

【Grant-in-Aid for Scientific Research (S)】

Humanities and Social Sciences (Humanities)



Title of Project : Seeking the onset of infant speech development: An explanation of developmental mechanisms from the perspective of Asian languages

Reiko Mazuka
(RIKEN, Brain Science Institute, Team Leader)

Research Project Number : 16H06319 Researcher Number : 0392126

Research Area : Developmental Psycholinguistics

Keyword : Infant Speech Perception

【Purpose and Background of the Research】

It has been commonly hypothesized that infants are capable of discriminating all phonetic contrasts, including those not in their native language, and that such broad abilities decrease as the infant develops. This is called the *Perceptual Narrowing Hypothesis*. However, the hypothesis was formed on the basis of a small number of studies that found that infants surrounded by English and a few other European languages are capable of discriminating some sound contrasts that do not exist in their native languages, such as Thai stop sounds and Cantonese tone contrasts. It remains unclear whether this is an absolute phenomenon, or whether there are indeed sounds that require prior experience (exposure, maturation, etc.) before an infant can discriminate them.

This project tests the perceptual narrowing hypothesis by experimentally testing infants native to four Asian languages (Thai, Korean, Cantonese, and Japanese) on their ability to discriminate native and non-native sound contrasts.

【Research Methods】

Infants will be tested at Thammasat University in Bangkok, Thailand; Hong Kong University in Hong Kong; Chung-Ang University in Seoul, Korea; and RIKEN Brain Science Institute in Japan. As shown in Figure 1, the four languages included in the present study represent four distinctive types of stop contrasts. In addition, Thai and Cantonese are tone languages; standard Japanese is a lexical

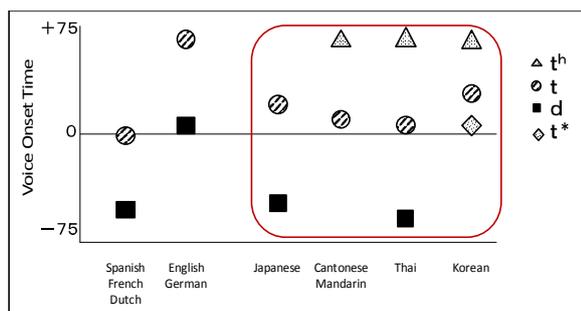


Figure 1. Variation in Stop contrasts

pitch-accent language; and the Seoul dialect of Korean uses no lexical level prosody. These features make it ideal to test infants' ability to discriminate these contrasts. Using a Visual Habituation-Dishabituation paradigm, 4-6 and 8-10 month infants will be tested in each country on their ability to discriminate native and non-native contrasts in stop sounds as well as differences in tone patterns and pitch-accents.

【Expected Research Achievements and Scientific Significance】

This will be the first study that compares infants native to Asian languages on their ability to discriminate speech contrasts in experiments. The comparison will allow us to critically evaluate whether perceptual narrowing applies equally to infants learning non-European languages.

Our prediction is that, unlike the claim of the perceptual narrowing hypothesis, infants are not able to discriminate all speech contrasts, but only those that are marked with perceptually salient cues. If our prediction is supported experimentally, it will constitute a significant advance in research on infant speech perception.

【Publications Relevant to the Project】

- Mazuka, R., Hasegawa, M., & Tsuji, S. (2014). Development of non-native vowel discrimination: Improvement without exposure. *Developmental Psychobiology*, 56, 192-209.
- Sato, Y., Kato, M., & Mazuka, R. (2012). Development of single/geminate obstruent discrimination by Japanese infants: Early integration of durational and non-durational cues. *Developmental Psychology*, 48(1), 18-34.

