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Human and non-human animals: Comparative Psychology - the Venn diagram of cognition and behaviour

**APA Handbook of Comparative Psychology**

**Volume 1: Basic Concepts, Methods, Neural Substrate, and Behavior 989 pp. ISBN10: 1-4338-2350-0**

**Volume 2: Perception, Learning, and Cognition 841pp. ISBN10: 1-4338-2352-7**

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Abstract

The APA Handbook of Comparative Psychology is a magnum opus of the first calibre, encompassing the major areas of study of animal cognition and behaviour. Underpinning the field is an evolutionary perspective which is also the central core premise of this handbook. Comprising 80 chapters divided into nine sections, Call and his associate editors have produced a cogent and smoothly synthesised tour de force in terms of its coverage of history, theories, schools of thought and evidence. It is a truly comprehensive piece of work, drawing on contributions from across the Americas, Eurasia and Australasia, from those already eminent in their fields and those from the upcoming generation of pure and applied researchers in the field. The overall structure is logical and simple and the individual chapters provide, as applicable, an introduction to the history of the area, as well as considered discussion of the current state of knowledge, thought and evidence. The clarity of writing means that all the chapters are accessible to those who may not have an extensive background in the subject. The authors have responded to the editor’s encouragement to take a broad taxonomic approach considering evidence from terrestrial and aquatic, vertebrate and invertebrate, domestic and wild species. Combined with the editorial team’s in-text cross references to other chapters, this means this book is an enriching read, engendering cogitations of possibilities for future research both pure and applied, within and across disciplines. The fillip provided by the study of Comparative Psychology is the understanding that the study of non-human species provides can inform, and be informed by, research into the human species. The scope and content of this book makes one realise the widening opportunities for such inter and intra disciplinary thought and progression. Consequently, this text should be made available to every student on every psychology, animal behaviour or welfare focussed course. It is full of gems to which we can direct our colleagues in other areas of psychology and beyond. The real potential from collaborative and cross-disciplinary thinking that comparative psychology can engender is only just beginning to be realised. This book will do much to push it forward to the benefit of both the human and non-human species.

Review

A few weeks ago a large parcel arrived at Southampton containing a review copy of the two volumes that comprise the APA Handbook of Comparative Psychology. I confess, my immediate reaction was feeling more than somewhat daunted by the size of the task ahead of me, especially at a busy time of the academic year. I wondered if I was about to regret agreeing to take on the review… look at the size of it, 80 chapters, some 1800 pages! I am sure the late, and great Jaak Panksepp would have more accurately labelled this as an expression of mild panic and eloquently explained which bits of my brain were firing and the nuances of my physiological and emotional response (see Chapter 23, Volume one). My second reaction was a frisson of anticipation mingled with a dose of wariness. Anticipation stemmed from a quick glance at the contents page which indicated this was going to be a really interesting and comprehensive guided tour of the field of comparative psychology, stopping at all the major sites of interest. Further, the tour guides were many and varied; the established and the upcoming; an international cast of colleagues from Europe, Scandinavia, the Americas, Australia, New Zealand and Japan. Wariness arose from past experience of edited books, some have been better than others. Differences in style of individual chapter authors can sometimes be a problem, but more important is the structure of the whole. Where an interlinking of chapters is absent and the overall structure is somewhat opaque, an edited volume can read more like a disparate collection of articles. The role of an editor is challenging at any time, and surely where one volume contained 45 chapters and the second 35 the potential for structural gaps seemed quite high and the diversity of topics covered would no doubt further increase the probability. How wrong I was!

Congratulations are due to Josep Call and to his associate editors for the production of this cogent and smoothly synthesised opus. There has clearly been a great deal of planning and communication between the editorial team and with the authors. As explained in Call’s introduction, the underlying foundation of Comparative Psychology is evolution and an evolutionary perspective is the central core premise of the overall structure of this handbook. The opening chapter, written by the editorial team, provides a concise yet comprehensive overview of comparative psychology, starting by clearly defining it as the scientific study of animal cognition and behaviour from an evolutionary perspective. This chapter covers the development of the field, its scope and the “relation and reciprocal impact of comparative psychology on other disciplines both inside and outside of psychology” (Vol 1, pg 3). This important point underscores the value of this publication to a wide field of academics and applied practitioners. The scope and content of this book makes one realise the widening opportunities for such inter and intra disciplinary thought and progression.

Obviously, this book with be attractive to those whose main focus concerns animals, such as biologists, ethologists, behaviourists, animal welfare scientists, veterinarians and conservationists. However, both generally and in regard to specific areas, comparative psychology has aspects that will be of interest to those whose main focus is the human animal. As Call suggests, these include anthropologists, social scientists, neuroscientists, linguists, experts on artificial intelligence, and even experimental economists. For me there was not an obvious link at first consideration with experimental economics, reflecting my personal degree of ignorance of economics. Having the link drawn to my attention drew my interest and added an extra dimension to my reading of the chapters indicated by Call as relevant, namely Zentall’s on Decision Making: Rational and Irrational choice; and Rosati’s Decision Making under Uncertainity: preferences, biases and choice. Over recent decades there has been a regrettable compartmentalisation of knowledge; even in areas that are clearly closely related. The drawbacks of this are being realised with an increasing recognition of the need for and benefits of an inter-disciplinary approach to science teaching (Czerniak & Johnson, 2014). Call’s book is a wonderful example evidencing that a holistic approach to the consideration and interpretation of data and information leads to greater understanding. Where that study involves living organisms, or indeed artificial intelligence, Comparative Psychology provides important and essential connective tissue.

