

Neuroscience Of Decision Making Journal

In the years since it first published, *Neuroeconomics: Decision Making and the Brain* has become the standard reference and textbook in the burgeoning field of neuroeconomics. The second edition, a nearly complete revision of this landmark book, will set a new standard. This new edition features five sections designed to serve as both classroom-friendly introductions to each of the major subareas in neuroeconomics, and as advanced synopses of all that has been accomplished in the last two decades in this rapidly expanding academic discipline. The first of these sections provides useful introductions to the disciplines of microeconomics, the psychology of judgment and decision, computational neuroscience, and anthropology for scholars and students seeking interdisciplinary breadth. The second section provides an overview of how human and animal preferences are represented in the mammalian nervous systems. Chapters on risk, time preferences, social preferences, emotion, pharmacology, and common neural currencies—each written by leading experts—lay out the foundations of neuroeconomic thought. The third section contains both overview and in-depth chapters on the fundamentals of reinforcement learning, value learning, and value representation. The fourth section, “The Neural Mechanisms for Choice,” integrates what is known about the decision-making architecture into state-of-the-art models of how we make choices. The final section embeds these mechanisms in a larger social context, showing how these mechanisms function during social decision-making in both humans and animals. The book provides a historically rich exposition in each of its chapters and emphasizes both the accomplishments and the controversies in the field. A clear explanatory style and a single expository voice characterize all chapters, making core issues in economics, psychology, and neuroscience accessible to scholars from all disciplines. The volume is essential reading for anyone interested in neuroeconomics in particular or decision making in general. Editors and contributing authors are among the acknowledged experts and founders in the field, making this the authoritative reference for neuroeconomics Suitable as an advanced undergraduate or graduate textbook as well as a thorough reference for active researchers Introductory chapters on economics, psychology, neuroscience, and anthropology provide students and scholars from any discipline with the keys to understanding this interdisciplinary field Detailed chapters on subjects that include reinforcement learning, risk, inter-temporal choice, drift-diffusion models, game theory, and prospect theory make this an invaluable reference Published in association with the Society for Neuroeconomics—www.neuroeconomics.org Full-color presentation throughout with numerous carefully selected illustrations to highlight key concepts

In *The Mind within the Brain*, David Redish brings together cutting edge research in psychology, robotics, economics, neuroscience, and the new fields of neuroeconomics and computational psychiatry, to offer a unified theory of human decision-making. Most importantly, Redish shows how vulnerabilities, or "failure-modes," in the decision-making system can lead to serious dysfunctions, such as irrational behavior, addictions, problem gambling, and PTSD. Told with verve and humor in an easily readable style, Redish makes these difficult concepts understandable. Ranging widely from the surprising roles of emotion, habit, and narrative in decision-making, to the larger philosophical questions of how mind and brain are related, what makes us human, the nature of morality, free will, and the conundrum of robotics and consciousness, *The Mind within the Brain* offers fresh insight into one of the most complex aspects of human behavior.

What produces emotions? Why do we have emotions? How do we have emotions? Why do emotional states feel like something? What is the relation between emotion, and reward value, and subjective feelings of pleasure? How is the value of a good represented in the brain? Will neuroeconomics replace classical microeconomics? How does the brain implement decision-making? Are gene-defined rewards and emotions in the interests of the genes, and does rational multistep planning enable us to go beyond selfish genes to long-term plans and social contracts in the interests of the individual? This book seeks explanations of emotion and decision-making by considering these questions. The topics covered include: The nature of emotion, and a theory of emotion The functions of emotion, including a Darwinian theory of the adaptive value of emotion, which helps to illuminate many aspects of brain design and behaviour The brain mechanisms of emotion Affective states and motivated behaviour: hunger and sexual behaviour The pharmacology of emotion, and brain mechanisms for action Neuroeconomics, and the foundation of economic value Decision-making Emotional feelings, and consciousness Neural networks involved in emotion The book will be valuable for those in the fields of neuroscience and neurology, psychology, psychiatry, and philosophy