【Term of Project】 FY2016-2020

【Budget Allocation】 87,200 Thousand Yen

【Homepage Address and Other Contact Information】

<http://lang-dev-lab.brain.riken.jp/>

【Grant-in-Aid for Scientific Research (S)】

Humanities and Social Sciences (Humanities)



Title of Project : Integrated Research into the Processes and Mechanisms of Racialization

Yasuko Takezawa

(Kyoto University, Institute for Research in Humanities, Professor)

Research Project Number : 16H06320 Researcher Number : 70227015

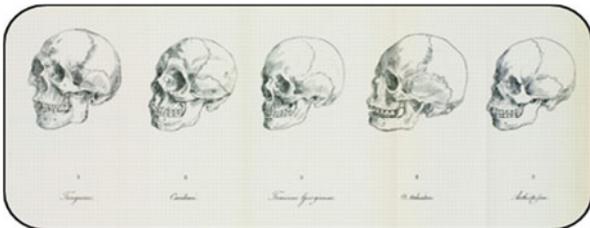
Research Area : Cultural anthropology, Ethnology

Keyword : Race, Genome, Discrimination

【Purpose and Background of the Research】

There exists a vast body of research in the field of race studies, but research has been primarily based in the internal and external colonial experience of Western nations. This project will bring together case studies from Japan and Asia, in addition to those from the United States, Europe, and elsewhere, with the goal of clarifying the processes and mechanisms of “racialization.”

This project will specifically encompass the following three topics: 1) We will examine the principal investigator’s theory that racialization began in premodern times in the West and/or elsewhere. 2) A consideration of the trans-national processes of continuity and rupture in the discourse surrounding race in Japan and Asia. 3) We will undertake a consideration of the scientific discourse surrounding “group difference” in drug responsiveness and rates of morbidity in the post-genomic era, paying particular attention to social systems.



J. F. Blumenbach’s five-fold classification



Blumenbach’s influence on Meiji textbooks (Takezawa 2015)

【Research Methods】

The principal investigator proposes research methods, a theoretical framework, and a research plan, for international cooperative research. In addition, the researchers from the various disciplines (history, cultural anthropology, science), will carry out case studies (data collection, field work). Further, we will put our efforts toward holding an international symposium and publishing the results of our research.

【Expected Research Achievements and Scientific Significance】

By bringing in this heretofore ignored vantage point, the current project will construct a new theory of race studies to replace the old Western-centric theoretical model.

We will also endeavor to return the benefits of the current project to the community, for example holding symposia aimed and promoting the creation of guidelines beneficial to genomic and post-genomic research.

Race is a topic given great weight internationally in both academia and secondary education. This project will be one step on the road to advancing social consciousness of the issues surrounding racism.

【Publications Relevant to the Project】

Yasuko Takezawa ed. *Racial Representations in Asia*, Kyoto University Press, 2011.

Yasuko Takezawa ed. *Is Race a Universal Idea?* (in Japanese), Jimbun Shoin, 2005.

【Term of Project】 FY2016-2020

【Budget Allocation】 116,100 Thousand Yen

【Homepage Address and Other Contact Information】

<http://takezawa.zinbun.kyoto-u.ac.jp/>

<http://race.zinbun.kyoto-u.ac.jp/>

A new website for this project is being constructed.

【Grant-in-Aid for Scientific Research (S)】

Humanities and Social Sciences (Social Sciences)



Title of Project : “African Potential” and overcoming the difficulties of modern world: comprehensive area studies that will provide a new perspective for the future of humanity

Motoji Matsuda
(Kyoto University, Graduate School of Letters, Professor)

Research Project Number : 16H06318 Researcher Number : 50173852

Research Area : Area Studies

Keyword : Africa, potential, development, environment, conflict

【Purpose and Background of the Research】

The aim of this research project is to change the conventional perception under which Africa was considered to be only an object of assistance and sympathy, or the source of supply of resources and a promising market, to make clear the potentials Africa has created for problem solving and development, and to examine comprehensively its possibilities to make great contributions for the entire world of the 21st century. Sub-Saharan Africa was praised as one of the engines of the world economic growth in the first decade of this century. However, on the other hand, difficulties such as widening disparity in the society, confrontation seemingly based on religion, race and ethnicity, environmental destruction are becoming even more serious. In order to deal with these difficulties, we will extract and conceptualize the dynamic coping ability of African society that has been ignored by conventional thoughts and ideas that have an intellectual origin in Western modernity, and will provide a perspective for problem solving by utilizing such potentials. With the help of such endeavor, we aim to show a creative articulative process of knowledge genesis to become the basis of the African potentials as another mode of knowledge of the humanities and social sciences originating from Africa, which will make it possible to understand and live the world in a different way.

