

# Cutting-Edge Kokoro Research

## PSYCHIATRY Psychiatry in the Future

*Intersection of the humanities and natural sciences.*

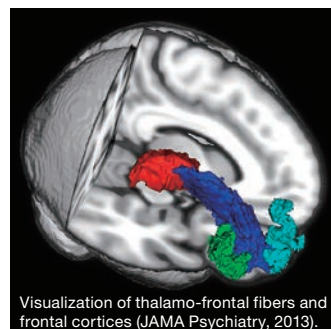
By applying neurobiological and psychosocial approaches flexibly, we aim to achieve a multi-faceted understanding of psychiatric disorders. Using high-resolution magnetic resonance imaging (MRI), the Neuroimaging Group is attempting to elucidate neural correlates of various neuropsychiatric conditions, including schizophrenia, depression, and gambling disorder. The Psychopathology Group focuses on eating disorders, dissociative disorders, and psychiatric issues of epilepsy. In collaboration with brain surgeons, the Neuropsychology Group is investigating neural correlates of cognitive and behavioral sequelae after brain damage. The Child and Adolescent Psychiatry Group is investigating relationships between phenotypes and neurocognitive functions in autism spectrum disorder.

There is very active collaboration among these groups, and as a result, our department is a leading clinical, research, and educational center of psychiatry.



**Toshiya Murai, MD, PhD** *Professor, Graduate School of Medicine*

[www.med.kyoto-u.ac.jp/en/organization-staff/research/doctoral\\_course/r-061/](http://www.med.kyoto-u.ac.jp/en/organization-staff/research/doctoral_course/r-061/)  
[www.kuhp.kyoto-u.ac.jp/~psychiat/](http://www.kuhp.kyoto-u.ac.jp/~psychiat/)



Visualization of thalamo-frontal fibers and frontal cortices (JAMA Psychiatry, 2013).

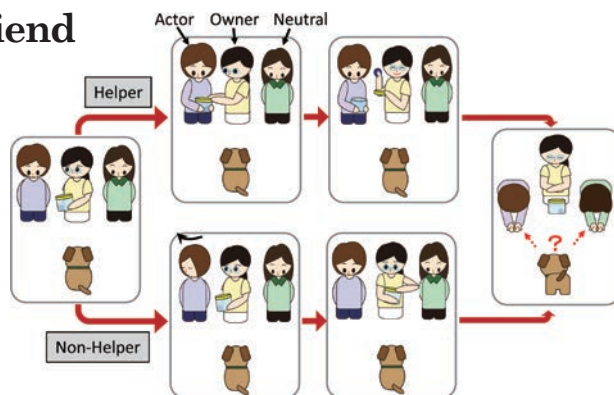


The psychiatric department building.

## COMP-COG Your Dog is Your Real Friend

*Third-party affective evaluation by dogs.*

Dogs, known affectionately as “humans’ best friends,” carefully watch social signals from humans. Do they do so just for their own interest? Or do they monitor people even in situations irrelevant to their own benefit? We gave dogs a simple test in which they watched as their owners tried unsuccessfully to open a container. The owner requested help from an actor sitting nearby. In one situation, the actor helped the owner by supporting the container. In another situation, the actor refused to help by turning away. After these interactions, the actor and a neutral



bystander simultaneously offered treats to the dog. The results showed that the dogs’ choice of who to receive the treats from was random in the former condition. However, they avoided taking food from the actors who refused to help their owners in the latter condition. In other words, the dogs avoided the people who behaved negatively to their owners. This is the first report to indicate that dogs make affective social evaluations in situations irrelevant to their immediate benefit, and it provides important clues to improving relationships between humans and dogs.



◀ A book based on this research, *Gokai darake no “inu no kimochi”* (Tokyo: Zaikaitenboshinsha, 2015), was published last spring.

## Kazuo Fujita, PhD

*Professor, Graduate School of Letters*  
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## PSYCHOANAL Is That Absence Truly a “Loss”?

*How does one experience the eternal absence of a significant other?*

Today, the word *kizuna*, which means “bond” in Japanese, is increasingly commonly used. This may be due to an increase in the number of people who have experienced the loss of a significant other because of major earthquakes and other natural disasters, high suicide rates, or other reasons. This situation is defined objectively as “loss.” What I am presenting here, however, is the question of whether such an experience is perceived by the person concerned as the loss of a truly important object. After the eternal absence of a significant other, which is objectively regarded as a “loss” and perceived as a “true object loss,” one must undergo long and rigorous mental processes called “mourning work.” Working through this mourning work healthily ripens one’s mind.



However, failure in such work can awaken or trigger serious mental disorders, and a broad spectrum exists between absolute success and absolute failure. “The experience of absence,” which is my research field, demands detailed investigations based on the practice of psychoanalysis in clinical situations.

**Kunihiro Matsuki, MD, PhD** *Professor, Graduate School of Education*  
[www.jpas.jp](http://www.jpas.jp) (Japan Psychoanalytic Society)



Kunihiro Matsuki,  
*Theory of Absence*  
 (Sogensha, 2011)

## COGNITIVE Why Are People Honest or Dishonest?

*Brain mechanisms underlying honesty and dishonesty.*



An example of my recent findings (modified from Abe & Greene, 2014, *J Neurosci*). Responses to rewards in nucleus accumbens were associated with individual differences in (dis) honesty.

is an important and longstanding question for anyone whose well-being depends on the trustworthiness of others or themselves. My experiment links honesty or dishonesty to the operations of familiar neurobiological systems: the mesolimbic reward pathway, and the prefrontal control system.