Goal-Directed Decision Making: Computations and Neural Circuits examines the role of goal-directed choice. It begins with an examination of the computations performed by associated circuits, but then moves on to in-depth examinations on how goal-directed learning interacts with other forms of choice and response selection. This is the only book that embraces the multidisciplinary nature of this area of decision-making, integrating our knowledge of goal-directed decision-making from basic, computational, clinical, and ethology research into a single resource that is invaluable for neuroscientists, psychologists and computer scientists alike. The book presents discussions on the broader field of decision-making and how it has expanded to incorporate ideas related to flexible behaviors, such as cognitive control, economic choice, and Bayesian inference, as well as the influences that motivation, context and cues have on behavior and decision-making. Details the neural circuits functionally involved in goal-directed decision-making and the computations these circuits perform Discusses changes in goal-directed decision-making spurred by development and disorders, and within real-world applications, including social contexts and addiction Synthesizes neuroscience, psychology and computer science research to offer a unique perspective on the central and emerging issues in goal-directed decision-making

Computations and Neural Circuits

Neuroeconomics and the Decision-Making Process

Neuroeconomics, Judgment, and Decision Making

The Wiley Blackwell Handbook of Judgment and Decision Making, 2 Volume Set

Decision-Making Experiments under a Philosophical Analysis: Human Choice as a Challenge for Neuroscience

Handbook on Decision Making

This latest volume in the critically acclaimed and highly influential Attention and Performance series focuses on two of the fast-moving research areas in cognitive and affective neuroscience - decision making and emotional processing. Decision Making, Learning and Problem Solving investigates the psychological and neural systems underlying decision making, and the relationship with reward, learning and problem solving. In addition, it considers neurodevelopmental and clinical aspects of these issues - for example the role of decision making and reward in drug addiction. It also looks at the applied aspects of this knowledge to other disciplines, including the growing field of Neuroeconomics. After an introductory chapter from the Volume editors, the book is then arranged according to the following sections: Psychological Processes underlying decision-making. Neural systems of decision-making. Neural systems of emotion, reward and learning. Neurodevelopmental and clinical aspects. Superbly written and edited, the book highlights the complex interplay between emotional and decision-making processes and their relationship with learning.

In Decision Making and Problem Solving: A Practical Guide for Applied Research, the author utilizes traditional approaches, tools and techniques adopted to solve current day-to-day, real-life problems. The book offers guidance in identifying and applying a range of methods for designing a strategy as well as implementing these strategies in the real world. The book includes realistic case studies and practical approaches that should help readers understand how the decision making occurs and can be applied to problem solving in the face of deep uncertainty.

The first book to use the unexpected discoveries of neuroscience to help us make the best decisions Since Plato, philosophers have described the decision-making process as either rational or emotional: we carefully deliberate, or we "blink" and go with our gut. As scientists break open the mind's black box with the latest tools of neuroscience, they're discovering that this is not how it works. Our best decisions are a finely tuned blend of both feeling and reason—and the precise mix depends on the situation. When buying a house, for example, it's best to let our unconscious mull over the many variables. But when we're picking a stock, intuition often leads us astray. The trick is to determine when to use the different parts of the brain, and to do this, we need to think (a little smarter) about how we think. Jonah Lehrer arms us with the tools we need, drawing on cutting-edge research as well as the real-life experiences of a wide range of "deciders"—from airplane pilots and hedge fund investors to serial killers and poker players. Lehrer shows how people are taking advantage of the new science to make better television shows, win more football games, and improve military intelligence. His goal is to answer two questions that are of interest to just about anyone, from CEOs to firefighters: How does the human mind make decisions? And how can we make those decisions better?

This introduction just aims to be a fast foreword to the special topic now turned into an e-book. The Editorial "Decision-Making Experiments under a Philosophical Analysis: Human Choice as a Challenge for Neuroscience" alongside with my opinion article "Neurophilosophical considerations on decision making: Pushing-up the frontiers without disregarding their foundations" play a key role of considering in more details the articles and the whole purpose of this e-book. What I must highlight in this foreword is my intention with such a project was to deepen into the very foundations of our current paradigms in decision neuroscience and to philosophically moot its foundations and repercussions. Normal Science (a term coined by Philosopher Thomas Kuhn) works within a research consensus among a scientific community: A shared paradigm, consolidated methods, widespread convictions. Pragmatic, winning formulas must be kept, although, not at any cost. What differentiates a gifted and revolutionary scientist from a mediocre bureaucratic colleague is the capacity and willingness of constantly reevaluating, depurating and refining his/her own paradigm. The best strategy to avoid that a paradigm itself would gradually come under challenge. In my view, some achievements, in this field, were brought about in our project. The e-book will be inspiring and informative for both neuroscientists that are concerned with the very foundations of their works and for philosophers that are not blind to empirical evidence. Kant once said: "Thoughts without content are empty, intuitions without concepts are blind". Paraphrasing Kant we could say: Philosophy without science is empty, science without philosophy is blind.