【Research Methods】

The research plan of this project is comprised of three following phases. At the first stage, we identify the problems that African society faces within historic processes and social changes, and bring to light various kinds of politico-economical, socio-cultural and ideological ways to deal with them. At the second stage, we examine the effect and mechanism of "African potentials" through the comparison of each way of problem-resolution. At the third stage, we identify the domains in which "African potentials" functions effectively in problem solving, and concentrate our efforts on organizing an intensive joint research concerning those domains. Therefore, the research method is as follows: to set up two research teams in each of the three fields (nature and environment, society and co-existence, body and succession), and to create a special team that will integrate all findings and results of each research teams and

will energize the unitary connectivity of the six research groups. The research teams are characterized by core participation of woman researchers and researchers from Africa of each generation, and by participation of eight front-line African researchers who created and developed the idea of "African potential" together.

【Expected Research Achievements and Scientific Significance】

By using "African potentials" as another intellectual and practical tool for problem resolution, we will achieve three goals. The first goal is to make a practical contribution to solve the problems such as conflict resolution and social reconciliation or environmental conservation. The second expected outcome of this project is to make a critical reconsideration of the dominant perspective to recognize Africa, which has been developed and prevailed for several centuries. The last goal is to formulate another mode of knowledge that Africa has created and recreated with entanglement of other elements/forces from the outside world. In this sense, "African potentials" will not be comprehended as a practical skill for problem solving. By formulating an "African potentials" in which the another way of thinking, knowing, imagining and doing are producing, different from those ways that originated in Western modernity and have monopolized a dominant position within humanities and social sciences until now, we will develop a new kind of humanities and social scientific knowledge, which will become an intellectual property for the future of human society.

【Publications Relevant to the Project】

- Matsuda Motoji, Hirano (Nomoto) Misa eds., "Culture that solves conflicts" African potential 1, Kyoto University Press, 2016.
- Matsuda Motoji ed., "For those who study African society", Sekaishisousha, 2014.

【Term of Project】 FY2016-2020

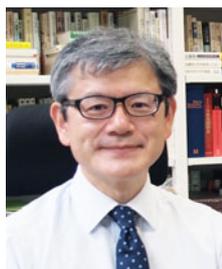
【Budget Allocation】 140,000 Thousand Yen

【Homepage Address and Other Contact Information】

<http://www.africapotential.africa.kyoto-u.ac.jp/mms/>

【Grant-in-Aid for Scientific Research (S)】

Humanities and Social Sciences (Social Sciences)



Title of Project : Research on Disputing Behavior and Judicial Policy in the Super-Aging Society

Iwao Sato
(The University of Tokyo, Institute of Social Science, Professor)

Research Project Number : 16H06321 Researcher Number : 80154037

Research Area : Sociology of Law (Socio-Legal Studies)

Keyword : Super-Aging Society, Disputing Behavior, Judicial Policy, Empirical Studies

【Purpose and Background of the Research】

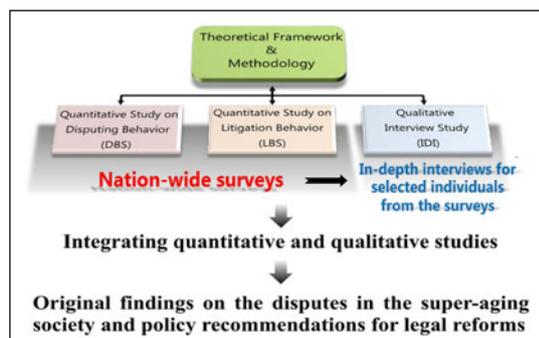
One of the formidable challenges Japan faces now is the imminence of what is called “super-aging society.” As of September 2015, the people who are 65 or older are as high as 26.7% of the population. It is expected that the proportion of aged population exceed 1/3 in 2035. The super-aging society will cause the increase of the number and the complexity of new types of disputes, e.g., inheritance, care/nursing/medicine, housing, family, asset/property management, pension, consumer protection, etc. But little evidence has been gathered about the realities of these problems.

