This chapter addresses the topic of self-control from the perspective of conflict theory, a well-studied framework for understanding the behavioral and neural adaptation effects seen during the performance of a selective attention task. We begin with an in-depth explanation of conflict theory and a review of recent literature in support of this theory. We explain how the anterior cingulate cortex (ACC) monitors for processing or response conflict and recruits dorsolateral prefrontal cortex (DLPFC) to resolve these conflicts, increasing attention to goal-related stimuli and adaptively improving behavioral performance. Next, we review alternative theories and explanations of cognitive control and compare them to conflict theory. Finally, we focus on the recent application of conflict theory to the understanding of a wide range of mental processes including emotion regulation and appraisal as well as social cognitive phenomena such as moral reasoning and attitudes, social exclusion, and cognitive dissonance. We conclude that conflict theory, a mechanistic framework originally designed to account for cognitive control functions related to attention, also shows promise in its ability to elucidate higher-level emotional and social behaviors and their associated neural activity. We propose that this model should be considered in future studies of processes related to self-control.
This chapter reviews the neural mechanisms underlying cognitive processes including emotion, reward, memory, social behavior, numerosity, and executive control. The first section identifies the main structures that comprise the emotional circuits of the primate brain. The second section describes what is known about the neural basis of emotional processes, from the association of stimuli to positive or negative outcomes, to the interplay between the perception and expression of social signals. Reflecting the biases in the literature, the descriptions will emphasize the macaque genus and the function of the amygdala, the most highly connected component of the emotional brain.

Emotional Influences on Visuospatial Attention
Harlan M Fichtenholtz and Kevin S LaBar

This chapter focuses on how emotional processing in the amygdala and related limbic regions interact with frontoparietal attentional control systems and the visual processing stream. Such effects have been elucidated by studying neurologic patients with brain damage, as well as by functional brain imaging methods in healthy individuals. A systematic treatment of attentional biases in affective disorders is beyond the scope of this chapter, although it mentions some studies that investigate how anxiety as a trait marker moderates emotion-attention interactions. It also considers the time course of emotional influences on visual processing that have been revealed by event-related potential (ERP) studies in humans.
This chapter on emotions expands on the implications of individual differences in self-perception processes and describes an integrated view of emotional processes. It argues that emotional processes are innate, adaptive, complex integrations of action, autonomic preparation for action, and expressive signaling of the impending action sequence. Feelings are the recognition of these complex patterns. An emotional feeling is information about what actions are going on and plays the same role in subsequent activity as any other kind of information. That is, it provides guidance and defines the context of subsequent actions. Feelings do not, however, play the compelling, driving role that common sense assumes.

This chapter examines the basic principles governing emotional processing. It re-evaluates the concept of the limbic system and identifies the amygdala as a crucial component of the system involved in the acquisition, storage, and expression of fear memory. Amygdala acts as a species-specific danger detector that can be quickly activated by threatening stimuli, and that can be modulated by higher cognitive systems. The amygdala influences the cognitive system by way of projections to arousal centres that control the way actions and perceptions are performed.
Emotional processes in human newborns: a functionalist perspective
Robert Soussignan and Benoist Schaal

in Emotional Development:: Recent Research Advances

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This chapter examines how the reconceptualisation of emotion within a functionalist perspective can provide guidance for a discussion on emotional processes in neonates. In contrast to theories in which emotion during the neonatal period is seen as unlikely because newborns lack the cognitive prerequisites for experiencing feelings, the functionalist approach conceives emotion as relational processes deriving from significant transactions between the individual and the environment.

The Functional Neuroanatomy of Envy
Jane E. Joseph, Caitlin A. J. Powell, Nathan F. Johnson, and Gayannée Kedia