**Nobuhito Abe, PhD** *Associate Professor, Kokoro Research Center* [nobuhitoabe.com/](http://nobuhitoabe.com/)



## EDUC-PSYCH Global Communication, Deep Learning, and Critical Thinking

*Formulating ways to realistically and effectively cultivate essential skills in students.*

In the past twenty years or so, there has been a lot of talk about the importance of cultivating 21<sup>st</sup> century skills in students. However, little actual research has been undertaken on how to effectively develop such skills. I am leading a new research project to investigate effective ways to cultivate particular 21<sup>st</sup> century skill sets that are vital to Japan and other countries. These skill sets pertain to competencies in communicating effectively in the increasingly globalized environments in which we now operate, learning more deeply with true understanding rather than just rote memorization, and being able to think critically in dealing with the overwhelming



amounts of information that is available to us through the Internet and other forms of media. Through this research, we intend to make a significant and visible Japanese contribution to current international efforts in 21<sup>st</sup> century skills education development.

**Emmanuel Manalo, PhD** *Professor, Graduate School of Education*  
[www.learning-strategies-project.org](http://www.learning-strategies-project.org)



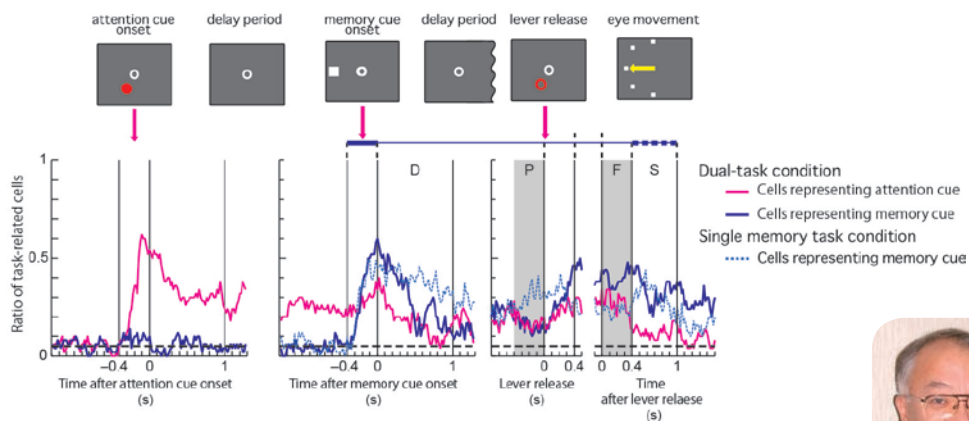
It is crucial that children today develop skills that will enable them to communicate across different cultures.

# Neural Mechanism of Dual-Task Interference

*Why can't we perform two cognitive tasks simultaneously?*

Talking on a cell phone while driving a car often causes difficulties in performing either action. This effect is called dual-task interference. Although this effect is thought to be caused by cognitive capacity limitation and it is shown to be related by the prefrontal cortex, the neural mechanism of dual-task interference and neural correlates of capacity limitation were previously not known. To investigate this, Dr. Kei Watanabe and I analyzed prefrontal activities while monkeys performed an attention task and a memory task simultaneously. We found that prefrontal neurons decreased the monkey's ability to represent task-relevant information in proportion to the increased demand of one task. This result provides direct evidence that the simultaneous overloaded recruitment of the same neural population by two tasks causes the interference.

Temporal changes of the ratio of task-related cells along a dual-task trial



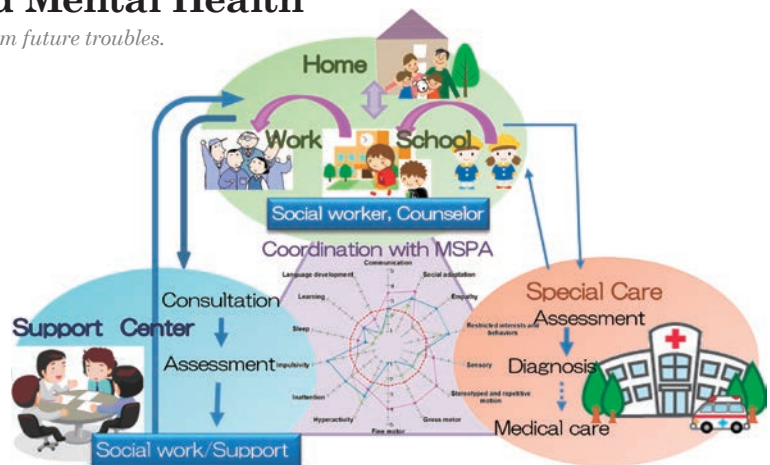
**Shintaro Funahashi, PhD** Professor, Kokoro Research Center  
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# Autistic Traits and Mental Health

*Knowing yourself may prevent you from future troubles.*

Mental health is related not only to one's current environment but also to character, development and environments from childhood. We study those relationships from various angles, and divide the factors into constant and variable parts. By coping with the variable parts after having recognized the constant parts, we aim to devise preventive measures against future troubles. Autistic traits can affect interpersonal relations even below the threshold of diagnosis. Therefore, we work on elucidation of the autism mechanism



and related disorders using electroencephalography (EEG,) near infrared spectroscopy (NIRS), functional magnetic resonance imaging (fMRI), and various cognitive and behavioral tests. Furthermore, we are conducting an international comparison of mental health, and building a social support system to help persons with developmental disorders throughout their life stages.

**Yasuko Funabiki, MD, PhD** Associate Professor, Human and Environmental Studies  
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## COG-SCI Constructive Developmental Science

*Revealing the principles of human development from the fetal period.*



Body movement measurements of an infant and a caregiver within a social context, detected by a motion capture system (Upper Figure); Human fetal yawning (24 weeks GA, Bottom Figure).

Compared to most other animals, humans are born in a relatively premature state. However, human newborns do possess an elaborate capacity to process information about both the external world and their own bodies. Our research team has extended our knowledge about infancy by showing that there is a clear continuity in human sensorimotor development from prenatal to postnatal life. For example, we investigated cerebral responses in full-term neonates and preterm infants at a term-equivalent age, and found that preterm infants follow different developmental trajectories from those born at full term. Further important progress is anticipated. In 2012, I took charge of leading a constructive developmental science research project, which is supported by a grant-in-aid from the Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT). This five-year interdisciplinary research project integrates robotics, medicine, psychology, neuroscience, and *Tohjisha-kenkyu* (person-centered, peer-supported research). Our aim is to foster a new understanding of human development and its disorders, comprehensive diagnostic methodologies, and truly appropriate assistive technologies.

