Neuropsychology of the Sense of Agency

Understanding the Neuropsychology of the Sense of Agency

Neuropsychology of the sense of agency is a fascinating field that delves into how our brains create the feeling that we are the authors of our own actions. This sense—the intrinsic feeling that "I am the one causing or generating an action"—is fundamental to our everyday experiences, influencing how we perceive ourselves and interact with the world. But what exactly happens inside the brain to give rise to this phenomenon? How do neural mechanisms integrate sensory information, motor commands, and cognitive processes to produce that seamless experience of control? Let's explore the intricate neuropsychological foundations of the sense of agency, revealing insights that bridge neuroscience, psychology, and philosophy.

What Is the Sense of Agency?

Before diving into neuropsychology, it helps to clarify what the sense of agency actually entails. At its core, the sense of agency refers to the subjective awareness that one is initiating, executing, and controlling one's own voluntary actions. It's the feeling you get when you decide to pick up a cup of coffee and successfully carry out that action.

This concept is distinct from the sense of ownership, which is the feeling that a particular body part belongs to you. For example, you can feel ownership of your hand without necessarily feeling you are controlling it at every moment. The sense of agency specifically pertains to the feeling of causing an action.

The Importance of Agency in Daily Life

Our sense of agency plays a crucial role in motivation, responsibility, and self-identity. When the sense of agency is intact, individuals feel empowered, purposeful, and accountable for their actions. Conversely, disruptions in this sense can contribute to various neurological and psychiatric conditions, such as schizophrenia or alien hand syndrome, where patients may feel their movements are controlled by external forces.

Neural Mechanisms Underlying the Sense of Agency

The neuropsychology of the sense of agency involves a complex network of brain regions working together to monitor, predict, and integrate information about actions and their consequences.

Motor System and Predictive Coding

At the heart of agency lies the motor system. When you decide to move, your brain generates motor commands sent to your muscles. Simultaneously, the brain creates an internal prediction of the expected sensory feedback from that movement, a process often explained by the comparator model.

This model suggests that the brain compares predicted sensory outcomes with actual sensory feedback. If the predicted and actual feedback align, the brain attributes the action to oneself, reinforcing the sense of agency. If there's a mismatch, the sense of agency can be diminished or lost.

This mechanism involves the cerebellum, which is crucial for generating these predictions and error corrections, and regions like the supplementary motor area (SMA) and premotor cortex that plan and initiate voluntary movements.

Role of the Parietal Cortex

The parietal cortex, particularly the inferior parietal lobule (IPL), is a key player in integrating sensory and motor information necessary for agency. It helps in distinguishing self-generated movements from external events by processing spatial and temporal aspects of movement.

Neuroimaging studies have shown that the IPL activates strongly when individuals experience a mismatch between expected and actual movement outcomes, such as during illusions of control or altered feedback scenarios. This suggests its involvement in monitoring discrepancies that affect agency.

Prefrontal Cortex and Cognitive Aspects

Beyond sensorimotor integration, higher-level cognitive processes also influence the sense of agency. The prefrontal cortex, especially the dorsolateral prefrontal cortex (DLPFC), contributes to decision-making, intention formation, and conscious awareness of actions.

This area helps evaluate whether an action aligns with one's goals and intentions, adding a reflective layer to the sense of agency. Damage or dysfunction in these prefrontal areas can lead to impaired judgment about self-generated actions.

Disorders and Disturbances of the Sense of Agency

Studying conditions where the sense of agency is disrupted offers valuable insights into its neuropsychological basis.

Schizophrenia and Delusions of Control

One of the most profound disturbances occurs in schizophrenia, where patients may experience delusions of control—believing that external forces control their movements or thoughts. This altered sense of agency is thought to arise from impaired predictive coding and dysfunctional integration in the parietal and prefrontal cortices.

Neuroimaging reveals abnormal activity in these brain regions during tasks requiring agency judgments, suggesting a breakdown in the mechanisms that normally distinguish self-generated actions.