in Envy: Theory and Research

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Item type: chapter

This chapter first describes the functional neuroanatomy for emotional processing in general and outlines neuroscientific techniques used to study emotional processing. Second, it discusses neuroimaging findings on the core features of envy, including research on inferiority and social comparison, deservingness and unfairness, and hostility. Third, it presents neuroimaging findings on secondary features of envy such as guilt, embarrassment, and shame. Fourth, it discusses recent research on schadenfreude (pleasure at the misfortune of others) that has been shown to be a frequent consequence of envy when an envied person suffers. Finally, it sketches out a hypothesized functional neuroanatomical network for envy, drawing on research from envy, facets of envy, and other related emotions. The chapter then suggests research questions for testing with future human neuroimaging studies that have envy and related emotions as their focus.
FUNCTIONAL neuroimaging broadly refers to methods used to visualize neural activity in the brain in relation to a specific experimental variable (e.g., an emotion). It was only about ten years ago that neuroscientists began to use functional neuroimaging to investigate the neural substrates of emotion with music. The first part of this chapter provides a review of functional neuroimaging studies of emotion and music. It then describes the functional significance of a number of brain structures crucially involved in emotional processing. A section is devoted to musical emotions, emphasizing (1) that music is capable of evoking ‘real’ and ‘basic’ emotions; (2) that music can evoke even more than just those basic emotions; and (3) that if an emotion can never be evoked by music, then it is not an emotion at all.

Emotion, higher-order syntactic thoughts, and consciousness
Edmund T. Rolls

This chapter discusses emotion and sets a framework for approaching the relation between affective state and consciousness. It describes multiple routes to action, some of which involve implicit or unconscious emotional processing, and one of which involves multiple-step planning that leads to a higher-order syntactic theory of consciousness.

Emotion-Focused Therapy
Antonio Pascual-Leone and Leslie Greenberg
This chapter provides an overview of the theory and practice of emotion-focused therapy (EFT), while giving special attention to the neuropsychological perspectives that help explain this approach to treatment. The authors elaborate how emotion theory is a fundamental part of the approach and discuss how this theory informs the treatment principles or ways of understanding emotional processing. They discuss how EFT focuses on accessing and utilizing adaptive emotions to promote transformation of maladaptive emotion structures and show how this promotes changing painful memories from the past by a process of memory reconsolidation. In addition, they refer to the outcome and process research of this approach and outline the principles of clinical practice.

Processing Emotions Induced by Music
L. J. Trainor and L. A. Schmidt

in The Cognitive Neuroscience of Music
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Item type: chapter

Can music induce emotions directly and, if so, are these emotions experienced similarly to emotions arising in other contexts? This chapter analyzes these questions from the perspective of neuroscience. Despite the fact that music does not appear to have an obvious survival value for modern adults, research indicates that listening to music does activate autonomic, subcortical, and cortical systems in a manner similar to other emotional stimuli. It is proposed that music may be so intimately connected with emotional systems because caregivers use music to communicate emotionally with their infants before they are able to understand language. In particular, it examines whether music engages the autonomic nervous system, sub-cortical emotion networks, and cortical areas involved in the emotional processing of other types of stimuli. It also investigates whether emotional reactions to music are simply cultural conventions by asking whether and how infants process musical emotions.
Emotional Processing and Political Judgment: Toward Integrating Political Psychology and Decision Neuroscience

Michael L. Spezio and Ralph Adolphs

in The Affect Effect: Dynamics of Emotion in Political Thinking and Behavior

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This chapter, which connects political psychology and decision neuroscience by addressing the challenges to the development of theory about the role of emotions in decision making, also considers the recent work in areas relating emotional processes to prudential decision making and reward, as well as social judgment. The dichotomy between cognition and emotion is described. In addition, a proposal that seeks to develop the concept of emotional processing within the context of complex decision making is reported. The methodological challenges strongly indicate that construction of inferential models of information processing in the brain needs to proceed by an integrative approach. Judgment and decision making in the social realm demonstrates some of the strongest links with emotional processing. The outlook for productive collaborative work between decision neuroscientists and political psychologists is promising.

Conscious and Nonconscious Cognitive Processes in Jurors’ Decisions

Reid Hastie

in Better Than Conscious?: Decision Making, the Human Mind, and Implications For Institutions

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How should we conceptualize the relationships between conscious and nonconscious processing in some important decisions? This question is addressed in the context of an institutionally significant legal decision—the reasoning processes engaged in by American jurors when rendering verdicts in typical criminal and civil trials. A cognitive–psychological process model for the juror’s decision task is outlined and some of the behavioral evidence for the validity of that interpretation is presented. Thereafter, a discussion of the roles of conscious and nonconscious processes is provided within that framework.
In this chapter, the case is made that the procedure for memory reconsolidation (MR) is compatible with the strategies and interventions of modern psychodynamic psychotherapy. In particular the concept of the corrective emotional experience (CEE) is seen as integral to the MR process. A measure (the Narrative-Emotional Processing Coding System [NEPCS]) was used to code transcripts from a case being seen in Time-Limited Dynamic Psychotherapy. Results indicate that the NEPCS was able to track key shifts consistent with the MR process and CEE. One implication of this work is that psychodynamic therapists might be able to use an MR framework intentionally to foster enduring change more effectively and efficiently.