Individual Differences in Judgement and Decision-Making

Decision-Making in Management

Neuroscience of Decision Making

Neuroscience perspectives on Security: Technology, Detection, and Decision Making

Analyzing the Role of Cognitive Biases in the Decision-Making Process

Vol 1: Techniques and Applications

In the last two decades there has been a flourishing research carried out jointly by economists, psychologists and neuroscientists. This meltdown of competences has led towards original approaches to investigate the mental and cognitive mechanisms involved in the way the economic agent collects, processes and uses information to make choices. This research field involves a new kind of scientist, trained in different disciplines, familiar in managing experimental data, and with the mathematical foundations of decision making. The ultimate goal of this research is to open the black-box to understand the behavioural and neural processes through which humans set preferences and translate these behaviours into optimal choices. This volume intends to bring forward new results and fresh insights into this matter.

The Neuroscience of Organizational Behavior establishes the scientific foundations of organizational neuroscience, a nascent discipline that explores the neural correlates of human behavior in organizations. The book draws from several disciplines including the organizational sciences, neuroeconomics, cognitive psychology, social cognitive neuroscience and neuroscience. The topics discussed include the neural foundations of organizational phenomena, such as decision-making, leadership, fairness, trust and cooperation, emotions, ethics and morality, unconscious bias and diversity in the workplace.

Controlling Uncertainty: Decision Making and Learning in Complex Worlds reviews and discusses the most current research relating to the ways we can control the uncertain world around us. Features reviews and discussions of the most current research in a number of fields relevant to controlling uncertainty, such as psychology, neuroscience, computer science and engineering Presents a new

framework that is designed to integrate a variety of disparate fields of research Represents the first book of its kind to provide a general overview of work related to understanding control

Decision making arises when we wish to select the best possible course of action from a set of alternatives. With advancements of the digital technologies, it is easy, and almost instantaneous, to gather a large volume of information and/or data pertaining to a problem that we want to solve. For instance, the world-wide web is perhaps the primary source of information and/or data that we often turn to when we face a decision making problem. However, the information and/or data that we obtain from the real world often are complex, and comprise various kinds of noise. Besides, real-world information and/or data often are incomplete and ambiguous, owing to uncertainties of the environments. All these make decision making a challenging task. To cope with the challenges of decision making, - searchers have designed and developed a variety of decision support systems to provide assistance in human decision making processes. The main aim of this book is to provide a small collection of techniques stemmed from artificial intelligence, as well as other complementary methodo- gies, that are useful for the design and development of intelligent decision support systems. Application examples of how these intelligent decision support systems can be utilized to help tackle a variety of real-world problems in different - mains, e. g. business, management, manufacturing, transportation and food ind- tries, and biomedicine, are also presented. A total of twenty chapters, which can be broadly divided into two parts, i. e.

Aging and Decision Making

Neuroeconomics

An Integrative Perspective

The Neuroscience of Organizational Behavior

Decision Making and Learning in Complex Worlds

Goal-Directed Decision Making

The intersection between the fields of behavioral decision research and neuroscience has proved to be fertile ground for interdisciplinary research. Whereas the former is rich in formalized models of choice, the latter is rife with techniques for testing behavioral models at a fine level. As a result, there has been the rapid emergence of progressively more sophisticated biological models of choice, geared toward the development of ever more complete mechanistic models of behavior. This volume provides a coherent framework for distilling some of the key themes that have emerged as a function of this research program, and highlights what we have learned about judgment and decision making as a result. Although topics that are theoretically relevant to judgment and decision making researchers are addressed, the book ventures somewhat beyond the traditional boundaries of this area to tackle themes that would of interest to a greater community of researchers. Neuroscience of Decision Making provides contemporary and essential reading for researchers and students of cognitive psychology, neuroscience, philosophy, and economics.

Neuroscience is a multidisciplinary research area that evaluates the structural and organizational function of the nervous system. When applied to business practices, it is possible to investigate how consumers, managers, and marketers makes decisions and how their emotions may play a role in those decisions. Applying Neuroscience to Business Practice provides theoretical frameworks and current empirical research in the field. Highlighting scientific studies and real-world applications on how neuroscience is being utilized in business practice and marketing strategies to benefit organizations, as well as emergent business and management techniques being developed from this research, this book is a pivotal reference source for researchers, managers, and students.