**Masako Myowa-Yamakoshi, PhD**

*Professor, Graduate School of Education*

[www.educ.kyoto-u.ac.jp/myowa/en/index.html](http://www.educ.kyoto-u.ac.jp/myowa/en/index.html) [devsci.isi.imi.i.u-tokyo.ac.jp/about?lang=en](http://devsci.isi.imi.i.u-tokyo.ac.jp/about?lang=en)



## PHILOSOPHY Spiritual Study Course in Seven Volumes

*Comprehensive research into the mind, body, and soul.*

I have compiled and edited a “Spiritual Study Course,” which is composed of seven volumes. “Spiritual study” is a comprehensive form of academic research, in which the mind, body, and soul are considered as a single whole, and various methods are used to examine the purpose of life and how to live. The first volume is titled “Spiritual Care.” To give a specific example of my reasons for developing this volume, I thought that we should address how best to live through and overcome the post-Great Eastern Japan earthquake era and society.

In addition, over the past seventeen years since the Great Hanshin Earthquake of 1995, I believe there has been a progression from “mental care” to “spiritual care.” In Volume 2, “Spirituality, Medical Care and Health,” I touched on the concepts of “mental care” and “spiritual care” to examine caring for the body, mind, and spirit as a whole. Volume 3, “Spirituality and Peace,” deals with the issue of “social care,” or rather, “human relations and group care.” It looks at the relationships between spirituality and religious dialogue, global ethics, mutual help, and the public arena that transcend religious conflicts and clashes of civilizations.

In Volume 4, “Spirituality and Environment,” the life, position, and behavior of humankind in an ever changing global environment are identified, and the

sacredness of the environment and dimensions of transcendency are examined. The fifth volume, “Spirituality and Education,” questions the link between education, which refines the process of fulfilling self-discovery and building relationships with others, and spirituality. I hope these questions can offer some clues as to how the “future of the mind” should be.



**Toji Kamata, PhD** *Professor, Kokoro Research Center*

[kokoro.kyoto-u.ac.jp/en/staff-en/2011/02/toji\\_kamata.html](http://kokoro.kyoto-u.ac.jp/en/staff-en/2011/02/toji_kamata.html)

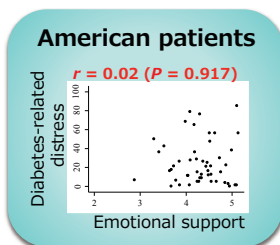
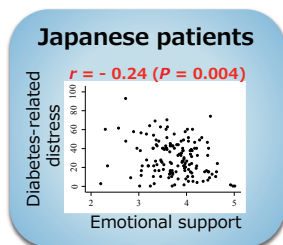


Prof. Kamata's series of books, A Course in Spiritual Studies (BNP, 2014–15).

Vol. 1: *Spiritual Care*  
Vol. 2: *Spirituality and Health*  
Vol. 3: *Spirituality and Peace*  
Vol. 4: *Spirituality and the Environment*  
Vol. 5: *Spirituality and Education*

## MED Emotional Assurance: A Key to Care

*The connection between emotional support and diabetes-related distress.*



tended to report less diabetes-related distress in Japan, while those did not in the United States. Emotional assurance in an interdependent cultural context (as exemplified by East Asian cultures) may benefit patients more than emotional assurance in an independent cultural context (as exemplified by North American culture).

**Kaori Ikeda, MD, PhD**

*Specially Appointed Assistant Professor, Graduate School of Medicine* [www.metab-kyoto-u.jp/](http://www.metab-kyoto-u.jp/)



## OMP-QJF-SCI Bringing Zoology back to the Zoo

*The zoo as a research and education tool.*

The roles of modern zoos can be described in four keywords: conservation, research, education, and recreation. Kyoto City Zoo, the second oldest zoo in Japan, underwent a full renovation in October 2015. To take advantage of this renovation, I am promoting research and educational activities in the zoo. My research topic is cognitive abilities in zoo primates: chimpanzees, gorillas, gibbons, and mandrills. I used a computer-based method to allow them to demonstrate their intelligence. The research, conducted in the zoo, is open to all visitors. They have the opportunity to see the animals engage in the cognitive tasks, and witness their intelligence. The zoo also has potential as an educational tool, particularly for junior and high school students. We have developed several scientific programs to pique their interest.



**Masayuki Tanaka, PhD** *Specially appointed professor, Wildlife Research Center / Director, Center for Research and Education of Wildlife, Kyoto City Zoo* [www5.city.kyoto.jp/zoo/](http://www5.city.kyoto.jp/zoo/)



## CL-SCI What Makes a Woman a Mother?

*Two types of psychological process during maternity.*

We conducted semi-structured interviews with females during pregnancy and childbirth about their feelings about biological maternity before pregnancy (FBMBP) and their practical experiences of biological maternity (PEBM). As a result, contrary to general belief, PEBM had no linear relation to FBMBP. The relation between PEBM and FBMBP was found to be dependent on the individual, but had two types as follows:

- 1) The women who had negative FBMBP realized the essential secret of life behind existence itself through their experiences of fetal movements or delivery pains, which generated awareness in each of them about becoming a mother as a supporter, not as an owner, of her child who had his/her own life.
- 2) The women who had positive FBMBP experienced fetal movements or delivery pains at a realistic and physical level, which generated awareness in each of them about becoming a mother who has a solid connection to her child.



