

# Preface

This book provides an overview of the idea of behavioral decision theory and related research findings. Behavioral decision theory is described briefly as the general term for descriptive theories to explain the psychological knowledge related to people's decision-making behavior. It is called theory, but it is a combination of various psychological theories, for which no axiomatic systems such as those with which the utility theory widely used in economics have been established, but it is often limited to qualitative knowledge. As the studies of H. A. Simon, who won the Nobel Prize for economics in 1978, and D. Kahneman, who won the prize in 2002 suggest, however, the psychological methodology and knowledge of behavioral decision theory have been applied widely in such fields as economics, business administration, and engineering, and are expected to become useful in the future.

Behavioral decision theory is related closely to behavioral economics and behavioral finance, which have been popular in recent years. Behavioral economics is an attempt to understand actual human economic behavior, and behavioral finance studies human behavior in financial markets. The research of people's decision-making represents an important part also in these fields, in which various aspects overlap with the scope of behavioral decision theory.

This book covers a range from classical to relatively recent major studies related to behavioral decision theory. It comprises six parts—Part I: Behavioral Decision Theory and the Idea of It (Chap. 1), Part II: Preference Reversal Phenomenon and Description of the Phenomenon (Chaps. 2, 3, and 4), Part III: Expected Utility Theory and Counterexamples (Chaps. 5 and 6), Part IV: Decision Making and Prospect Theory (Chaps. 7 and 8), Part V: The Framing Effect and Its Descriptions (Chaps. 9 and 10), Part VI: Decision-making Process and Its Theory (Chaps. 11 and 12), and Part VII: Behavioral Decision Theory and Good Decision Making (Chap. 13).

Chapter 1 in Part I describes the relations between the decision-making phenomenon and behavioral decision theory. Chapter 2 in Part II explains the phenomenon by which a preference is reversed depending on the mode of making

a decision (preference reversal phenomenon), followed by Chap. 3, which addresses the causes of such preference reversal phenomenon, and Chap. 4, which presents the model to explain the psychological process of the preference reversal phenomenon. Subsequently, Chap. 5 in Part III highlights the relation to expected utility theory, which is often used in economics and psychology. Chapter 6 presents consideration of the axioms of expected utility theory and the Allais and Ellsberg Paradoxes. Chapter 7 in Part IV explains the preference paradox and nonlinear utility theory, particularly the prospect theory that Kahneman and others proposed. Chapter 8 introduces prospect theory and cumulative prospect theory, which uses the Choquet integral, and illustrates the decision-making phenomenon that is explainable using this theory. Chapter 9 in Part V introduces the framing effect, in which the decision-making result varies depending on how decision-making problems are described, which is followed by Chap. 10 that presents the theory to explain this framing effect. In Part VI, empirical studies of decision-making processes are introduced in Chap. 11, along with the theories and knowledge of neuroeconomics to explain decision-making processes presented in Chap. 12. Finally in Part VII, theoretical discussions of multiattribute decision making are introduced using the possibility theorem and other properties of decision theory. Chapter 13 presents a critical examination of the psychological models of multi-attribute decision-making, findings obtained from them, and rational decision-making and considers what constitutes a “good decision.”

Reading this book requires no advanced expertise. Nonetheless, introductory knowledge of psychology, business administration, and economics and approximately high school graduate level mathematics should improve a reader’s comprehension of the content. In addition, each chapter includes a corresponding bibliography, which can be referred to when studying more details related to behavioral decision theory.

The early draft version of this book is based on the series of Japanese articles of *Keizai Seminar* (Economic Seminar). Ms. Fukiko Konishi of Nippon Hyoron Sha, who was responsible for serials of *Keizai Seminar*, provided me with many helpful remarks, related even to small details. Dr. Hajimu Ikeda, Union Press suggested that I should write this book, and provided me with a number of helpful comments for the English manuscript. Mr. Yutaka Hirachi, and Mr. Yoshio Saito, Springer Japan also provided me with valuable comments for the manuscript.