Alien Hand Syndrome

In alien hand syndrome, patients report their limb acting seemingly autonomously, without their volition. Lesions in the parietal lobe, corpus callosum, or supplementary motor area have been implicated, disrupting the normal neural circuits responsible for agency.

This syndrome highlights how specific brain areas are critical for the continuous experience of controlling one's own body.

Functional Movement Disorders

In functional neurological disorders, patients exhibit involuntary movements despite normal neurological function. These conditions may involve altered sense of agency, where patients feel movements are not under

their control, even though they are.

Understanding these phenomena through the neuropsychology of the sense of agency helps in diagnosing and developing therapeutic interventions.

Experimental Approaches to Studying the Sense of Agency

Researchers employ various experimental paradigms to unravel the neuropsychology of agency.

Intentional Binding

Intentional binding is a phenomenon where voluntary actions and their sensory consequences are perceived as temporally closer than they actually are. This temporal compression reflects the brain's integration of action and outcome, serving as an implicit measure of agency.

By manipulating timing and feedback, scientists assess how different brain regions contribute to this binding effect, enhancing our understanding of agency mechanisms.

Virtual Reality and Sensorimotor Manipulations

Virtual reality (VR) technologies allow precise control over sensory feedback and action consequences. By altering the timing, spatial location, or visual representation of a participant's movements, researchers can induce changes in agency experiences.

These studies show which neural circuits respond to discrepancies and how the brain adapts to maintain or lose the sense of agency.

Implications and Future Directions

The neuropsychology of the sense of agency not only enriches our theoretical understanding but also has practical implications.

For example, improving our grasp of agency mechanisms could inform rehabilitation strategies for stroke patients recovering motor control. It also opens pathways for designing brain-computer interfaces (BCIs) that provide users with a more natural sense of control over prosthetic limbs or external devices.

Moreover, deeper insights into agency can influence legal and ethical discussions surrounding responsibility and free will, as neuroscience continues to reveal how the brain constructs our experience of self-control.

Exploring the neuropsychology of the sense of agency reveals a delicate dance between prediction, perception, and cognition, orchestrated by a network of brain regions. This dance creates the seamless feeling that "I am the one causing this action," a sensation so fundamental that we often take it for granted. Yet, when the rhythm falters, the resulting experiences shed light on the profound complexity underlying what it means to be an agent in the world.

Frequently Asked Questions

What is the sense of agency in neuropsychology?

The sense of agency refers to the subjective experience of controlling one's own actions and, through them, events in the external world. Neuropsychology studies how brain processes contribute to this feeling of control and self-attribution of actions.

Which brain regions are primarily involved in the sense of agency?

Key brain regions involved in the sense of agency include the prefrontal cortex, the parietal cortex (especially the inferior parietal lobule), and the supplementary motor area. These regions integrate motor commands and sensory feedback to generate the experience of agency.

How does the comparator model explain the sense of agency?

The comparator model suggests that the brain predicts the sensory consequences of motor commands and compares them with actual sensory feedback. When the predicted and actual feedback match, the brain attributes the action to oneself, generating a sense of agency.

What neuropsychological disorders affect the sense of agency?

Disorders such as schizophrenia, alien hand syndrome, and some forms of anosognosia can disrupt the sense of agency. Patients may experience a loss of control over their actions or feel that their movements are controlled by external forces.

How do neuroimaging studies contribute to understanding the sense of agency?

Neuroimaging techniques like fMRI and EEG help identify brain activity patterns associated with self-generated actions versus externally generated events, enhancing our understanding of the neural mechanisms underlying the sense of agency.

Can the sense of agency be experimentally manipulated, and what does this reveal?

Yes, experimental paradigms like the intentional binding effect can manipulate the perceived timing between actions and outcomes, altering the sense of agency. These studies reveal how timing and prediction contribute to the feeling of control over actions.