Japan’s judicial system has undergone an extensive overhaul in 2000s, e.g., rapid increase of lawyers, expanded legal aid, etc. The real impacts of these judicial reforms are yet to be studied.

With the special focus on people’s disputing and litigation behavior in the super-aging society, this research project (Civil Justice Research Project: CJRP) aims to produce a comprehensive analysis of the challenges utilizing the wide variety of socio-legal methodologies, while comparing its results with those of the previous studies in Japan and other countries.

【Research Methods】

CJRP is composed of 3 components, 2 consist in the first stage and 1 consists in the second stage. In the first quantitative stage, we conduct 2 nation-wide surveys: Disputing Behavior Study (DBS) and Litigation Behavior Study (LBS). DBS is on people’s dispute experience and disputing behavior in their



everyday life. LBS is on people’s civil litigation behavior. The second qualitative stage consists of in-depth interviews (IDI) to selected individuals from the DBS and LBS. The IDI aims to understand the “symbolic world” of the people’s dispute experiences.

【Expected Research Achievements and Scientific Significance】

CJRP will make an epoch-making impact on the law and social science scholarship. It is also expected to give major impacts on the judicial policy making in Japan. The finding will be utilized in the evidence-based policy making by the legal scholars, legislators, as well as the judicial policy makers. Those impacts are not limited to Japan, for many developed countries will face the problems of aging society sooner or later. Many more countries will share the same or similar challenges as that of Japan in the 21st Century. CJRP will give many invaluable policy suggestions to the global society.

【Publications Relevant to the Project】

- Murayama, M., et al. (eds.), *Civil Justice and Dispute Resolution in Contemporary Japan*, 3 vols., Univ. of Tokyo Press, 2010. [in Japanese]
- Sato, I., et al., “Citizens’ Access to Legal Advice in Contemporary Japan,” Paper presented at the Joint Socio-legal Conference of LSA and RCLS, Berlin, July 2007.
- Sato, I., “Expanding Access to Justice for Labor Disputes,” *Social Science Japan*, No.46, pp.6-10, 2012.

【Term of Project】 FY2016-2020

【Budget Allocation】 127,700 Thousand Yen

【Homepage Address and Other Contact Information】

<http://web.iss.u-tokyo.ac.jp/cjrp/>

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【Grant-in-Aid for Scientific Research (S)】

Humanities and Social Sciences (Social Sciences)



Title of Project : Service Sector Productivity in Japan: Determinants and Policies

Kyoji Fukao
(Hitotsubashi University, Institute of Economic Research, Professor)

Research Project Number : 16H06322 Researcher Number : 30173305

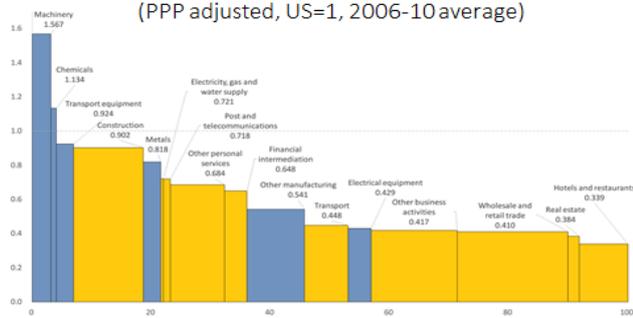
Research Area : Social Sciences

Keyword : Theory of Economic Policy

【Purpose and Background of the Research】

Numerous studies on Japan have shown that growth in service sector productivity has been sluggish and, moreover, that productivity is quite low compared to the United States and Europe. Given that the service sector accounts for about 80 percent of Japan's GDP and employment, boosting service sector productivity plays a crucial role in raising economic growth and living standards. The project team has ample experience in the kind of research proposed and includes members of government-related statistics and research departments, with which the project will work in close cooperation.

Labor Productivity by Industry: US-Japan Comparison
(PPP adjusted, US=1, 2006-10 average)



Sources: JIP Database 2015 (Hitotsubashi Univ. and RIETI), EU KLEMS Database (Groningen Univ.), World KLEMS Database (Harvard Univ.)
Note: Primary sector and non-market services are excluded.

【Research Methods】

Research activities will be conducted in four groups that will closely work together.