The information provided in this book has been used for lectures at Waseda University, Gakushuin University, Rikkyo University, The University of Tokyo, Tokyo Institute of Technology, Nagoya University, Kansai University, Osaka University of Human Sciences, Kobe University, University of Tsukuba, and Saint Petersburg State University, Russia. Questions and answers exchanged with students at all of those places have contributed greatly to the compilation of this book. Particularly I have received highly valuable opinions from graduate students taking the Takemura Seminar at Waseda University and from researchers in

decision-making studies through usual discussions. Above all, Dr. Yuki Tamari, Mr. Hajime Murakami, Ms. Junko Takeuchi, Ms. Mariko Shinozuka of Waseda University, Mr. Shigetaka Ohkubo of Keio University helped with some of the proofreading and corrections.

Professor Satoshi Fujii at Kyoto University, who has been conducting joint research on decision making for nearly a decade, also provided me with extremely informative advice and suggestions on a regular basis. A part of our joint research is introduced in this book. Professor Hidehiko Takahashi at Kyoto University, Prof. Takayuki Sakagami, Prof. Toshiko Kikkawa, Mr. Shigetaka Ohkubo at Keio University, Prof. Kaori Karasawa at the University of Tokyo, Prof. Henry Montgomery, Prof. Ola Svenson at Stockholm University, Prof. Tommy Gärling at Gothenburg University, Prof. Marcus Selart at the Norwegian School of Economics and Business Administration, Prof. Michael Smithson at the Australian National University, Prof. Yuri Gatanov at Saint Petersburg State University, Prof. Baruch Fischhoff, Carnegie Mellon University, and Prof. Colin Camerer, California Institute of Technology have given me useful comments for our joint research on decision making through daily practice, which also benefitted this book.

In addition, the research discussions and workshops for experimental Social Sciences Project (headed by Prof. Tatsuyoshi Saijo at Osaka University) conducted under a Grant-in-Aid for Scientific Research on Priority Areas of The Ministry of Education, Culture, Sports, Science and Technology (No. 19046007), and for the Prescriptive Social Psychology Project (headed by Kazuhisa Takemura) conducted under a Grant-in-Aid for Scientific Research A (No. 24243061) in which I am currently taking part, have allowed me to exchange opinions with researchers from various fields including experimental psychology, behavioral economics, and experimental economics. I have found those opportunities to be extremely beneficial. I have been participating in the 20-year-old Cognitive and Statistical Decision Making Research SIG (headed by Prof. Kazuo Shigemasa at Teikyo University) from its inception. Moreover, I continue to learn much from researchers in decision-making studies such as Prof. Yutaka Nakamura of University of Tsukuba, Dr. Yasuaki Kobashi of Taikasha and Prof. Kimihiko Yamagishi of Tokyo Institute of Technology, Prof. Kenpei Shiina, Prof. Shuzo Abe, Prof. Mamoru Kaneko, Prof. Tsuyoshi Moriguchi, Prof. Naoto Onzo, Prof. Kazumi Shimizu, and Prof. Shin-ichi Hirota, Dr. Yuki Tamari, Mr. Takashi Ideno, of Waseda University, Prof. Tetsuo Sugimoto of Sophia University, Prof. Mikiya Hayashi of Meisei University, and Prof. Makoto Abe at The University of Tokyo. In addition, Prof. Tsuyoshi Hatori of Ehime University has remained supportive of me through daily discussion related to decision-making research.

I am most appreciative of the guidance and encouragement offered by predecessors such as the late Prof. Sotohiro Kojima (Doshisha University), Prof. Osamu Takagi (Kansai University), Prof. Kazuo Shigemasa (Teikyo University),

Prof. Nozomu Mastubara (Seigakuin University), and Prof. Tomio Kinoshita (International Institute for Advances Studies).

Finally, this book is the fruit of valuable advice from numerous people with whom I have become acquainted but whose names have not been put into print here. I am truly grateful for all of their support.

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Behavioral Decision Theory

Psychological and Mathematical Descriptions of Human  
Choice Behavior

Takemura, K.

2014, XV, 207 p. 44 illus., 11 illus. in color., Hardcover

ISBN: 978-4-431-54579-8