Additional Resources

Neuropsychology of the Sense of Agency: Understanding the Brain's Role in Self-Perception

Neuropsychology of the sense of agency delves into the intricate relationship between brain mechanisms and the subjective experience of controlling one's actions. This phenomenon, fundamental to human cognition, underpins how individuals distinguish themselves as the authors of their movements and decisions. The sense of agency is pivotal not only for everyday functioning but also for understanding various neuropsychiatric conditions where this sense becomes disrupted. Exploring the neural substrates and cognitive processes involved offers critical insights into how the brain constructs a coherent self-model and mediates the feeling of intentional control.

Defining the Sense of Agency in Neuropsychological Context

The sense of agency refers to the pre-reflective awareness that one is initiating, executing, and controlling one's own actions. It differs from the sense of ownership, which is the feeling that one's body or action belongs to oneself. Neuropsychology investigates the biological foundations of this phenomenon, focusing on how specific brain regions and networks contribute to the emergence of agency.

From a neuropsychological perspective, the sense of agency is not a singular event but a dynamic process involving prediction, monitoring, and feedback integration. The brain continuously compares intended actions with the actual sensory outcomes, allowing the individual to evaluate whether they caused an effect. This sensorimotor integration is crucial for maintaining a stable and accurate sense of control.

Neural Correlates of the Sense of Agency

Research employing neuroimaging techniques such as fMRI, EEG, and lesion studies has identified several brain areas critical to the sense of agency:

- **Supplementary Motor Area (SMA):** Involved in planning and initiating voluntary movements, the SMA plays a key role in generating predictive signals about upcoming actions.
- **Prefrontal Cortex:** Particularly the dorsolateral prefrontal cortex, implicated in higher-order cognitive functions and decision-making, contributes to conscious awareness of agency.
- **Parietal Cortex:** The inferior parietal lobule integrates sensory feedback with motor commands, essential for comparing predicted and actual action outcomes.
- **Cerebellum:** Responsible for error correction and fine-tuning movements, the cerebellum supports prediction models that underpin the sense of agency.

These regions collectively facilitate the brain's ability to generate efference copies—internal replicas of motor commands—which are compared against sensory feedback to confirm action ownership.

Mechanisms Underlying the Sense of Agency

At the core of the neuropsychology of the sense of agency lies the comparator model. This theoretical framework posits that the brain generates a forward model predicting the sensory consequences of motor commands. When the actual sensory feedback matches the predicted outcome, the sense of agency is affirmed. Conversely, mismatches can reduce or abolish this sense, leading to feelings of alienation from one's actions.

Another vital mechanism is the involvement of intentional binding—a phenomenon where the perceived time between a voluntary action and its effect is subjectively shortened. This temporal compression is regarded as an implicit marker of agency and has been used in experimental paradigms to quantify agency strength.

Disorders of Agency: Insights from Neuropsychology

The neuropsychology of the sense of agency extends beyond normal functioning to pathological states where agency is distorted. Conditions such as schizophrenia, anosognosia, and certain movement disorders provide a window into how brain dysfunction disrupts agency perception.

- **Schizophrenia:** Patients often experience delusions of control, where they perceive their actions as controlled by external forces. Neuroimaging studies reveal altered connectivity between prefrontal and parietal regions, impairing the comparator system.
- **Anosognosia:** A lack of awareness of one's deficits, commonly observed after stroke, reflects impaired self-monitoring mechanisms integral to agency.
- **Alien Hand Syndrome:** Characterized by involuntary and seemingly autonomous limb movements, this syndrome highlights the dissociation between motor intention and awareness.

Understanding these disorders contributes to refining models of agency and informs therapeutic strategies aimed at restoring self-awareness.

Experimental Approaches to Investigating Agency

Neuropsychological research employs diverse methodologies to probe the sense of agency:

1. **Behavioral Paradigms:** Tasks involving action-effect contingencies assess participants' judgments about control over external events.
2. **Virtual Reality and Robotics:** These technologies enable manipulation of sensory feedback to study agency under controlled conditions.
3. **Neurophysiological Recording:** EEG and MEG track neural correlates of action preparation and outcome processing in real-time.
4. **Lesion Studies:** Investigations of patients with localized brain damage elucidate the causal role of specific regions in agency experience.

