argue that people show the out-group-exclusion responses when they were given a sharing-rule “if one is an in-group member, the one can get a share” on WST (Hiraishi and Hasegawa, 2001). In addition, I will argue that a simple trick could make respondents to switch from the logic-of-cheater-detection to the logic-of-out-group-exclusion on WST with a dyadic social exchange scenario (Hiraishi, 2008). From the BG point of view, I will show data which examined the relationships between the syllogism solving ability and IQ scores among twin participants. I will argue that syllogism solving is highly loaded with general cognitive ability or  $g$  (Shikishima Hiraishi, et al., 2009). In addition, the scores on a task composed of only five syllogism showed quite similar patterns reported with IQ scores (Shikishima, Yamagata, Hiraishi, et al., 2010). The relationships between the two approaches, EP and BG, will be discussed.

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***Metabolic fuel, hormones and mental performance: from benefit to  
damage***

Sandra I. Sünram-Lea  
Department of Psychology, Lancaster University, U.K.

Latest evidence obtained in our laboratory suggests that metabolic agents may prove to be effective in improving and preserving cognitive performance and may lead to better cognitive aging through the lifespan. Glucose is the brain's principal metabolic fuel. Therefore, it is not surprising that transiently increasing blood glucose levels improves cognitive performance. Conversely, chronically high levels of blood glucose, as seen in diabetes, may increase the risk for cognitive impairments, especially in older adults. In this talk I will present a series of studies exploring the role of glucose on cognitive performance. Gaining more in-depth understanding of the major metabolic components of cognition, and more specifically how glucose levels affect cognition, will not only provide a better framework for understanding the neurobiology of cognitive processes, but also increase our knowledge concerning the effects of abnormalities in brain glucose/energy metabolism on cognition, both in adults and in children. The interaction between nutrition and behaviour is currently very much on the public agenda. Nutritional interventions aimed at the maintenance of good glucose regulation may aid preservation of cognitive performance – something of increasing concern to most “ageing” societies.



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***The interplay of genetic and environmental influences on prefrontal  
function and  
self-regulation of impulsivity***

Michio Nomura  
Graduate School of Education, Kyoto University, Japan

Impulsive behavior has been suggested to be due to a dysfunction of serotonergic (5-HT) neurotransmission. Behavioral studies have revealed two broad aspects of impulsivity. Reward-delay impulsivity is defined as an inability to delay the acquisition of rewards, leading to an increased tendency to select immediate small rewards over larger delayed ones. Rapid-response impulsivity, the main focus of this talk, is the failure to successfully inhibit a response to one's environment or social context (i.e., behavioral dis-inhibition). Attraction to external stimuli that have rewarding properties is a central concept that underlies many normal and abnormal behaviors (Cools et al., 2005). Serotonin plays a significant biological role in the processing of incentive-rewarding stimuli, such that impulsive behavior has been linked to 5-HT neurotransmission dysfunction in the CNS. Thus, experimental and psycho-pharmacologic evidence to date appears to support the involvement of functional alterations of 5-HT neurotransmission in the modulation of impulsive behavior. Although polymorphism in the promoter of the 5-HT<sub>2A</sub> receptor gene has been proposed to underlie impulsive behavior following evaluation by a self-reporting measure, this hypothesis was not convincing. We investigated this issue by evaluating a Go/No-go task in healthy volunteers. We found that the subjects in the A-1438A allele group for the 5-HT<sub>2A</sub> receptor gene made more impulsive errors (responding when one should not) than those in the G-1438G group under the condition when monetary reward were given for correct responses in No-go trials. Our results suggest the possible involvement of the A-1438A polymorphism of the 5HT<sub>2A</sub> receptor gene in impulsive behavior. I will also show evidence the effect of acute tryptophan depletion (ATD) as an environment factor, which causes a decrease in 5-HT neurotransmission in the CNS, on behavioral regulatory processes.



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*A brief introduction to the emergence of face processing research in  
psychology*

Dennis Hay  
Department of Psychology, Lancaster University, U.K.

This brief presentation will provide a short introduction to some of the important early ideas in the emergence of modern face processing research in cognitive psychology. The talk will comment on the role of work carried out in Lancaster that helped to launch the field, and set the scene for current research programmes.

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*Face recognition and cultural influences*

Diana Su Yun Tham  
Department of Psychology, Lancaster University, U.K.

People are better at recognising faces of their own race rather than faces of another race; termed the other-race effect (ORE). However, investigations have been inconsistent in confirming the conventional (social) contact hypothesis. Past research has primarily focused on the development of ORE from predominantly single-race populations such as Africa and China. Therefore, central to the role of experience, two experiments seek to understand the consistency of this hypothesis within different age groups (5-6 and 13-14) from a multicultural (Heterogeneous) and single race (Homogeneous) population. All children viewed a series of faces consisting of Chinese, Malay, Caucasian-White, and African-Black races, and were tested for recognition. Interaction with Population and Race of Stimulus was significant demonstrating an ORE on Black race only (for Heterogeneous) and ORE on all other-races apart from Caucasian-White (for Homogeneous). This highlights the importance of both conventional social experiences and newly proposed media experiences (which has been neglected in more than half a century) in explaining the ORE.