**Himeka Matsushita, PhD** *Associate Professor, Graduate School of Education*

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## MODERN CULTURE AND THE MIND

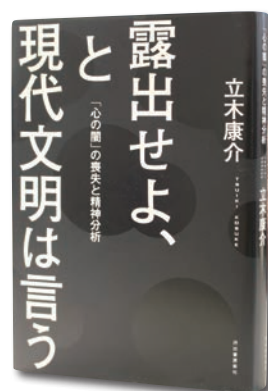
*Ongoing transmutation of human mind and its socio-cultural effects.*

Nowadays, people are driven to reveal their private lives and voluntarily exhibit their secrets. Our lives are filled with spectacles, and links to other people, without any physical contact, are highly sought after. When an idealization of youth, together with youth-targeted marketing, is tied up to the dominance of these kinds of human links, our sexuality will no longer be able to mature, but will be compelled to remain in a perpetual, uncertain vacillation. Indeed, the generalization of pleasure-seeking thinking, accompanied by a relative decline of the necessarily long and complicated process of desire satisfaction, seems to let us regress from sexual maturity and make our body and thoughts poorer and poorer. Deprived of its cultural “contents,” our body is now becoming just a physical body, which is also a privileged object of new management technology like biometric authentication. At the same time, the structure of “representation,” which, for a long time, has made all kinds of human “thoughts” possible, is today being demolished to make way for a tendency towards easily understandable presentations, a flood of repeated

stereotyped discourses, and a hegemony of statistical figures authorised in the name of “evidence.” On what transmutation of our “mind” do these contemporary phenomena depend? That is the subject of my ongoing research, recently crystallized in a publication : *“Exhibit Yourself,” Says Contemporary Civilization* (Tokyo: Kawadeshobo-shinsha, 2013).



**Kosuke Tsuiki, PhD** Associate Professor, Institute for Research in Humanities  
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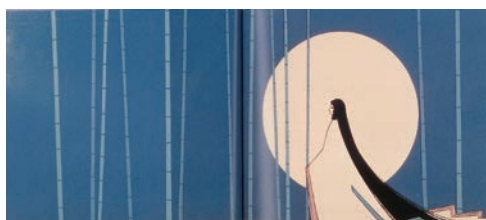


Kosuke Tsuiki,  
*“Exhibit Yourself,” Says Contemporary Civilization*  
 (Tokyo: Kawadeshobo-shinsha, 2013).

## CLINICAL PSYCH The Moon as a Mirror of the Japanese Psyche

*The significance of depth psychology in the modern world.*

### The Moon –As the mirror of Japanese psyche–



The Bamboo-Cutter's Tale  
 Compiled by Sayumi Kawauchi  
 Translated by Ralph F. McCarthy  
 Kodansha International (2000)

People still have fantasies about the moon, even though we are now familiar with its uneven dried surface. In Japan, we have the oldest legend about the moon. In the story, *The Tale of the Bamboo-Cutter*, a princess who came from the moon returns from whence she came after shaking off a wedding proposal from the emperor. She might also have taken the Japanese unconscious psyche back there with her. Even now, when we look up at the moon, we see our inner psyche in the moon like a mirror. I am referring to the “separation” of the princess from this world, and the desire for “connection” with the people in this world that she left behind. I think this has some relation to the modern concept of psychic dissociation.

In the last thirty years, clinical psychology has become very popular in Japan, both in terms of the number of clinical psychologists and the scope of its fields. Nowadays, clinical psychotherapists in Japan work in various areas. Actually, *society* needs psychotherapy. Through the old Japanese fairy tales, I am contemplating the significance of depth psychology, especially in the modern world.

Currently, we imagine ourselves from the outside, not just from the inside as previously. With Google Earth on the internet, we can now find the house in which we live, as seen from directly overhead. This is not necessarily all bad. From a meta-perspective, we can get an external view of ourselves. Those unable to see themselves from the outside would also be unable to recognize that the Earth is round.

However, if we let the meta viewpoint predominate, we risk turning ourselves into a passive object, namely a specimen being “seen” and “analyzed.” We are in danger of moving towards the loss of the psyche in our internal world, and the internal space that makes us human. I believe this is what happens in the modern psyche. Even in the present day, we are still searching for the princess who vanished into the moon.

**Tomoko Kuwabara, PhD** Professor, Graduate School of Education  
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## CLIN PSY The Future of Psychotherapy Created by ASD

*Psychotherapy is always revised by “illnesses of Zeitgeist.”*

During the last century, psychotherapy has been revised by so-called “illnesses of *Zeitgeist*,” such as hysteria, borderline cases, and multiple personality disorder. In that sense, autism spectrum disorder (ASD) can be regarded as an illness of *Zeitgeist* today based on the loss of “psychological infrastructure.” Through my research, I try to formulate such a state of mind for their psychotherapy. Psychotherapy now has to give up its own unconditional major premises, which were formerly naturally presupposed: premises such as “personality,” “interiority,” and “subjectivity.” In my work, I have developed three “renunciations” as a means for a fundamental revision of psychotherapy: “renunciation of neutrality as our therapeutic attitude,” “renunciation of depth as our therapeutic fantasy,” and “renunciation of adaptation as our therapeutic goal.” “Psychotherapy does not cure ASD. ASD cures it.” Jungian psychotherapy should, or can, be open to the endless transformation of *Zeitgeist*. Of course, this is not a conclusion, but simply a starting point for my research.



**Yasuhiro Tanaka, PhD** Associate Professor, Graduate School of Education

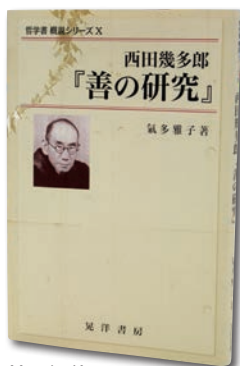
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*Psychological Diagnosis and Psychotherapy for Adult Patients with Autistic Spectrum Disorder.*  
Osaka: Sogensha, 2013

## PHIL OF REL Thorough Consideration of Religious and Non-Religious Phenomena

*The search for a new framework for understanding religions.*



Masako Keta,  
Kitaro Nishida's  
“A Study of Good”  
(Kyoto, Kôyô-shobô, 2011)

Religious studies seem to be entering a new stage of development on several fronts. Perhaps the main issue facing scholars is that the fundamental terms of the discipline are losing their potency. A principal cause of the problem with applying the received framework of ideas is, of course, the dynamic transformations taking place in the way religions function in contemporary societies. We might also point to the fact that theories and methodologies that were developed within the European academic traditions to explain these changes do not necessarily fit the situation of religion in non-European societies. Today the very foundation of our religious studies research is being challenged. I am currently engaged in a study of the Kyoto School of Philosophy, including such thinkers as Kitaro Nishida and Keiji Nishitani. Their philosophy includes a thorough consideration of religious and non-religious phenomena. I think that I may be able to find a new framework for understanding of religions there.