Combining these approaches provides a comprehensive picture of how the brain engenders the sense of agency.

Implications for Artificial Intelligence and Neuroprosthetics

Insights from the neuropsychology of the sense of agency have practical implications extending to the development of brain-computer interfaces (BCIs) and neuroprosthetic devices. For users to effectively control artificial limbs or robotic extensions, the integration of agency is critical. Designing systems that provide congruent sensory feedback and support predictive motor control can enhance the user's feeling of ownership and control over these devices.

Similarly, understanding agency mechanisms informs AI systems that simulate human-like decision-making and action initiation, potentially leading to more intuitive human-machine interactions.

The ongoing exploration of how brain structures and cognitive processes coalesce to produce the feeling of agency continues to shape multiple disciplines. From clinical neurology to cognitive neuroscience and technological innovation, the neuropsychology of the sense of agency remains a rich field for investigation, shedding light on the fundamental nature of selfhood and control.

Neuropsychology Of The Sense Of Agency

neuropsychology of the sense of agency: Neuropsychology of the Sense of Agency Michela Balconi, 2010-09-08 Not nothing without you but not the same Erich Fried (1979) How do I know that I am the person who is moving? The neuroscience of action has identified specific cognitive processes that allow the organism to refer the cause or origin of an action to its agent. This sense of agency has been defined as the sense that I am the one who is causing or generating an action or a certain thought in my stream of consciousness. As such, one can distinguish actions that are self-generated from those generated by others, giving rise to the experience of a self-other distition in the domain of action. A tentative list of the features distinguishing the concept of agency includes awareness of a goal, of an intention to act, and of initiation of action; awareness of movements; a sense of activity, of mental effort, and of control; and the concept of authorship. However, it remains unclear how these various aspects of action and agency are related, to what extent they are dissociable, and whether some are more basic than others. Their sources remain to be specified and their relationship to action specification and action control mechanism is as yet unknown.

neuropsychology of the sense of agency: Neuropsychology of the Sense of Agency Rene Sinclair, 2023-09-26 Sense of agency (SA), in neuropsychology refers to the subjective awareness of originating, executing, and controlling one's own volitional activities in the world. This also adds to the subjective phenomenon of self-consciousness by allowing oneself to feel separate from others. The sense of agency is crucial in cognitive development, particularly in the initial stage of self-awareness, which supports theory of mind capacities. SA is the manner in which self builds itself as an entity autonomous from the external world and from other agents. Differentiating oneself from others is one of the significant functions of human brain. Even slight impairments in this ability have profound effects on the functioning of the individual in the society. Furthermore, SA is also significant in law and ethical questions, which concerns guilt and responsibility. This book is compiled in such a manner, that it will provide in-depth knowledge about the neuropsychology of the sense of agency. It aims to serve as a resource guide for students and experts alike and contribute to the growth of the discipline. This book will serve as a reference to a broad spectrum of readers.

neuropsychology of the sense of agency: Neuropsychology of the Sense of Agency Michela Balconi, 2010

neuropsychology of the sense of agency: The World of Obsessive-Compulsive Disorder Dana Fennell, 2022-01-11 This book depicts the lives of people with OCD. Based primarily on interviews with those who have the disorder, this book follows them from when they first started to believe they had a problem, all the way to life after treatment--

neuropsychology of the sense of agency: A Transdiagnostic Approach to Obsessions, Compulsions and Related Phenomena Leonardo F. Fontenelle, Murat Yücel, 2019-01-03 Using a transdiagnostic framework, this book describes how mental health professionals can diagnose and treat OCD and related disorder.

neuropsychology of the sense of agency: Decoding Consciousness and Bioethics Alberto García Gómez, Alberto Carrara, 2022-11-15 Human consciousness is one of the most fascinating mysteries sheltered by the brain, evidencing that what happens between our ears is more important than what happens outside our skull. In addition, how do we know whether someone other than ourselves is conscious? This book offers a compelling bioethical analysis of one of the most intriguing topics of neuroscience: states of consciousness. It brings together the thought-provoking

contributions of international experts concerning the role of bioethics in fostering dialogue between different, but related, fields of study concerning human consciousness and its altered states, including ethics of neuroscience, psychology, philosophy and anthropology, theology, clinical ethics, law and social studies.