Children face an overwhelming amount of information and a range of different choices every day, and so there has never been a more important time to understand how children learn to make judgments and decisions in our modern world. Individual Differences in Judgment and Decision-Making presents cutting-edge developmental research to advance our knowledge and understanding of how these competencies emerge. Focusing on the role of individual differences, the text provides a complementary theoretical approach to understanding the development of judgment and decision-making skills, and how and why these competencies vary within and between different periods of development. Sampling a diverse set of developmental paradigms and measures, as well as considering typical and atypically developing samples, this volume provokes thinking about how we can support our children and youth to help them make better choices. Drawing on the expertise of a range of international contributors, this book will be of interest to students and researchers of cognitive and reasoning from both cognitive and developmental psychology backgrounds.

Neuroeconomics has emerged as a field of study with the goal of understanding the human decision-making process and the mental consideration of multiple outcomes based on a selected action. In particular, neuroeconomics emphasizes how economic conditions can impact and influence the decision-making process and alternately, how human actions have the power to impact economic conditions. Neuroscience and the Decision-Making Process presents the latest research on the relationship between neuroscience, economics, and human decision-making, including theoretical foundations, real-world applications, and models for implementation. Taking a cross-disciplinary approach to neuroeconomic theory and study, this publication is an essential reference source for economists, psychologists, business professionals, and graduate-level students across disciplines.

A Practical Guide For Applied Research

Empirical and Applied Perspectives

How We Make Decisions and How those Decisions Go Wrong

Decision Neuroscience

Rational Choice in an Uncertain World

This book reviews the latest research from psychology, neuroscience, and behavioral economics evaluating how people make financial choices in real-life circumstances. The volume is divided into three sections investigating financial decision making at the level of the brain, the level of an individual decision maker, and the level of the society, concluding with a discussion of the implications for further research. Among the topics discussed: Neural and hormonal bases of financial decision making Personality, cognitive abilities, emotions, and financial decisions Aging and financial decision making Coping methods for making financial choices under uncertainty Stock market crashes and market bubbles Psychological perspectives on borrowing, paying taxes, gambling, and charitable giving Psychological Perspectives on Financial Decision Making is a useful reference for researchers both in and outside of psychology, including decision-making experts, consumer psychologists, and behavioral economists.

Decisions large and small play a fundamental role in shaping life course trajectories of health and well-being: decisions draw upon an individual's capacity for self-regulation and self-control, their ability to keep long-term goals in mind, and their willingness to place

appropriate value on their future well-being. Aging and Decision Making addresses the specific cognitive and affective processes that account for age-related changes in decision making, targeting interventions to compensate for vulnerabilities and leverage strengths in the aging individual. This book focuses on four dominant approaches that characterize the current state of decision-making science and aging - neuroscience, behavioral mechanisms, competence models, and applied perspectives. Underscoring that choice is a ubiquitous component of everyday functioning, Aging and Decision Making examines the implications of how we invest our limited social, temporal, psychological, financial, and physical resources, and lays essential groundwork for the design of decision supportive interventions for adaptive aging that take into account individual capacities and context variables. Divided into four dominant approaches that characterize the current state of decision-making science and aging neuroscience Explores the impact of aging on the linkages between cortical structures/functions and the behavioral indices of decision-making Examines the themes associated with behavioral approaches that attempt integrations of methods, models, and theories of general decision-making with those derived from the study of aging Details the changes in underlying competencies in later life and the two prevailing themes that have emerged—one, the general individual differences perspective, and two, a more clinical focus