This Octopoda-like reach into so many different social and biological sciences encapsulates a major potential problem of undertaking a Handbook in Comparative Psychology, namely how do you structure it, what do you include and what needs to be omitted? This is a challenge that has been successfully faced by the team. This publication is one that throughout interweaves both subtle simplicity and complexity to guide its reader, be they familiar or otherwise with the content.

The overall structure is logical and simple; and comprises nine parts. Six are covered in Volume One. The first five: History and Basic Concepts; Methods; Adaptations, Evolution and Phylogeny; Genes, Hormones and Ontogeny; and Neural Substrate, provide the reader with a clear overview and understanding of the conceptual underpinnings of the field. In these, as in all sections and chapters, theories and concepts are clarified, illustrated and debated through consideration of both classical and the most recent research findings. The final part of Volume One is Behaviour; containing 16 chapters including, but not limited to, chapters on language, referential and symbolic communication; inter-specific communication parenting and alloparenting, play, friendships and coalitions, collaboration and prosociality, ingestive behaviour, predator-prey interactions; why animals fight, and conflict resolution. Clearly important topics for all interested in animal behaviour and welfare, but also for the growing field of anthrozoology and human-animal interactions, including clinical animal psychology. This of itself is a feast, but more is to come in Volume Two which serves to compliment, expand and further enhance the reader’s knowledge and fascination with comparative psychology and all it has to offer.

The title of Volume Two “Perception, learning, and cognition” advises the reader that herein are areas perhaps more familiar to students of human psychology namely psychological processes underlying individual behaviour. This volume is divided into three parts: Perception, attention and memory; learning and motivation; and finally cognition and emotion. Again a range of topics are considered from comparative research into perception, visual, auditory and olfactory; comparative visual illusions, memory and, for Dr Who fans (☺), mental time travel in animals. Individual and social learning, decision making and serial learning are some of the contributions to the Learning and Motivation Section. The final section on cognition and emotion introduces classic areas of interest such as spatial cognition, navigation and timing, as well as areas less familiar to those whose understanding of mental processes may be more anthropocentric. These include areas such as comparative metaphysics and metacognition as well as rodent models of empathy and prosocial behaviour – subjects of importance in human behaviour research too. The last chapter is a drawing together of the extensive role of comparative psychology in the field animal welfare, contributing to how we conceptualise welfare, physical and psychological, and the challenges of measuring, and thereby gaining an understanding of how animals feel and thus how we can improve the lot of these fellow creatures. For, of course, the fillip provided by the study of Comparative Psychology is the wealth of information and insight it provides from looking at other species that have evolved in various niches of varying stability on this planet of ours. The understanding that the study of non-human species provides can inform, and be informed by research into the human species, hopefully to the betterment of the welfare of all.

Indeed, throughout Call and colleagues consider the between research on human and non-human animals in a fascinating and informed manner. For some this may immediately throw up images of unending reference to primate, rat, pigeon and parrot studies. Of course these are there, but the editors have encouraged their contributors to be taxonomically broad, and discussion of research into a range of taxa; terrestrial and aquatic, domestic and wild, vertebrate and invertebrate has enhanced the reading experience and the post-reading cogitations. The latter are enriched further by the in-text cross-references to other chapters provided by the editorial team, helping the reader synthesise a vast body of information. This is one more bit of icing on the cake… though it does mean that putting this ‘handbook’ down is a jolly hard task as you get drawn in to wanting to find out about “just that one more” piece of the jigsaw. There is so much herein, it is a treasure trove. Indeed, the main problem I have found in undertaking this review was finding time to do anything else but read the content!

In summary, this handbook is comprehensive and has somehow managed to present a wide and expanding field in a concise and instructive format. It is a tour de force in terms of its inclusivity; of the history, theories, schools of thought and evidence. Like an organism, the science of comparative psychology has and continues to evolve, learn, develop and reach out to other disciplines. Whilst the contributors have their own style, the general overall structure of the chapters and the clarity of writing means that all the chapters are accessible to those who may not have an extensive background in the subject, and also are extremely useful summaries of the current state of knowledge and thought and thus of interest to all. All the contributors are to be thanked for their effort as it has meant this text is useful to undergraduate, postgraduate and professors alike, be they psychologists or from other fields. It is not intended as a course textbook per se; but I certainly would regard it as an essential supplement for students. It is the bridge connecting and clarifying the textbook and the journals. I can only say that Call and all his colleagues have more than met his stated aim of combining “classical findings with current and new directions………. to correct as much as possible the inevitable decalage that occurs between what is published in journals and what is included in textbooks”(Volume one, page xix). In my opinion this text should be made available to every student on every psychology, animal behaviour or welfare focussed course. It is full of gems to which we can direct our colleagues in other areas of psychology and beyond. The real potential from collaborative and cross disciplinary thinking that Comparative Psychology can engender is only just beginning to be realised. This book will do much to push it forward to the benefit of both the human and non-human species. I thoroughly recommend this book to all, for university libraries, or your own. You will not regret it.

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