neuropsychology of the sense of agency: The Theory and Practice of Positive Neuropsychology K. Jayasankara Reddy, 2024-11-08 This pioneering work focuses on positive psychology and wellbeing from a neuropsychological perspective. It bridges social, emotional, and psychological principles to explore the burgeoning field of positive neuropsychology. Combining academic theory and clinical practice, it delves into foundational principles, assessments of neuro-cognitive health, evidence-based interventions, practical applications and real-life case studies, and the profound implications of positive neuropsychology in educational contexts. At the intersection between neuropsychology and positive psychology, this book advocates the recent shift toward recognizing the paramount importance of exploring the positive facets of neuropsychological functioning, rather than the historical focus of neuropsychology on ameliorating cognitive deficits and addressing neurological disorders. A must-read for academics, clinicians, and students in neuropsychology, clinical psychology, and positive psychology, this book is also invaluable for anyone interested in enhancing cognitive wellbeing and resilience.

neuropsychology of the sense of agency: Brain Stimulation and Behavioral Change Claudio Lucchiari, Nicholas J. Kelley, Maria E. Vanutelli, Roberta Ferrucci, 2019-05-15 The eBook entitled “Brain Stimulation and Behavioral Change” is a collection of articles about the use of transcranial electric stimulation (tES) to change behaviors and face pathological conditions, to enhance cognition and to explore cerebral functions using safe and non-invasive brain modulation techniques. The tESs include transcranial direct current stimulation (tDCS), transcranial alternate current stimulation (tACS), and, due to the way it induces changes in the brain, Transcranial Magnetic Stimulation (TMS). The use of tES has recently exploded. Certainly, one reason for this explosion of research is that it is a cheap way to change behavior. However, on the other hand, we still know very little about the neural mechanisms that underlie tES. The present eBook includes both original studies and reviews. It covers a wide scope of arguments, including studies aimed at testing the potential ability of tES in mitigating physical and psychiatric symptoms, and to support neurological rehabilitation, enhancing reading abilities, motor abilities, and creativity. Furthermore, some contributions about the role of tES in discovering and mapping the neuro-functional correlates of higher cognitive functions are also included. The common background of the contributions included in the eBook lies in the idea that we need sound scientific evidence about how to move these techniques from labs to real-life contexts. Addressing these issues and understanding the real potentialities of tES in clinical and non-clinical applications require a significant cross-fertilization between disciplines. We hope this eBook will be able to boost the discussion on this vital topic.

neuropsychology of the sense of agency: Free Will and the Brain Walter Glannon, 2015-09-18 Examines how neuroscience can inform the concept of free will and associated practices of moral and criminal responsibility.

neuropsychology of the sense of agency: NEITHER MIND NOR BRAIN CJ ROY, 2020-12-12 This book is an interdisciplinary theoretical effort to explain the mind-body problem. Conscious mind is the hard problem to be explained and is the utmost existential question for any scientific mind. Neither a reductionist identity theory nor a commonsense-religious dualism can answer the problem. Human cognitive system can have a natural explanation rather than a religious description. To reduce the mind as what the brain does is too premature and to separate the mind and brain as two independent realities is too trivial. The hypothesis of the book identifies the conscious mind with the emergent functionality of the human brain. And, this is definitely an approximate guess. This informed guess is a challenge to many previously established theories and is an invitation for further research. It demystifies the age old homunculus mind and does not explains it away. To elaborate the theme, the author has incorporated themes such as complex system dynamics, evolution, cosmology, thermodynamics, information and emergence. The

philosophical discussion on the first three chapters govern as an intuitive background for the theoretical development in further chapters. It affirms that the mind and brain are neither two dichotomized substances nor are they one and same substance. Chapters from four to eight deal with various themes from natural science with respect to the theme of mind-brain. they involve system dynamics, cosmology, thermodynamics, evolutionary theory and information model. Last chapter assimilates the discussions of previous chapters to propose the key hypothesis of the book viz. mind-brain is the emergent functionality of the human brain which is the matter-energy-information complex system. The universe, which itself is a matter-energy-information system, at least in one occasion, becomes conscious of itself through humans.