Risky Decision Making in Psychological Disorders provides readers with a detailed examination of how risky decision making is affected by a wide array of individual psychological disorders. The book starts by providing important background information on the construct of risky decision making, the assessment of risky decision making, and the neuroscience behind such decision making. The Iowa Gambling Task, Balloon Analogue Risk Task, and other behavioral measures are covered, as are topics such as test reliability and the pros and cons of utilizing tasks that have strong practice effects. The book then moves into how risky decision making is affected by specific psychological disorders, such as addictive behaviors, anxiety disorders, mood disorders, schizophrenia, sleep disorders, eating disorders, and more. For the past decade, the U.S. Marine Corps and its sister services have been engaged in what has been termed "hybrid warfare," which ranges from active combat to civilian support. Hybrid warfare typically occurs in environments where all modes of war are employed, such as conventional weapons, irregular tactics, terrorism, disruptive technologies, and criminality to destabilize an existing order. In August 2010, the National Research Council established the Committee on Improving the Decision Making Abilities of Small Unit Leaders to produce Improving the Decision Making Abilities of Small Unit Leaders. This report examines the operational environment, existing abilities, and gap to include data, technology, skill sets, training, and measures of effectiveness for small unit leaders in conducting enhanced company operations (ECOs) in hybrid engagement, complex environments. Improving the Decision Making Abilities of Small Unit Leaders also determines how to understand the decision making calculus and indicators of adversaries. Improving the Decision Making Abilities of Small Unit Leaders recommends operational and technical approaches for improving the decision making abilities of small unit leaders, including any acquisition and experimentation efforts that can be undertaken by the Marine Corps and/or by other stakeholders aimed specifically at improving the decision making of small unit leaders. This report recommends ways to ease the burden on small unit leaders and to better prepare the small unit leader for success. Improving the Decision Making Abilities of Small Unit Leaders also indentifies a responsible organization to ensure that training and education programs are properly developed, staffed, operated, evaluated, and expanded.

Decision Making: Neural and Behavioural Approaches

The Cognitive Neurosciences

Emotion and Decision-making Explained

Judgment and Decision Making

The Neuroscience of Risky Decision Making

Decision Making And Problem Solving

Whether the decision is to have unprotected sex, consent to surgery, have an extra piece of pie, or spend rather than save for retirement, risky decisions permeate our lives, and sometimes with disastrous consequences. How and why risk taking occurs has important implications. Yet many questions remain about how neurobiological, psychological, and socio-cultural factors influence decision-making. This book advances basic understanding and scientific theory about the brain mechanisms underlying risky decision by integrating findings from a number of disciplines, including development and cognitive psychology, brain sciences, law, behavioral economic, and addiction. The result is a rich scientific framework for understanding the causal mechanisms of risky decision making across the lifespan. Book jacket.

This well-established international series examines major areas of basic and clinical research within neuroscience, as well as emerging and promising subfields. This volume explores interdisciplinary research on decision making taking a neural and behavioural approach. Leading authors review the state-of-the-art in their field of investigation, and provide their views and perspectives for future research. Chapters are extensively referenced to provide readers with a comprehensive list of resources on the topics covered. All chapters include comprehensive background information and are written in a clear form that is also accessible to the non-specialist.

Behavioral decision research offers a distinctive approach to understanding and improving decision making. It combines theory and method from multiple disciplines (psychology, economics, statistics, decision theory, management science). It employs both empirical methods, to study how decisions are actually made, and analytical ones, to study how decisions should be made and how consequential imperfections are. This book brings together key publications, selected to represent the major topics and approaches used in the field. Put in one place, with integrating commentary, it shows the common elements in a research program that represents the scope of the field, while offering depth in each. Together, they provide a vision for what has become a burgeoning field.

The fourth edition of the work that defines the field of cognitive neuroscience, offering completely new material.

Neuroscience of Preference and Choice

Psychological Perspectives on Financial Decision Making

Decision Making and the Brain

The Mind within the Brain

Neuroscience and the Economics of Decision Making

Improving the Decision Making Abilities of Small Unit Leaders

This volume explores how and why people make judgments and decisions that have economic consequences, and what the implications are for human well-being. It provides an integrated review of the latest research from many different disciplines, including social, cognitive, and developmental psychology; neuroscience and neurobiology; and economics and business. The book has six areas of focus: historical foundations; cognitive consistency and inconsistency; heuristics and biases; neuroeconomics and neurobiology; developmental and individual differences; and improving decisions. Throughout, the contributors draw out implications from traditional behavioral research as well as evidence from neuroscience. In recent years, neuroscientific methods have matured, beyond being simply

correlational and descriptive, into theoretical prediction and explanation, and this has opened up many new areas of discovery about economic behavior that are reviewed in the book. In the final part, there are applications of the research to cognitive development, individual differences, and the improving of decisions. The book takes a broad perspective and is written in an accessible way so as to reach a wide audience of advanced students and researchers interested in behavioral economics and related areas. This includes neuroscientists, neuropsychologists, clinicians, psychologists (developmental, social, and cognitive), economists and other social scientists; legal scholars and criminologists; professionals in public health and medicine; educators; evidence-based practitioners; and policy-makers.

