Topic-Setting Program to Advance Cutting-Edge Humanities and Social Sciences Research

（Area Cultivation）

Progress Report

（Summary of Final Report）

Exploring cognitive and neural foundations of normative

and ethical judgments about social values

Core-Researcher:　 Tatsuya Kameda

 Institution: The University of Tokyo 　　

 Academic Unit: Graduate School of Humanities and Sociology 　

 Position: Professor

 Research Period:　FY2014 – FY2017

1. Basic information of research project

Research Area	New advances in humanities and social sciences using analytical methods incorporating praxeology, cognitive science, and neural science
Project Title	Exploring cognitive and neural foundations of normative and ethical judgments about social values
Institution	The University of Tokyo
Core-Researcher (Name, Academic Unit & Position)	Tatsuya Kameda, Graduate School of Humanities and Sociology, Professor
Project Period	FY2014- FY2017
Appropriations Plan (¥)	FY2014 5,000,000JPY
	FY2015 10,000,000JPY
	FY2016 10,000,000JPY
	FY2017 5,000,000JPY

2. Purpose of research

As exemplified by the "Occupy Wall Street" protest and the proliferation of similar protests across the world, conflicts in values including how to distribute wealth and resources represent one of the most urgent political problems faced by modern societies. This project aims to investigate the behavioral, cognitive and neural processes underlying human value judgments about how we should construct our societies. We investigate how social values are acquired and maintained through a combination of techniques including computational models, behavioral experiments, fMRI, eye-tracking and the measurement of physiology and hormonal responses. Ultimately our aim is to combine empirical ("be", "do") findings derived from such methodologies with normative ("should") theories about social values, which have been developed in the humanities and social sciences.

3. Outline of research (Including study member)

The following two themes were studied.

(A) Examination of basic processes underlying formation of values
    1) Neuro-cognitive mechanisms for computations of physical and social values
    2) Computational models for acquisition of social values

(B) Analysis of functions of higher social values with distributive justice as an example
    1) Normative analysis of distributive justice
    2) Neuro-cognitive basis of distributive values including dimensions of inequality, maxmimin, and efficiency

Principal Investigator

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Collaborators

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    Akitoshi Ogawa, Assistant Professor, Juntendo University, Graduate School of Medicine

    Kazushi Ikeda, Professor, Nara Institute of Science and Technology, Graduate School of Information Science

    Tomoya Tamei, Assistant Professor, Nara Institute of Science and Technology, Graduate School of Information Science

4. Research results and outcomes produced

The representative results from this project were published in *Proceedings of the National Academy of Sciences of the United States of America* in 2016. The following is its abstract.

<u>Abstract</u>

Distributive justice concerns the moral principles by which we seek to allocate resources fairly among diverse members of a society. Although the concept of fair allocation is one of the fundamental building blocks for societies, there is no clear consensus on how to achieve "socially just" allocations. Here we examine neuro-cognitive commonalities of distributive judgments and risky decisions. We explore the hypothesis that people's allocation decisions for others are closely related to economic decisions for oneself at behavioral, cognitive and neural levels, via a concern about the minimum, worst-off position. In a series of experiments using attention-monitoring and brain-imaging techniques, we investigated this "maximin" concern (maximizing the minimum possible payoff) via responses in two seemingly disparate tasks: third-party distribution of rewards for others, and choosing gambles for self. The experiments revealed three robust results: (1) participants' distributive choices closely matched their risk preferences — "Rawlsians" who maximized the worst-off position in distributions for others avoided riskier gambles for themselves, while "utilitarians" who favored the largest-total distributions preferred riskier but more profitable gambles; (2) across such individual choice-preferences, however, participants generally showed the greatest spontaneous attention to information about the worst possible outcomes in both tasks; and (3) this robust concern about the minimum outcomes was correlated with activation

of the right temporo-parietal junction (RTPJ), the region associated with perspective-taking. The results provide convergent evidence that social distribution for others is psychologically linked to risky decision-making for self, drawing on common cognitive-neural processes with spontaneous perspective-taking of the worst-off position.

Representative publications

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Homepage

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