neuropsychology of the sense of agency: Neuropsychogical Trends 19 - April 2016 AA.VV., 2016-04-13 CONTENTS: Marco Moniz - Saul Neves de Jesus - Eduardo Gonçalves - Andreia Pacheco - João Viseu, Decision-making in adult unipolar depressed patients and healthy subjects: significant differences in Net Score and in non-traditional alternative measures (doi: 10.7358/neur-2016-019-moni) Emma Brambilla, Tourette Syndrome and Learning Disabilities: a focus on correlations in a neurodevelopmental perspective (doi: 10.7358/neur-2016-019-bram) Rachel K. Peterson - Chad A. Noggle - Lokesh Shahani - Raymond S. Dean, Residuals in post-chemotherapy, non-depressed patients with leukemia that is in remission (doi: 10.7358/neur-2016-019-pete) Davide Crivelli, Electrophysiological correlates of social information processing for detecting agents in social interaction scenes: P200 and N250 components (doi: 10.7358/neur-2016-019-criv) Michela Balconi, Brain plasticity and rehabilitation by using Near-Infrared Spectroscopy (doi: 10.7358/neur-2016-019-balc) Maria Elide Vanutelli - Jean-Louis Nandrino - Michela Balconi, The boundaries of cooperation: sharing and coupling from ethology to neuroscience (doi: 10.7358/neur-2016-019-vanu)

neuropsychology of the sense of agency: Owning a Body + Moving a Body = Me? Lorenzo Pia, Francesca Garbarini, Andreas Kalckert, Hong Yu Wong, 2019-05-16 The conscious experience of the bodily self is a cornerstone of human nature, which allows us to delineate the boundaries between the surrounding environment and us. A plethora of clinical and experimental investigations has clearly demonstrated that bodily self-consciousness draws on different neuro-cognitive mechanisms with distinct anatomo-functional underpinnings. Among these, the sense of body ownership (i.e., my body belongs to me), and the sense of agency (i.e., I am the author of my actions) have attracted increasing interest in recent years. The former seems to be strongly rooted in afferent sensory signals, whereas the latter appears to be rooted in efferent motor signals and/or the monitoring of their sensory consequences. Despite the consensus that the interplay between body ownership and the sense of agency contribute to the omnipresent conscious experience of the bodily self, the character and the form of this relationship remain unclear. Though research into the mechanisms underlying ownership (e.g., bodily illusions) or on agency (e.g., intentional binding) is blooming, very few studies have aimed to investigate both these processes at the same time. Therefore, many questions remain unresolved: for example, how do the experiences of ownership and agency influence each other? What are the anatomo-functional substrates of their interplay, and how does damage to these structures affect the experience of either ownership or agency (or both) in clinical populations? What is the specific role of efferent and afferent signals, and how may these be complimented by other inputs like emotional or interoceptive cues? And going beyond the mechanisms and anatomo-functional substrates, are there rational relations between the representations underlying body ownership and agency so that ownership can be a seen as a condition on intentional action and a sense of agency? Elucidating the complex relationship between ownership and agency is a crucial step in our understanding of bodily self-consciousness, and may help us to better understand the variety of neurological/psychiatric disorders affecting the perception of one’s own body and its movements. These insights can contribute to the development of future prosthetic devices or virtual-reality applications, which may in turn allow for new approaches in neuroscience, rehabilitative medicine, and therapeutic interventions.