In security science, efficient operation depends typically on the interaction between technology, human and machine detection and human and machine decision making. A perfect example of this interplay is 'gatekeeping', which is aimed to prevent the passage of people and objects that represent known threats from one end to the other end of an access point. Gatekeeping is most often achieved via visual inspections, mass screening, random sample probing and/or more targeted controls on attempted passages at points of entry. Points of entry may be physical (e.g. national borders) or virtual (e.g. connection log-ons). Who and what are defined as security threats and the resources available to gatekeepers determine the type of checks and technologies that are put in place to ensure appropriate access control. More often than not, the net performance of technology-aided screening and authentication systems ultimately depends on the characteristics of human operators. Assessing cognitive, affective, behavioural, perceptual and brain processes that may affect gatekeepers while undertaking this task is fundamental. On the other hand, assessing the same processes in those individuals who try to breach access to secure systems (e.g. hackers), and try to cheat controls (e.g. smugglers) is equally fundamental and challenging. From a security standpoint it is vital to be able to anticipate, focus on and correctly interpret the signals connected with such attempts to breach access and/or elude controls, in order to be proactive and to enact appropriate responses. Knowing cognitive, behavioral, social and neural constraints that may affect the security enterprise will undoubtedly result in a more effective deployment of existing human and technological resources. Studying how inter-observer variability, human factors and biology may affect the security agenda, and the usability of existing security technologies, is of great economic and policy interest. In addition, brain sciences may suggest the possibility of novel methods of surveillance and intelligence gathering. This is just one example of a typical security issue that may be fruitfully tackled from a neuroscientific and interdisciplinary perspective. The objective of our Research Topic was to document across relevant disciplines some of the most recent developments, ideas, methods and empirical findings that have the potential to expand our knowledge of the human factors involved in the security process. To this end we welcomed empirical contributions using different methodologies such as those applied in human cognitive neuroscience, biometrics and ethology. We also accepted original theoretical contributions, in the form of review articles, perspectives or opinion papers on this topic. The submissions brought together researchers from different backgrounds to discuss topics which have scientific, applicative and social relevance.

"This two-volume reference is a comprehensive, up-to-date examination of the most important theory, concepts, methodological approaches, and applications in the burgeoning field of judgment and decision making (JDM). Brings together a multi-disciplinary group of contributors from across the social sciences, including psychology, economics, marketing, finance, public policy, sociology, and philosophy Provides accessible, essential information, complete with the latest research and references, for experts and non-experts alike in two volumes Emphasizes the growth of JDM applications with separate chapters devoted to medical decision making, decision making and the law, consumer behavior, and more Addresses controversial topics (such as choice from description vs. choice from experience and contrasts between empirical methodologies employed in behavioral economics and psychology) from multiple perspectives "-- In this provocative book, Paul Glimcher argues that economic theory may provide an alternative to the classical Cartesian model of the brain and behavior. Glimcher argues that Cartesian dualism operates from the false premise that the reflex is able to describe behavior in the real world that animals inhabit. A mathematically rich cognitive theory, he claims, could solve the most difficult problems that any environment could present, eliminating the need for dualism by eliminating the need for a reflex theory. Such a mathematically rigorous description of the neural processes that connect sensation and action, he explains, will have its roots in microeconomic theory. Economic theory allows physiologists to define both the optimal course of action that an animal might select and a mathematical route by which that optimal solution can be derived. Glimcher outlines what an economics-based cognitive model might look like and how one would begin to test it empirically. Along the way, he presents a fascinating history of neuroscience. He also discusses related questions about determinism, free will, and the stochastic nature of complex behavior.

