Introduction

Currently, there is increasing interest in using neuroscientific tools and techniques to study human behavior in organizations. Perhaps this is the consequence of Lee, Senior, and Butler's (2012a) observation that “there has been a missing cognitive neuroscience level in organization studies” (p. 213). Several authors have used terms such as organizational cognitive neuroscience (Butler and Senior, 2007; Lee and Chamberlain, 2007), neuro-organizational behavior (Beugré, 2010), and organizational neuroscience (Becker and Cropaanzano, 2010; Becker, Cropaanzano, and Sanfey, 2011) to emphasize the application of neuroscience to organizational behavior. Using neuroscientific tools and techniques to study organizational phenomena is encouraging because understanding how the human brain functions could help to better address some of the questions that current organizational science methodologies cannot resolve. In this regard, organizational neuroscience could complement the organizational sciences. Hence, “researchers should see neuroscience as another tool in the toolbox, one that complements existing methods and is mutually informative and enriching” (Becker and Cropaanzano, 2010, p. 1059). However, to benefit from findings in neuroscience, organizational scholars must have a solid grasp of both neuroscience and organizational science.

As a field of scientific inquiry and practical relevance, organizational neuroscience is still in its infancy (Beugré, 2010; Butler et al., 2016; Waldman, Ward, and Becker, 2017). The first articles in the mainstream management and organizational behavior journals that specifically mention the application of neuroscience tools and techniques to organizational behavior were mostly published in the first part of this decade. The articles by Becker and Cropaanzano (2010), Becker et al. (2011), Senior, Lee, and Butler (2011), and Lee, Senior, and Butler (2012b) were published in the Journal of Organizational Behavior and the Journal of Management and Organization Science. The only publication prior to 2010 was the journal article by Butler and Senior on organizational cognitive neuroscience in 2007. Despite its emerging nature, however, the future of organizational neuroscience looks promising.
The purpose of this book, therefore, is to lay the groundwork for developing the field of organizational neuroscience. In so doing, the book follows the emerging trend of combining the studies of biology and human behavior in the workplace (Heaphy and Dutton, 2008; Akinola, 2010; Colarelli and Arvey, 2015). In fact, the use of biology to explain how people act or react in the workplace has a long history and can be traced back to the work of Hans Selye (1956) on stress and its physiological consequences. We must also acknowledge that more than 80 years ago, Lashley (1930) pointed out the role of neuroscience in explicating human behavior and discussed the concept of “localization of function” of the brain, implying that individual neurons are specialized for particular functions. He specifically notes that “the final explanation of behavior or of mental processes is to be sought in the physiological activity of the body and, in particular, in the properties of the nervous system” (Lashley, 1930, p. 1).

Since then, neuroscientists have based their studies on this notion to localize particular regions of the brain responsible for specific behaviors. Recently, the study of the physiological dimensions of employee behavior has expanded to neuropsychology and particularly the understanding of the impact of brain structures on work and economic behavior, such as decision making, trust, fairness, leadership, and emotions, to name but a few.

In this book, I take on the challenge of describing how a combination of neuroscience and the organization sciences could lead not only to a new discipline but also, most importantly, advance our understanding of how we as human beings make decisions and interact with one another in organizational settings. The book draws from several fields including neuroscience, organization science, neuroeconomics, cognitive psychology, and social cognitive neuroscience. However, for the promising future of organizational neuroscience to materialize, organizational scholars must familiarize themselves with the theories and models of cognitive psychology and the tools and techniques of neuroscience. This could help rephrase the debate on human behavior in the workplace, thereby leading scholars to ask new questions or reformulate old questions in new ways.

In writing this book, my goal is not to contend that organizational neuroscience is a panacea, nor am I advocating that it is a new field that will revolutionize research and practice in management and organizational behavior. Rather, my goal is to contribute to the nascent field of organizational neuroscience by discussing and summarizing the neural basis of the major topics discussed in organizational science, including fairness, motivation and rewards, trust and cooperation, leadership, decision making, creativity and innovation, morality and ethical behavior,
emotions, and unconscious bias. Discussing the neural basis of these topics could provide insights to our understanding of the different facets of organizational life. As Becker et al. (2011, p. 951) suggest, “the perspectives from organizational neuroscience can help scholars resolve conceptual disagreements. Issues that are difficult to differentiate at one level of analysis may become more distinctive at the level of neural processing.”

Likewise, Senior, Lee, and Butler (2011) add that neuroscience can help realize the relationship between “organizational behavior and our brains and allows us to dissect specific social processes at the neurobiological level and apply a wider range of analysis to specific organizational research” (p. 804). Volk and Köhler (2012) note that by uncovering neural functioning as the basis of an observable behavior, neuroscience techniques can (1) help researchers form better theories about the underlying reasons for observable behaviors in a given context; and (2) create more accurate tests of these theories than if they were to use other, less direct means, such as standard self-report measures.

Organizational neuroscience provides an opportunity for cross-pollination of organizational research and opportunities for targeted interventions and could also help us better understand the role of training and retraining in neuroplasticity (Damasio, Everitt, and Bishop, 1996; Bechara, Damasio, and Damasio, 2000). Neuroplasticity refers to the ability of the brain to rewire itself based on the environment in which the individual operates. Organizational neuroscience should not limit itself to brain mapping. Rather, it must draw sound conclusions from studies using neuroscience tools and techniques. It is only by doing so that it can make new and useful contributions to existing theories in the organizational sciences. To some extent, “human behavior at some level is biological, but this is not to say that biological reductionism yields a simple, singular, or satisfactory explanation for complex behaviors or that molecular forms of representation provide the only or best level of analysis for understanding human behavior” (Cacioppo, 2002, p. 820).

The book is divided into ten chapters. The first chapter presents and discusses the nature of organizational neuroscience. The second chapter describes the methods used in neuroscientific research that could be useful for organizational neuroscience scholars. The third chapter analyzes the neural basis of decision making. The fourth chapter explores the neural basis of creativity and innovation in organizations. The fifth chapter analyzes the neural foundations of motivation and rewards. The sixth chapter deals with issues of leadership and their neural foundations. The seventh chapter addresses the neural foundation of fairness. The eighth chapter describes how neuroscience could help us understand trust.
and cooperation in organizations. The ninth chapter discusses the neural basis of ethics and morality. Finally, the tenth chapter addresses the neural basis of emotions and unconscious bias in organizations. Together, these different topics represent those that are extensively studied in research in organizational behavior and neuroscience and that are largely discussed in organizational behavior textbooks.