neuropsychology of the sense of agency: Foundations of Criminal Forensic

Neuropsychology K. Jayasankara Reddy, 2025-03-17 This volume, written by experts from academia, research institutions, police organizations, and private industry, tackles the most pressing challenges in the global security domain. Focusing on the protection of critical infrastructures, counterterrorism, cybercrime, and border security, this book examines how advanced ICT solutions can address emerging threats in the modern security landscape. It delves into the application of artificial intelligence, the dark web, and large-scale data analysis to combat serious and organized crime, manage disasters, and protect national security. Through a collection of case studies from over 30 large-scale research and development projects, this book provides practical insights into the operational challenges and security gaps faced by security professionals worldwide. It explores not only the theoretical aspects of global security but also identifies real-world solutions for contemporary issues such as cybercrime, border surveillance, and crisis management. The book offers a unique, multidisciplinary perspective on security policy, highlighting the complexities of securing critical infrastructures and combating global threats. By focusing on both the operational and technological aspects of security, it presents actionable insights for policy makers, security professionals, and researchers. This book is ideal for professionals and scholars in the fields of global security, cybersecurity, law enforcement, and public policy, as well as those interested in the evolving role of technology in safeguarding critical infrastructure and managing crises.

neuropsychology of the sense of agency: Neuropsychological and Psychosocial Foundations of Neuro-Oncology Herbert B. Newton, Ashlee R. Loughan, 2024-08-05 Neuropsychological & Psychosocial Foundations of Neuro-Oncology provides an in-depth review of common cognitive, psychological, and social manifestations that occur in patients with brain cancer and other neuro-oncological issues, Chapters discuss primary CNS tumors, brain metastases, leptomeningeal disease, paraneoplastic disorders, and many other topics. Effects of CNS and systemic cancer treatment (i.e., radiotherapy, chemotherapy, immunotherapy) are also examined, as wel as current practices for rehabilitation and targets for essential future interventions in vulnerable populations. This book is fully illustrated with pathology photomicrographs, CT and MRI images, tables, and molecular pathway diagrams. Bringing neuropsychological and behavioral health trial knowledge from the bench to the bedside, this volume is an essential reference for practicing neuro-oncologists, neuropsychologists, nurses, and others working in the field of neuro-oncology. - Discusses the neurocognitive implications of brain and systemic cancer treatments - Examines the foundations of neuropsychological testing and daily life implications, including caregiver support - Covers the psychosocial implications of brain cancer, psychotherapeutic interventions, and cognitive rehabilitation

neuropsychology of the sense of agency: Awareness shaping or shaped by prediction and postdiction Yuki Yamada, Takahiro Kawabe, 2015-06-08 We intuitively believe that we are aware of the external world as it is. Unfortunately, this is not entirely true. In fact, the capacity of our sensory system is too small to veridically perceive the world. To overcome this problem, the sensory system has to spatiotemporally integrate neural signals in order to interpret the external world. However, the spatiotemporal integration involves severe neural latencies. How does the sensory system keep up with the ever-changing external world? As later discussed, ‘prediction’ and ‘postdiction’ are essential keywords here. For example, the sensory system uses temporally preceding events to predict subsequent events (e.g., Nijhawan, 1994; Kerzel, 2003; Hubbard, 2005) even when the preceding event is subliminally presented (Schmidt, 2000). Moreover, internal prediction modulates the perception of action outcomes (Bays et al., 2005; Cardoso-Leite et al., 2010) and sense of agency (Wenke et al., 2010). Prediction is also an indispensable factor for movement planning and control (Kawato, 1999). On the other hand, the sensory system also makes use of subsequent events to postdictively interpret a preceding event (e.g. Eagleman & Sejnowski, 2000; Enns, 2002; Khuu et al., 2010; Kawabe, 2011, 2012; Miyazaki et al., 2010; Ono & Kitazawa, 2011) and it's much the same even for infancy (Newman et al., 2008). Moreover, it has also been proposed that sense of agency stems not only from predictive processing but also from postdictive inference (Ebert & Wegner, 2011). The existence of postdictive processing is also supported by several neuroscience studies