Decision Making, Affect, and Learning
Mauricio R. Delgado, Elizabeth A. Phelps, and Trevor W. Robbins (eds)

This latest volume in the Attention and Performance series focuses on two of the fastest moving research areas in cognitive and affective neuroscience — decision making and emotional processing. This book investigates the psychological and neural systems underlying decision making, and the relationship with reward, affect, and learning. 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, the book is arranged according to the following themes: psychological processes underlying decision-making; neural systems of decision-making; neural systems of emotion, reward and learning, and neurodevelopmental and clinical aspects.
Although the term reconciliation has been widely used in academic literature regarding international and interethnic conflict, the term has an ambiguous nature as it can be used over a wide variety of contexts and perspectives and it can be discussed also at micro and macro levels. Thus, the working definition for this study concerns reconciliation as a fusion of cognitive and emotional processes wherein concerned parties accept relationships of peace and are accompanied by certain political and structural processes during the transition from state to state. This chapter attempts to explain what psychological processes are involved in reconciliation and what the necessary conditions for the transition from conflict to peace are.

CBT for Anxiety Disorders
Jonathan D. Huppert, Isaac Fradkin, and Shawn P. Cahill

Although exposure is considered one of the most effective treatments for the anxiety disorders, theories underlying the efficacy of the treatments vary. This chapter examines various forms of exposure in terms of emotional processing theory, the inhibitory learning model, and cognitive theory. The authors discuss how each relates to current literature on memory reconsolidation. They suggest that, ultimately, all three models have strengths and weaknesses that can be improved upon via their integration and raise questions for further research in terms of each theory as well as their relationship to memory reconsolidation. In addition, some proposals for integrating these theories via consideration of the brain as a Bayesian predictive coding processor and use of computational modeling are suggested.
Vision researchers typically objectify the human body in their studies of body perception by adopting the same theoretical approaches and experimental methodologies used in studies of object perception. Although the human body can be understood as a physical object, it is also much more. Numerous behavioral and neurophysiological studies, with adult and infant observers, have demonstrated important differences in the visual perception of human motion and object motion. At least three factors—motor experience, visual experience, and emotional processes—differentiate the visual perception of animate, or at least observer-like, entities from inanimate entities.

This chapter examines the interplay between the spatial representation and the circuitry underlying the expression of fear responses. It outlines research into this circuitry, of which a crucial component is the amygdala, and then looks at how the spatial representation interacts with it so that animal can learn to fear a place in which it has experienced an aversive event. In particular, it develops an anatomical model of context fear involving hippocampal-cortical-amygdala interactions to help explicate the existing data and generate new predictions. It begins by explaining fear as a functional behavioural system that has evolved to protect animals from predation. In addition, a discussion of the basic neural circuitry involved in conditional fear is provided. The data indicate that two functionally distinct systems contribute to context fear acquisition. Furthermore, it is assumed that the ventral hippocampal system may provide an interface between complex
multimodal processing by neocortical systems and emotional processing by the amygdala and other ‘limbic’ structures.

Is the Startle Reaction an Emotion?
Paul Ekman, Wallace V. Friesen, and Ronald C. Simons

in What the Face Reveals: Basic and Applied Studies of Spontaneous Expression Using the Facial Action Coding System (FACS)

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This chapter looks at a study that determines the extent to which the startle reaction is influenced by three cognitive activities. One experimental condition examined the role of expectations by telling subjects exactly when they would be startled. Another condition explored how well the startle expression can be suppressed, and a third condition investigated how well the startle expression can be simulated. It also verified Landis and Hunt's account about the remarkable uniformity and brevity of the startle expression, features that might distinguish a startle from emotions such as anger or fear. Some of the methodological defects in Landis and Hunt's study are also remedied. Although their study was exemplary for its time, Landis and Hunt did not report how they made their behavioral measurements, they did not mention interobserver reliability, and often they omitted the quantitative data and significance tests that presumably were the bases for many of their key findings. The paper on startle and emotion and the study of the Latah syndrome are described.