**Masako Keta, PhD** Professor, Graduate School of Letters

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## DEV-PSY Can Psychology Detect Lies?

*Psychological analyses of testimonies in criminal trials.*

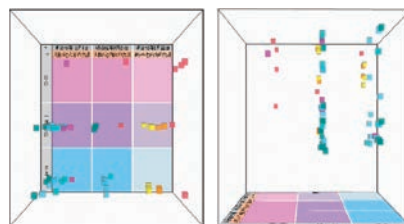
The Japanese judicial system has been criticized for relying too much on suspects' confessions. Under such circumstances, we are sometimes asked by lawyers to analyze written evidence psychologically. In such cases, we examine closely whether or not suspects and victims are telling the truth by considering chronological changes in their statements, the characteristics of human memory, and various other indicators of lies. In a recent case, an eight-year-old girl testified that she had been sexually victimized by her teacher. However, I analyzed her statements cautiously and concluded that

it was a false charge. Through a defense plea reflecting my analysis, the suspect was found not guilty in the trial. Through refining my method of analysis, I would like to contribute to the reduction of false accusations.



**Tokushi Okura, PhD** Associate Professor, Graduate School of Human and Environmental Studies

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## DEV-PSY Your Personality Matters?

*Correlated changes in personality and physical health.*

Studies of links between personality traits and physical health may be an essential component of a comprehensive understanding of human health processes and disease mechanisms. My research has found that increases in conscientious personality traits (i.e. the propensity to be self-controlled, task- and goal-directed, planning-oriented, rule-following, and responsible to others) were associated with improvements in physical health over time. Some of your personality traits partially matter to your own physical health, and by increasing your conscientiousness, you may become healthier with time. Your own mind and body are connected and work harmoniously. More interestingly, my recent findings showed that changes in your spouse's personality were linked to changes in your own physical health and vice versa. It is possible that our mind and body might cooperate with an important partner's mind and body.



**Yusuke Takahashi, PhD** *Associate Professor, Graduate School of Education*  
[www.educ.kyoto-u.ac.jp/cogpsy/member/takahashi.html](http://www.educ.kyoto-u.ac.jp/cogpsy/member/takahashi.html)



## PRIMATOL Chimpanzees Meet Bonobos

*In terms of social nature, humans share similarities to both of these species of primate.*



Wild chimpanzees and bonobos do not meet in their natural habitats, as their habitats are separated by a large river. The Kumamoto Sanctuary houses both of these species, and they can encounter each other through a door or a window. When they first saw each other, the chimpanzees instantaneously became menacing, and started banging and kicking the wall of their room. The bonobos, on the other hand, remained calm, and sometimes made friendly gestures to the chimpanzees, such as extending their arm or showing their belly. This episode illustrates a characteristic difference in sociality between chimpanzees and bonobos. We humans have similarities to both of them, and scientific studies of the minds of chimpanzees and bonobos will help us to understand the evolutionary origins of human sociality.



**Satoshi Hirata, PhD** *Professor, Wildlife Research Center*  
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## ANIM-PSY Ai-Project

*Parallel efforts in both laboratory work and fieldwork on chimpanzees.*

The human mind is as much a product of evolution as the human body. You can see the evolutionary basis of human cognition and behavior by comparing humans and chimpanzees, who share their most recent common ancestor approximately five to six million years ago. I have made parallel efforts in both laboratory work and fieldwork on chimpanzees. The laboratory work is known as the Ai-project which started in 1978 at the Primate Research Institute. My colleagues and I have been studying the chimpanzee mind. Please take a look at our website for details of our ongoing study: <http://langint.pri.kyoto-u.ac.jp/ai/>. A field study has been carried out in Bossou-Nimba, Guinea, West Africa, focusing on the use of stone tools by wild chimpanzees to crack open oil-palm nuts. Details of the field study can be found on the following website: <http://www.greencorridor.info/>



**From the Editor** Prof. Matuzawa also serves as president of the International Primatological Society, general director of the Japan Monkey Centre, editor-in-chief of *PRIMATES*, a member of the Editorial Board of *Philosophical Transactions of the Royal Society B*, and chairperson of the Scientific Program of International Congress of Psychology 2016.

**Tetsuro Matuzawa, PhD** *Professor of Primate Research Institute and Coordinator of the Leading graduate program for Primatology and Wildlife Science*  
[langint.pri.kyoto-u.ac.jp/langint/staff/tetsuro\\_matuzawa.html](http://langint.pri.kyoto-u.ac.jp/langint/staff/tetsuro_matuzawa.html)





## COC-SCI The Vision Science of Invisible Things

*Automatic feature integration in visual working memory.*

Contrary to our intuition that the sense of vision deals only with visible objects, the processing of invisible information, namely visual memory, is critical for visual cognition. Without visual working memory (VWM), we cannot maintain a sense of a continuous world. Given that VWM has limited capacity (only three or four objects), how does it make rich visual experiences possible? I have been studying the integration of visual features in VWM through cognitive neuroscience experiments,

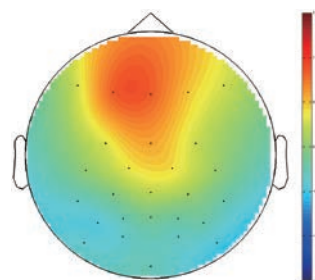
and have found evidence for the automatic integration of non-

spatial features (color and shape) in VWM, suggesting that VWM organizes such features into meaningful objects. Our research may be able to contribute to the development of visual communication technologies, such as human interfaces and data visualization.