Project Supervision & Measurement Issues: Construct quality-adjusted deflators and output indexes for major service sectors and propose these to statistical offices; improve indexes of service productivity for international and prefectural comparisons; examine the impact of Industry 4.0; develop a productivity index for creative industries; revise JIP and R-JIP Databases.

Capital Formation: Investment in intangible assets such as ICT and economic competencies plays an important role in raising service sector productivity growth.

Labor & Human Capital: Estimate production functions taking imperfect competition into account; examine the impact of the elderly and women re-entering the labor market after raising children on labor supply and wages; and others.
Simultaneity of Production and Consumption: Estimate utility functions taking the complementarity of service consumption and leisure into account.

【Expected Research Achievements and Scientific Significance】

The proposed project, comprising Japan's leading researchers on productivity, seeks to remedy this situation in collaboration with statistical agencies and in conjunction with ongoing research initiatives abroad through comprehensive research on service sector productivity to drastically improve the measurement of real service sector output and productivity and to develop a new approach to the study of service sector activity taking the simultaneity of production and consumption into account. Such a large-scale research endeavor is almost unprecedented both in Japan and abroad. The project will make a substantial contribution to global research on the measurement of, and policies to raise, service sector productivity.

【Publications Relevant to the Project】

- Fukao, Kyoji, *The Structural Causes of Japan's "Two Lost Decades": Forging a New Growth Strategy*, Nikkei Publishing Inc., Tokyo, 2012. (in Japanese)
- Morikawa Masayuki, *Productivity in Service Industries: Empirical Analyses Using Microdata*, Nippon Hyoronsha Co., Ltd., 2014. (in Japanese)

【Term of Project】 FY2016-2020

【Budget Allocation】 98,900 Thousand Yen

【Homepage Address and Other Contact Information】

<http://sspj.ier.hit-u.ac.jp/English>
SSPR Project Office 042-580-8350(direct)

【Grant-in-Aid for Scientific Research (S)】

Humanities and Social Sciences (Social Sciences)



Title of Project : Investigation of the long-term causal effect of economic inequality on educational inequality based on longitudinal survey and experiments of parent-child pairs and international comparison

Hideo Akabayashi
(Keio University, Faculty of Economics, Professor)

Research Project Number : 16H06323 Researcher Number : 90296731

Research Area : Social Sciences, Economics, Public Economics

Keyword : Education, Family, Panel data, Cognitive and noncognitive ability, Experiment

【Purpose and Background of the Research】

Income inequality and inequality of opportunity has become a major concern among developed countries. In Japan, eliminating child poverty and strong intergenerational correlation of economic status is considered one of the highest priorities.

What education policies effectively enhance equality of opportunity? Japan has been left behind in an emerging international cooperation to answer this question since Japan has lacked a longitudinal survey that follows the same children from preschool age through adulthood with measures of cognitive and noncognitive ability and labor market outcomes in adulthood.

We will investigate the long-term causal effect of economic inequality on educational inequality by expanding the Japan Child Panel Survey (JCPS) to include preschool children and adolescents, conducting experiments on parent-child pairs, and starting an international project that compares the effect of economic inequality on children.

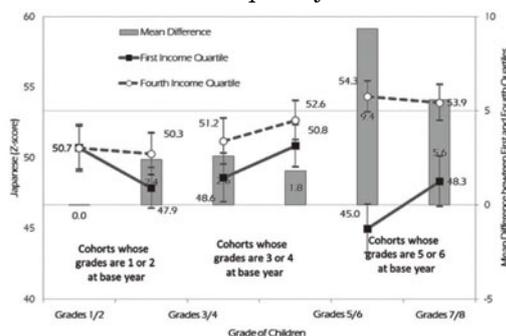


Fig.1. Dynamics of Test Gap across Household Income Groups (Akabayashi et al 2016)

【Research Methods】

First we will conduct a panel survey of preschool age children about child care arrangement, family education, and child's behavior. Second we will construct unified measures of the cognitive ability of school children across ages. Third we will conduct a survey of young adults to investigate the determinants of college enrollment and early economic and social outcomes. Fourth we will conduct experiments on the same parent-child pairs over time to uncover how family influences children.