Opportunities in Neuroscience for Future Army Applications

Methods and Behavioral Tools

Consumer Neuroscience

Attention and Performance XXIII

How We Decide

Decision Making under Uncertainty

Decision Neuroscience addresses fundamental questions about how the brain makes perceptual, value-based, and more complex decisions in non-social and social contexts. This book presents compelling neuroimaging, electrophysiological, lesional, and neurocomputational models in combination with hormonal and genetic approaches, which have led to a clearer understanding of the neural mechanisms behind how the brain makes decisions. The five parts of the book address distinct but inter-related topics and are designed to serve both as classroom introductions to major subareas in decision neuroscience and as advanced syntheses of all that has been accomplished in the last decade. Part I is devoted to anatomical, neurophysiological, pharmacological, and optogenetics animal studies on reinforcement-guided decision making, such as the representation of instructions, expectations, and outcomes; the updating of action values; and the evaluation process guiding choices between prospective rewards. Part II covers the topic of the neural representations of motivation, perceptual decision making, and value-based decision making in humans, combining neurocomputational models and brain imaging studies. Part III focuses on the rapidly developing field of social decision neuroscience, integrating recent mechanistic understanding of social decisions in both non-human primates and humans. Part IV covers clinical aspects involving disorders of decision making that link together basic research areas including systems, cognitive, and clinical neuroscience; this part examines dysfunctions of decision making in neurological and psychiatric disorders, such as Parkinson's disease, schizophrenia, behavioral addictions, and focal brain lesions. Part V focuses on the roles of various hormones (cortisol, oxytocin, ghrelin/leptine) and genes that underlie inter-individual differences observed with stress, food choices, and social decision-making processes. The volume is essential reading for anyone interested in decision making neuroscience. With contributions that are forward-looking assessments of the current and future issues faced by researchers, Decision Neuroscience is essential reading for anyone interested in decision-making neuroscience. Provides comprehensive coverage of approaches to studying individual and social decision neuroscience, including primate neurophysiology, brain imaging in healthy humans and in various disorders, and genetic and hormonal influences on decision making Covers multiple levels of analysis, from molecular mechanisms to neural-systems dynamics and computational models of how we make choices Discusses clinical implications of process dysfunctions, including schizophrenia, Parkinson's disease, eating disorders, drug addiction, and

pathological gambling Features chapters from top international researchers in the field and full-color presentation throughout with numerous illustrations to highlight key concepts

A comprehensive introduction to using the tools and techniques of neuroscience to understand how consumers make decisions about purchasing goods and services. Contrary to the assumptions of economists, consumers are not always rational actors who make decisions in their own best interests. The new field of behavioral economics draws on the insights of psychology to study non-rational decision making. The newer field of consumer neuroscience draws on the findings, tools, and techniques of neuroscience to understand how consumers make judgments and decisions. This book is the first comprehensive treatment of consumer neuroscience, suitable for classroom use or as a reference for business and marketing practitioners. After an overview of the field, the text offers the background on the brain and physiological systems necessary for understanding how they work in the context of decision making and reviews the sensory and perceptual mechanisms that govern our perception and experience. Chapters by experts in the field investigate tools for studying the brain, including fMRI, EEG, eye-tracking, and biometrics, and their possible use in marketing. The book examines the relation of attention, memory, and emotion to consumer behavior; cognitive factors in decision making; and the brain's reward system. It describes how consumers develop implicit associations with a brand, perceptions of pricing, and how consumer neuroscience can encourage healthy behaviors. Finally, the book considers ethical issues raised by the application of neuroscience tools to marketing. Contributors Fabio Babiloni, Davide Baldo, David Brandt, Moran Cerf, Yuping Chen, Patrizia Cherubino, Kimberly Rose Clark, Maria Cordero-Merecuana, William A. Cunningham, Manuel Garcia-Garcia, Ming Hsu, Ana Iorga, Philip Kotler, Carl Marci, Hans Melo, Kai-Markus Müller, Brendan Murray, Ingrid L. C. Nieuwenhuis, Graham Page, Hira Parikh, Dante M. Pirouz, Martin Reimann, Neal J. Roese, Irit Shapira-Lichter, Daniela Somarriba, Julia Trabulsi, Arianna Trettel, Giovanni Vecchiato, Thalia Vrantsidis, Sarah Walker

Decision making or making judgments is an essential function in the ordinary life of any individual. Decisions can often be made easily, but sometimes, it can be difficult due to conflict, uncertainty, or ambiguity of the variables required to make the decision. As human beings, we constantly have to decide between different activities such as occupational, recreational, political, economic, etc. These decisions can be transcendental or inconsequential. Analyzing the Role of Cognitive Biases in the Decision-Making Process presents comprehensive research focusing on cognitive shortcuts in the decision-making process. While highlighting topics including jumping to conclusion bias, personality traits, and theoretical models, this book is ideally designed for mental health professionals, psychologists, sociologists, managers, academicians, researchers, and upper-level students seeking current research on cognitive biases that affect individual decision making in daily life.