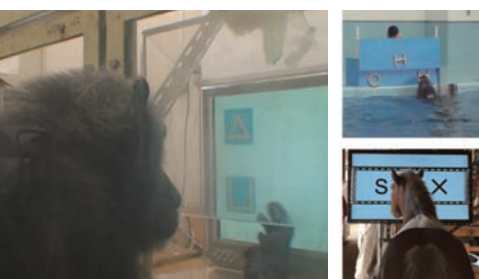
**Jun Saiki, PhD** *Professor, Graduate School of Human and Environmental Studies*

[www.cv.jinkan.kyoto-u.ac.jp/](http://www.cv.jinkan.kyoto-u.ac.jp/)



## COCN-SCI How Have Our Minds Evolved?

*Comparative approach toward understanding the evolution and diversity of the mind.*



Comparative cognitive science is seeking to answer the question “how have our minds evolved?” For this purpose, it is necessary not only to investigate our minds themselves, but also the minds of other species. When we compare humans with chimpanzees, our closest evolutionary neighbor, we can infer phylogenetic constraints on the evolution of the human mind. On the other hand, when we make comparisons with animals evolutionarily farther from us, such as dolphins or horses, we can see both the convergence and diversity of the mind as a result of adaptation to evolutionary environments. At present, I am mainly interested in the visual cognition of chimpanzees, and trying to compare their visual world with that of

humans, dolphins, and horses. How do they see the world? There must be a critical difference in the reliance of visual modality between chimpanzees and dolphins, but basic perception may be shared among these species. To answer this question, we conduct computer-controlled perceptual and cognitive experiments with them. If they see the world in a similar manner, then, the next question arises: are there any differences in more complicated cognition based on vision, such as social cognition? Currently, we are studying both the basic properties of visual perception and cognition (such as attention, memory, and face perception) and higher cognitive functions (such as behavioral synchronization and social intelligence).

**Masaki Tomonaga, PhD** *Associate Professor, Primate Research Institute*

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## MED-SCI The Meaning of Eating

*Research on the psychopathology of eating disorders.*

Although you might eat every day without any problems, one fifth of Japanese women in their early twenties have some eating troubles, specifically eating too little or too much.

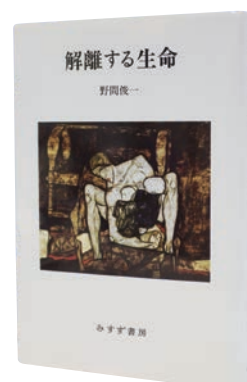
It has been pointed out that people with eating-disorders can also have social and behavioral problems, such as compulsive buying disorders, self-injurious behaviors, substance abuse, and shop-lifting. This has led to social problems in recent years. My colleagues and I are studying the psychopathology of eating disorders from both psychological and neurobiological perspectives in order to clarify the relationship between eating behaviors and impulsivity. Hopefully, we will be able to better understand the meaning of eating in our life.



**Shun'ichi Noma, MD, PhD**

*Senior Lecturer, Institution: Department of Psychiatry, Graduate School of Medicine*

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Shun'ichi Noma, “*Kairisuru seimei* (Dissociating lives)” (Misuzu shobo, 2012)

## PSYCHOL Human Memory and Brains

*Investigating the brain mechanisms of human memories.*

Memories for happy or sad events are kept in our mind for a longer time than memories for non-emotional events. This experience in our daily lives implies that human memories might be affected by some psychological factors such as emotion or motivation. Using functional magnetic resonance imaging (fMRI), we are trying to disentangle brain mechanisms associated with the mysterious link between memory and other psychological factors in humans. One of our recent findings was that long-term memories were enhanced by the motivation of getting monetary rewards or avoiding monetary punishments, and that interacting mechanisms between activations in the memory-related hippocampus and the reward-related regions were involved in the memory enhancement. We believe



that our research could lead to understanding human memory as a part of psychological processes from a neuroscientific perspective. This could then contribute to supporting elderly people or brain-damaged patients experiencing cognitive decline.

### Takashi Tsukiura, PhD

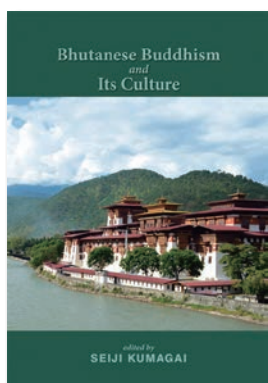
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## BUDDHOL The Establishment of Bhutanology

*Bhutan Studies from Indo-Himalayan Perspectives.*



S. Kumagai, *Bhutanese Buddhism and Its Culture* (Kathmandu: Vajra Publications, 2014)

In January 2012, I launched the Bhutanese Buddhism Research Project (BBRP) in collaboration with the Centre for Bhutan Studies (Bhutan) in order to clarify Bhutanese Buddhism, which is a basis of Bhutanese culture, society, and national policies such as Gross National Happiness (GNH). The department of Bhutanese Studies, established in Kyoto University's Kokoro Research Center in April 2012, conducts a wide range of research on Bhutanese history, culture, and philosophy from Indo-Himalayan perspectives in collaboration with international scholars. In addition, it regularly organizes international seminars and workshops where scholars of natural, social, and human science give talks, engage in discussions, and exchange academic information about Bhutan and the Himalayan region.