Lastly, we will start comparative research with China and OECD countries.

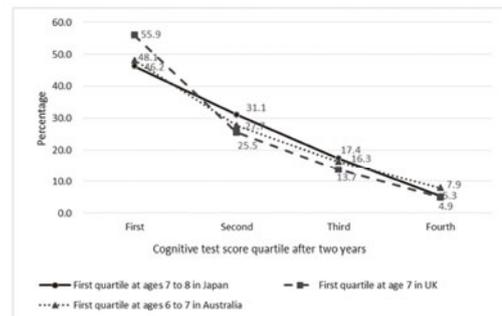


Fig.2. Mobility of Test Scores: Comparison of U.K., Australia, and Japan (Akabayashi et al. 2016).

【Expected Research Achievements and Scientific Significance】

The study will enhance our understanding about the long-term dynamics of educational inequality along the course of child development. The outcomes of this project will be useful not only to the domestic education policy but also to the global research and policy community.

【Publications Relevant to the Project】

Akabayashi, et al.(eds) 2016. An Economic Analysis of Academic Ability, Non-Cognitive Ability, and Family Background. Yuhikaku.(in Japanese)

Akabayashi,etal. 2016. "Toward an International Comparison of Economic and Educational Mobility: Recent Findings from the Japan Child Panel Survey." Educational Studies in Japan: International Yearbook. 10: 49-66.

【Term of Project】 FY2016-2020

【Budget Allocation】 140,400 Thousand Yen

【Homepage Address and Other Contact Information】

<http://ies.keio.ac.jp/projects/5965>

【Grant-in-Aid for Scientific Research (S)】

Humanities and Social Sciences (Social Sciences)



Title of Project : Understanding of cognitive, neural and ecological bases of human collective behavior

Tatsuya Kameda

(The University of Tokyo, Graduate School of Humanities and Sociology, Professor)

Research Project Number : 16H06324 Researcher Number : 20214554

Research Area : Social Sciences

Keyword : Collective phenomena, computational approach, neurocognitive & cross-species experiment

【Purpose and Background of the Research】

Understanding mechanisms of collective behavior, whereby a local phenomenon is amplified to yield unexpected macro consequences, is one of the most urgent agendas in the contemporary social sciences. In this project, researchers in social sciences (social psychology, behavioral economics, experimental social sciences) and in natural sciences (animal behavior, cognitive neuroscience, mathematical biology) work together toward a systematic understanding of cognitive, neural and ecological bases of human collective behavior.

【Research Methods】

This study combines various methods and techniques from social and natural sciences, including computer simulations, mathematical modeling, cross-species experiments, neuro-physiological experiments, cognitive-behavioral experiments, and a large-scale internet experiment, toward a comprehensive understanding of human collective behavior. We focus on “computational algorithm” characterizing each agent’s behavior and explore how the algorithm is implemented at the neuro-physiological levels. We also study how such individual-level algorithms may yield macro social phenomena through dynamic social interactions.

This project revolves around the four themes:

(1) Cross-species experiments on macro behavior using colonies/groups of ants, crows, and humans;

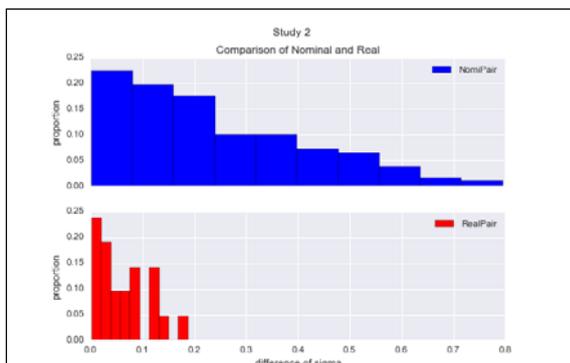


Figure 1 Convergence of cognitive metric for physical judgments through social interaction

(2) Model-based behavioral-cognitive experiments about human small groups;

(3) Neuro-physiological experiments about behavioral and cognitive synchrony; and

(4) Mathematical modeling of synchronization processes and other mass phenomena.