(Kamitani & Shimojo, 1999; Lau et al., 2007). How prediction and postdiction shape awareness of the external world is an intriguing question. Prediction is involved with the encoding of incoming signals, whereas postdiction is related to a re-interpretation of already encoded signals. Given this perspective, prediction and postdiction may exist along a processing stream for a single external event. However, it is unclear whether, and if so how, prediction and postdiction interact with each other to shape awareness of the external world. Awareness of the external world may also shape prediction and/or postdiction. It is plausible that awareness of the external world drives the prediction and postdiction of future and past appearances of the world. However, the literature provides little information about the role of awareness of the external world in prediction and postdiction. This background propelled us to propose this research topic with the aim of offering a space for systematic discussion concerning the relationship between awareness, prediction and postdiction among researchers in broad research areas, such as psychology, psychophysics, neuroscience, cognitive science, philosophy, and so forth. We encouraged papers that address one or more of the following questions: 1) How does prediction shape awareness of the external world? 2) How does postdiction shape awareness of the external world? 3) How do prediction and postdiction interact with each other in shaping awareness of the external world? 4) How does awareness of the external world shape prediction/postdiction?

neuropsychology of the sense of agency: Neuropsychology of Consciousness Silvia Savazzi, Anna Maria Berti, Juha Silvanto, Cecilia Guariglia, 2019-11-05

neuropsychology of the sense of agency: Inner Speech Peter Langland-Hassan, Agustín Vicente, 2018 Inner Speech focuses on a familiar and yet mysterious element of our daily lives. In light of renewed interest in the general connections between thought, language, and consciousness, this anthology develops a number of important new theories about internal voices and raises questions about their nature and cognitive functions.

neuropsychology of the sense of agency: Frames interdisziplinär: Modelle, Anwendungsfelder, Methoden Alexander Ziem, Lars Inderelst, Detmer Wulf, 2018-06-25 Das Frame-Konzept als kognitives ReprаÌˆsentationsformat ist seit seiner EinfuÌˆhrung durch Minsky und Fillmore vielfach rezipiert und modifiziert worden. Dieser interdisziplinaÌˆr ausgerichtete Band vereint BeitraÌˆge aus so unterschiedlichen Disziplinen wie Linguistik, Philosophie, Medien-, Kommunikations- und Informationswissenschaften bis hin zur Klinischen Psychiatrie, die das Frame-Konzept aus grundlagentheoretischer sowie methodologischer Perspektive in den Blick nehmen, die aber auch verschiedene Anwendungsfelder fuÌˆr Frames erproben. The series 'Proceedings in Language and Cognition' explores issues of mental representation, linguistic structure and representation, and their interplay. The research presented in this series is grounded in the idea explored in the Collaborative Research Center 'The structure of representations in language, cognition and science' (SFB 991) that there is a universal format for the representation of linguistic and cognitive concepts.

neuropsychology of the sense of agency: Neuropsychology David Andrewes, 2015-12-22 The second edition of this comprehensive textbook for students of Neuropsychology gives a thorough overview of the complex relationship between brain and behaviour. With an excellent blend of clinical, experimental and theoretical coverage, it draws on the latest research findings from neuroscience, cognitive neuroscience, neurochemistry, clinical neuropsychology and neuropsychology to provide students with new insights in this fast moving field. The book is organised around the main neuropsychological disorders in the areas of perception, executive dysfunction, attention, memory, cerebral asymmetry, language, emotion and consciousness. There is a clear emphasis on bridging the gap between theory and practice with links throughout to clinical issues of both assessment and rehabilitation to build a clear understanding of the application of the theoretical issues. The final section in each chapter illustrates the importance of a more systematic approach to intervention, which takes into account theoretical views of recovery from brain damage. New to this edition: A new chapter format that includes a basic topic section, which contains up-to-date essential knowledge of the topic and a further topics section for a more advanced

treatment of the area. A new section on neuroscientific approaches to rehabilitation in each chapter to make links between scientific knowledge and clinical treatment. A brand new chapter on consciousness A new full colour layout with increased pedagogical features, including key terms, section summaries, ‘study questions’ and improved presentation of figures and brain diagrams A companion website including related weblinks, guidance on answering the ‘study questions’, and flashcards. This book will be invaluable for undergraduate students in Neuropsychology and students who wish to take the subject further to the various clinical fields.

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