### Seiji Kumagai, PhD

*Uehiro Associate Professor, Kokoro Research Center*  
[kokoro.kyoto-u.ac.jp/en/staff-en/2012/10/seiji\\_kumagai.html](http://kokoro.kyoto-u.ac.jp/en/staff-en/2012/10/seiji_kumagai.html)



## CICASP Good Is Up?

*A new approach to the study of language evolution.*

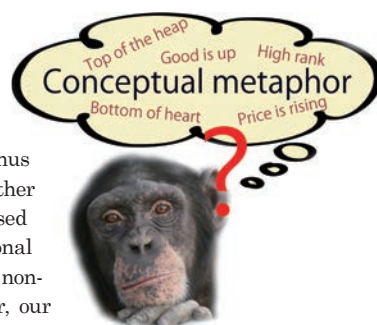
"High" vs. "low" status, "top of the heap"—these and similar expressions are widely observed across cultures and languages. This has been described as a conceptual metaphor, which has been thought to be a language construction and thus unique to humans. A conceptual metaphor takes one concept and connects it to another concept in order to better understand that concept (e.g. the concept of space is used to better understand the concept of social rank). To better understand the evolutionary



origins of this phenomenon, I am investigating whether or not non-human primates share similar mental representations. So far, our closest relatives, chimpanzees, have shown that they spontaneously map social rank and serial order onto the domain of space in a very similar way to humans.

### Ikuma Adachi, PhD

*Assistant Professor, Primate Research Institute*  
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## INF-SCI Octopus-Inspired Robots

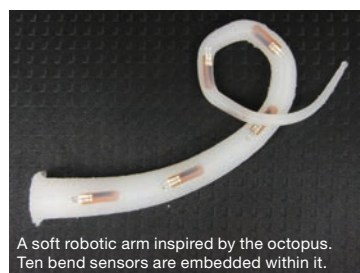
*Learning control principles for soft robots.*

An animal's behavioral control relies on a dynamic interaction between its brain, its body, and its environment. Some animals with soft bodies control themselves in a sophisticated manner by capitalizing on their body dynamics. The octopus is a prime example. From a conventional control perspective, the octopus's method of controlling movement and harnessing its nonlinear body dynamics is both outstanding and instructive. Accordingly, the octopus has been a rich source of ideas for designing a control strategy for soft robots. Inspired by the octopus, I



have demonstrated that soft robots' nonlinear body dynamics, once thought to be a drawback, can be positively exploited as a computational resource, and can be used to embed multiple control programs directly onto the soft materials. This approach not only suggests a novel control scheme for soft robots, but also opens up various engineering applications for the use of soft materials.

**Kohei Nakajima, PhD** *Assistant Professor, the Hakubi Center for Advanced Research / Graduate School of Informatics* [www.kohei-nakajima.com/](http://www.kohei-nakajima.com/)



A soft robotic arm inspired by the octopus. Ten bend sensors are embedded within it.

## COGNITIVE-SCI Do We See the Same External World?

*Perception and attention are tuned by our encountered environments.*



Longer Line Search



Shorter Line Search

A visual search task involves searching for a target among non-targets. Here, the target is either the longer line (left) or the shorter line (right). Westerners demonstrate search asymmetry, where the search for the longer line among shorter lines is easier than vice versa. This is not evident in the Japanese population. However, this cultural difference in search asymmetry is reversed depending on stimulus set.

It is thought that cultural influences affect how people think and reason. However, studies often fail to replicate these findings in lower level cognitive processing of attention and perception. In this study, I used a traditional paradigm with meaningless geometric figures to investigate perception and attention (see Figure). Results captured robust cultural differences based on stimulus coding systems. Previous studies from our laboratory and others have proposed that this system is tuned by environmental factors encountered in everyday life. These results suggest

that lower-level processing is not universally decided but dependent on environmental factors. These results further reflect the need for current models of perception and attention to be revised and extended. Comparisons of perception and attention between different cultures can provide such important perspectives.

**Yoshiyuki Ueda, PhD** *Assistant Professor, Kokoro Research Center*  
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## CLIN-PSYCH Are Today's Students Indecisive?

*A comparative study of psychological tests spanning ten years.*

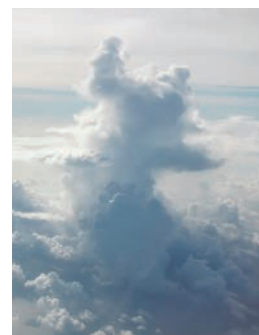
What do you think the cloud in the picture on the right looks like? You can choose your answer from: "an animal," "a person dancing," or "an explosion." As humans, we can project our inner images to outer ambiguous figures like clouds. The Rorschach test analyzes such psychological projection to illuminate our general attitude to the outer world. My research, which compared Rorschach data of students in 2003 and students in 2013 made it clear that recent university students exhibited indecisiveness. The students in 2013 frequently said, "this is a picture of A or B," rather than choosing one answer. Of course, the Rorschach test



originally did not anticipate such ambiguous answers. Do these results suggest that the young people in recent times have become indecisive?

The point to be noted is that the 2013 students did not hesitate to make such unclear answers. We can see here that Japanese society has become more interdependence-oriented.

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## DEV-SCI Baby Morals

*Development of prosocial behavior in early infants.*

What do you imagine about the way babies think? Are they just living in the here and now? Do they exist only to cry? No, not at all! I am studying the cognitive abilities of babies, especially social cognition. My recent studies concern prosocial behavior in early infancy. Ten-month-old babies showed sympathetic behavior to an animated agent which was aggressed by another animated agent. Human babies seem to have a kind of sense of morality from very early infancy. Other studies have shown that babies prefer fair agents, such as agents which help other agents. These findings support the view that humans are born with good morals.