【Expected Research Achievements and Scientific Significance】

This project is internationally unique in combining perspectives and methods from social and natural sciences, under a unified framework of “computational approach.” It is expected to produce cutting-edge knowledge about human collective behavior and achieve high scientific impacts. It is also expected to produce practical knowledge about how to predict and control various mass behavior in the closely-connected modern society.

【Publications Relevant to the Project】

• Kameda, T., & Hastie, R. (2015). Herd behavior: Its biological, neural, cognitive and social underpinnings. In R. Scott & S. Kosslyn (Eds.), *Emerging trends in the social and behavioral sciences*. Hoboken, NJ: John Wiley and Sons. DOI: 10.1002/9781118900772.

etrds0157

• Kameda, T., Wisdom, T., Toyowaka, W., & Inukai, K. (2012). Is consensus-seeking unique to humans? A selective review of animal group decision-making and its implications for (human) social psychology. *Group Processes and Intergroup Relations*, 15, 673-689.

【Term of Project】 FY2016-2020

【Budget Allocation】 140,500 Thousand Yen

【Homepage Address and Other Contact Information】

<http://www.tatsuyakameda.com/homeeng.html>

【Grant-in-Aid for Scientific Research (S)】

Humanities and Social Sciences (Social Sciences)



Title of Project : Lifestyle and Brain Function: Inquiry in Psychological Science into Successful Aging

Kaoru Sekiyama
(Kumamoto University, Faculty of Letters, Professor)

Research Project Number : 16H06325 Researcher Number : 70216539

Research Area : Social Science

Keyword : Life-span development, Maintaining cognitive function, Plasticity, Lifestyle, Brain imaging

【Purpose and Background of the Research】

Lifestyle is one of major factors for maintaining older adults' cognitive function. The purpose of this study is to delineate the mechanism that lifestyle affects maintenance of cognitive function in old ages. To this end, this study focuses on brain regions a) which are more subject to age-related deterioration and b) which tend to compensate for other regions' deterioration.

Older adults' cognitive function declines in acquiring new knowledge, both in speed (speed of processing) and consolidation (memory). As for brain aging, structural deterioration is observed as gray matter shrinkage (especially in the basal ganglia, cerebellum, hippocampus, and prefrontal cortex (PFC)) and white matter changes related to demyelination, while functional aging is often characterized as overactivation in the PFC. With these facts in mind, we will investigate effects of a few activities such as physical and musical exercise to clarify relations between their effects on behavior and those on brain.

【Research Methods】

This project includes intervention studies and master's studies. The intervention studies examine effects of training for relatively short period up to a year, while the master's studies investigate effects of life-long training/experiences.

The project will cover different types of training or lifestyle such as sensorimotor experiences, skill learning, and social exchanges, and their outcomes



Figure 1. An example intervention study

will be measured in various cognitive functions, such as multisensory integration, gait control, motor imagery, executive function, working memory, and episodic memory. In addition to behavioral performances in cognitive tasks, we will measure functional brain activation and anatomical brain structure.

【Expected Research Achievements and Scientific Significance】

Our previous works indicate that a possible mechanism that training affects cognitive function is that training decreases the processing load on the PFC, perhaps by activating other weakened regions for which the PFC tends to compensate. We will pursue this hypothesis and focus on "training of subcortical structures". We expect original findings based on our unique point of view. The results will advance understanding of lifespan brain plasticity and provide guiding principles to better survive the super-aged society.

【Publications Relevant to the Project】

- Kawagoe, T., ...Sekiyama, K. (2015). Brain activation during visual working memory correlates with behavioral mobility performance in older adults. *Front. Aging Neurosci.*, 7:186.
- Nishiguchi, S., Yamada, M., ... Sekiyama, K., ... Tsuboyama, T. (2015). A 12-Week Physical and Cognitive Exercise Program Can Improve Cognitive Function and Neural Efficiency in Community-Dwelling Older Adults: A Randomized Controlled Trial. *J. Ame. Geriatrics Soc.*, 63, 1355-1363.

【Term of Project】 FY2016-2020

【Budget Allocation】 101,800 Thousand Yen

【Homepage Address and Other Contact Information】

<http://www.let.kumamoto-u.ac.jp/ih/hum/psychology/sekiyama/>