Advances and major investments in the field of neuroscience can enhance traditional behavioral science approaches to training, learning, and other applications of value to the Army. Neural-behavioral indicators offer new ways to evaluate how well an individual trainee has assimilated mission critical knowledge and skills, and can also be used to provide feedback on the readiness of soldiers for combat. Current methods for matching individual capabilities with the requirements for performing high-value Army assignments do not include neuropsychological, psychophysiological, neurochemical or neurogenetic components; simple neuropsychological testing could greatly improve training success rates for these assignments. Opportunities in Neuroscience for Future Army Applications makes 17 recommendations that focus on utilizing current scientific research and development initiatives to improve performance and efficiency, collaborating with pharmaceutical companies to employ neuropharmaceuticals for general sustainment or enhancement of soldier performance, and improving cognitive and behavioral performance using interdisciplinary approaches and technological investments. An essential guide for the Army, this book will also be of interest to other branches of military, national security and intelligence agencies, academic and commercial researchers, pharmaceutical companies, and others interested in applying the rapid advances in neuroscience to the performance of individual and group tasks.

Judgment and Decision Making Under Uncertainty: Descriptive, Normative, and Prescriptive Perspectives

Risky Decision Making in Psychological Disorders

The Psychology of Judgment and Decision Making

The Ecology of Human Development

Decisions, Uncertainty, and the Brain

A Developmental Perspective

In the Second Edition of Rational Choice in an Uncertain World the authors compare the basic principles of rationality with actual behaviour in making decisions. They describe theories and research findings from the field of judgment and decision making in a non-technical manner, using anecdotes as a teaching device. Intended as an introductory textbook for advanced undergraduate and graduate students, the material not only is of scholarly interest but is practical as well. The Second Edition includes: - more coverage on the role of emotions, happiness, and general well-being in decisions - a summary of the new research on the neuroscience of decision processes - more discussion of the adaptive value of (non-rational heuristics) - expansion of the graphics for decision trees, probability trees, and Venn diagrams. Making important business decisions is usually a difficult and complicated task. In the modern economy where businesses have to solve increasingly complex decision-making problems, it is important to learn and use methods and techniques including the analysis of behavioral data to support decision-making in practice. This book presents various methods and solutions to problems in modern data acquisition techniques and practical aspects of decision making. In particular, it addresses such important issues as: business decision making, multi-criteria decision analysis (MCDA), multidimensional comparative analysis (MCA), decision games and data acquisition techniques for decision making (declarative techniques and cognitive neuroscience techniques). Important topics such as consumers' rational behavior, environmental management accounting, operational research methods, neuroscience including epigenetics, DEA analysis etc., as well as case studies related to decision making in management are also included.

One of the most pressing questions in neuroscience, psychology and economics today is how does the brain generate preferences and make choices? With a unique interdisciplinary approach, this volume is among the first to explore the cognitive and neural mechanisms mediating the generation of the preferences that guide choice. From preferences determining mundane purchases, to social preferences influencing mating choice, through to moral decisions, the authors adopt diverse approaches to answer

the question. Chapters explore the instability of preferences and the common neural processes that occur across preferences. Edited by one of the world's most renowned cognitive neuroscientists, each chapter is authored by an expert in the field, with a host of international contributors. Emphasis on common process underlying preference generation makes material applicable to a variety of disciplines - neuroscience, psychology, economics, law, philosophy, etc. Offers specific focus on how preferences are generated to guide decision making, carefully examining one aspect of the broad field of neuroeconomics and complementing existing volumes Features outstanding, international scholarship, with chapters written by an expert in the topic area

Most decisions in life are based on incomplete information and have uncertain consequences. To successfully cope with real-life situations, the nervous system has to estimate, represent and eventually resolve uncertainty at various levels. A common tradeoff in such decisions involves those between the magnitude of the expected rewards and the uncertainty of obtaining the rewards. For instance, a decision maker may choose to forgo the high expected rewards of investing in the stock market and settle instead for the lower expected reward and much less uncertainty of a savings account. Little is known about how different forms of uncertainty, such as risk or ambiguity, are processed and learned about and how they are integrated with expected rewards and individual preferences throughout the decision making process. With this Research Topic we aim to provide a deeper and more detailed understanding of the processes behind decision making under uncertainty.

Psychological Perspectives

Decision Making, Affect, and Learning

The Science of Neuroeconomics

Cognitive and Neural Mechanisms

Applying Neuroscience to Business Practice

Controlling Uncertainty

Judgment and Decision Making is a refreshingly accessible text that explores the wide variety of ways people make judgments. An accessible examination of the wide variety of ways people make judgments Features up-to-date theoretical coverage, including perspectives from evolutionary psychology and neuroscience Covers dynamic decision making, everyday decision making, individual differences, group decision making, and the nature of mind and brain in relation to judgment and decision making Illustrates key concepts with boxed case studies and cartoons