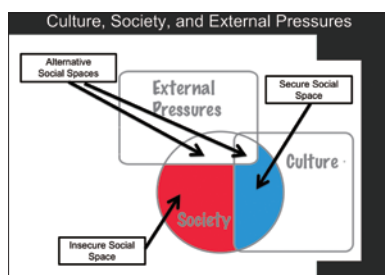


**Shoji Itakura, PhD** Professor, Graduate School of Letters [www.bun.kyoto-u.ac.jp/~sitakura/](http://www.bun.kyoto-u.ac.jp/~sitakura/)

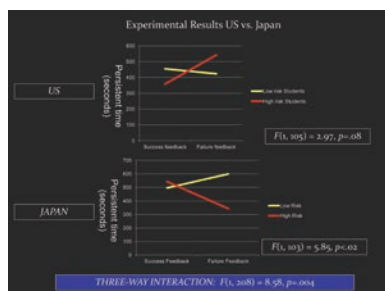


## CULTURE & SOC When Society Changes Faster Than Culture

*Investigating the Relationship Between Globalization and Culturally Deviant Behaviors.*



Society is unable to support the pursuit of culturally sanctioned goals for everyone when society changes faster than culture



Culturally deviant motivational behaviors among young people at risk of becoming marginalized in Japan and the United States

I have been collaborating with Associate Professor Yukiko Uchida at the Kokoro Research Center in a series of studies to investigate the psychological consequences of youth marginalization in rapidly changing postindustrial societies like Japan and the United States. Specifically, we have found that increased competition due to globalization and constrained economic opportunities for young people are associated with an increasing number of young people in Japan and the United States who are rejecting their society's dominant values and consequently exhibiting culturally deviant behaviors. For example, in one study, typical Japanese have been found to be more motivated by failure than by success when engaging in challenging tasks, while this pattern was reversed for typical Americans. However, rejection of dominant cultural values within each society was associated with being *demotivated* to work on challenging tasks under the same conditions that were motivating for a typical person in that society. Furthermore, some of these people are rejecting their society's dominant values without replacing them with an alternative value system. Such people seem to be at risk of being marginalized in their own society and/or experience mental health challenges such as hikikomori or depression. These may be some of the negative psychological consequences of rapidly changing post-industrial societies in the age of globalization.

### Vinai Norasakkunkit, PhD

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## COMP COG Evolution of Music

*Rhythmic entrainment and synchrony in chimpanzees and humans.*

Humans actively use behavioral synchrony, such as dancing and singing, when they intend to make affiliative relationships. Such advanced synchronous movement even occurs unconsciously when we hear rhythmically complex music. A foundation for this tendency may be an evolutionary adaptation for group living, but the evolutionary origins of human synchronous activity are unclear.



I have been experimentally studying behavioral synchrony and entrainment to external rhythms in chimpanzees and humans using finger tapping tasks.

The results suggest that sensitivity and some response to external rhythms were already deeply rooted in the common ancestors of chimpanzees and humans, six to seven million years ago.

**Yuko Hattori, PhD** Program-Specific Assistant Professor, Wildlife Research Center / Primate Research Institute  
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## Addressing the Challenges of a Super-Aged Society

*Action research incorporating clinical practice to improve medical care and support.*



My current research comprises two main studies. The first is a project for mutual aid development and self-help improvement program for the prevention of isolation, targeting local community residents. The second is an action research project focused on alleviating the burden on family caregivers of persons with dementia, which is conducted in collaboration with Dr. Kenji Toba and Dr. Takashi Sakurai of the National Center for Geriatrics and Gerontology, as well as clinical staff and family caregivers. What motivated me to be a medical social worker (MSW) was my personal experience of caring for my grandparents, who suffered from Alzheimer's disease. As an MSW at the Kyoto University Hospital and Kansai Rousai Hospital (Acute Care Hospital) for

fifteen years, I have supported patients with various diseases and their families. However, I have never felt satisfied with my efforts, as I wonder how I can aid the many people who do not come for consultations. Despite the efforts of medical staff, those who need medical support do not always receive it. I decided, therefore, to endeavor to provide support by enabling individuals to strengthen their coping skills, and exercise their intrinsic abilities of problem-solving, self-determination, and information-gathering. It was that decision which led me to the aforementioned studies. The first project has social significance in two ways: (1) preventing poor health and disorders related to physical, psychological, and social factors associated with residential isolation, and (2) improving education with regard to mutual aid, neighbor support, and self-help. The second action research project aims to develop caregivers' abilities and basic knowledge to prevent them from feeling lost and confused amid the abundant information available on dementia treatment and care. These studies will improve the dementia care provided by both medical specialists and family caregivers, and improve the situation for all people involved with dementia. Since Japan is now becoming an unprecedented super-aged society, these studies have a tremendous social significance. Bearing this situation in mind provides me with daily motivation in my work, and in my collaborations with the various professionals and other parties involved.

**Aya Seike, PhD** *Associate Professor, Kokoro Research Center*

[www.ncgg.go.jp/monowasure/news/20150512.html](http://www.ncgg.go.jp/monowasure/news/20150512.html)



## Describing the Wonder of Human Development: A "Double Positive"

*Construction of new view on human right to development.*

Many mammals begin to stand and move soon after their birth. Human babies, however, start crawling at around eight months old. Human babies are born helpless, and develop very slowly. When we feed milk to chimpanzee babies, they rarely stare at us. Human infants, however, frequently stare into their mother's eyes, even when pausing to drink milk. This is an example of the way in which human infants try to relate to others and establish social relationships. Through such activities, while we are weak and in the slow process of development, each of us seeks to affirm ourselves and others in two ways. Through my activities, I objectify my individuality and its specific character. Then, when you enjoy the world that I have created by through my activities, I have satisfied my human desires, and have objectified our essential nature. In this way, I have served as a mediator between you and the whole of humanity. Therefore, I have become part of the completion of your own essential nature and a necessary part of yourself. Through the individual expression of my life, I would have directly co-created your life. Therefore, through my individual activity I directly confirm and realize my true nature, my human nature, as well as my communal and social nature. Our existence and activity can be viewed as many "mirrors" in which we see the reflection of our essential nature. Furthermore, this relationship is reciprocal: what occurs on my side must



also occur on yours. My activity is a free manifestation of life, and hence expresses a respect for life. Even if you are working at your desk alone at midnight, you are never truly alone. You, your hands, and your words are a concentrated expression of the past history and future possibility of humankind, and can open the door to our new world and become an important aid for all people.



**Shinsuke Tanaka** *Associate Professor, Institute for Liberal Arts and Sciences / Department of Human*

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