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***Different Visual Scanning Patterns for Goal-Directed Actions  
in Humans (*Homo sapiens*) and Chimpanzees (*Pan troglodytes*)***

Masako Myowa-Yamakoshi  
Graduate School of Education, Kyoto University, Japan

Humans show a strong tendency to view the actions of others, not simply as physical movements referenced to objects, but as movements reflecting intentions, or other psychological characteristics. However, little is known about the ontogenetic and evolutionary foundations of this ability. We investigated how humans and chimpanzees differed when attending to actions of others. We used eye-tracking technology to directly compare gaze patterns of 8- and 12-month-old human infants, human adults, and adult chimpanzees. The participants watched videos of goal-directed and non-goal-directed actions. Results showed that chimpanzees anticipated others' action goals in a way identical to human adults. Humans and chimpanzees, however, attend to goal-directed actions differently: Humans, particularly infants, refer to actors' faces significantly more than chimpanzees do. In the case of non-goal-directed actions, human adults attended to faces less often in comparison to goal-directed actions. Our data suggests that chimpanzees predict the action goal based on an evaluation of the functional efficacy, depending mainly on object-related information. On the other hand, humans have a predisposition to observe goal-directed actions by integrating information from the actor (referential) and the manipulated object (goal-directed).

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***Effects of media exposure on executive function and “theory of mind”  
in seven and eight-year old elementary school children:  
From a Japanese longitudinal follow-up study***

Masuo Koyasu  
Graduate School of Education, Kyoto University, Japan

Toru Goshiki  
Faculty of Education, Shizuoka University, Japan

This study investigated the relationship between executive function and “theory of mind” in seven and eight-year old elementary school children. The participants were 374 children (1st grade 121 boys and 124 girls; 2nd grade 64 boys and 65 girls). They are a part of the group who have participated in a longitudinal follow-up study started from the year 2002 supported by the NHK Broadcasting Culture Research Institute, Japan. This study was administered in the year 2010. Children were divided into small groups of 20 or less and were given a booklet which includes two tasks of the Color Trails Test (CTT; Llorente, Williams, Satz, & D’Elia, 2003) and five tasks of “theory of mind (ToM).” CTT was administered using a pencil to connect, in ascending order, 20 numbers (CTT 1) and alternate colors (CTT 2) as quickly as possible. Such kind of executive functions as maintaining the goal in mind, task switching, and inhibitory control are needed in CTT. A 2 (gender) x 2 (school grade) analysis of variance showed only the school grade difference in CTT2 ( $F(1, 372) = 16.59, p < .01$ ). The means (SDs) are 14.25 (4.12) for the 1st graders and 12.36 (4.35) for the 2nd graders. Correlation ratios were calculated between CTT (1 and 2) and five ToM tasks (Second-order false belief task by Perner & Wimmer, 1985; Distinguishing lies from jokes task by Winner & Leekam, 1991; Faux pas task by Baron-Cohen, O’Riordan, Stone, Jones, & Plaisted; Understanding of commitment task by Mant & Perner, 1988; Moral judgment task by Piaget, 1932). Eta ( $\eta$ ) values ranged from 0.048 to 0.137; CTT1-Faux pas task was 0.122 and CTT2-Understanding of commitment task was 0.137. Phi coefficients between five ToM tasks ranged from 0.016 to 0.203. Finally, the effects of media exposure on two CTT and five ToM tasks were examined. Weak negative correlations were found between TV exposure and a CTT sub-score as well as TV exposure and the second-order false belief task.

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*How social engagement explains the “infant false belief” effect*

James Stack  
Department of Psychology, Lancaster University, U.K.

Charlie Lewis  
Department of Psychology, Lancaster University, U.K.

Onishi and Baillargeon’s (2005) “infant false belief” experiment appeared to show that 15-month olds can attribute mental states to others, but their findings and the 20 published replications and extensions have failed to arbitrate successfully between the explanation that we possess an innate ability to understand others’ minds and an explanation based on lower level behavioural associations. Unfortunately both accounts make the same predictions about infants’ reactions to violations of expectation. We tested an alternative model that infants learn to follow purposeful actions and expect another person to act according to where “we” last shared an event. This model outlines a developmental sequence which is surprisingly absent from both current theories. It also makes two predictions which run counter to the two dominant accounts. In three experiments we show that 10 month olds initially follow another’s purposeful gestures. Toddlers appear to show “false belief” understanding, but treat [1] “true belief” as false belief when an event is not shared with another person and [2] an event in which the person is not committed to one of two actions as if it were false belief. Only around their second birthdays do infants begin to understand others actions in terms of their commitment to beliefs.