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A Place for Comparative Psychology in Undergraduate Curricula

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Establishing a place for comparative psychology within the curricula of undergraduate psychology programs in the U.S. can be challenging. Psychology majors typically take a core set of required classes and select the remainder from a menu of options or from purely elective courses offered by faculty that are primarily focused on human behavior. It is within this context that many of us who teach comparative psychology find ourselves competing for space in our undergraduate programs. In this paper, I describe a way to make comparative psychology more visible in undergraduate psychology programs. Specifically, I outline a strategy for mapping undergraduate courses in comparative psychology onto the American Psychological Association's (2013) guidelines for the undergraduate major. The aim is to bring our unique contributions into focus, offer clarity on common course objectives, and, hopefully, offer something useful for assessing undergraduate student learning.

It is a pleasure to contribute to this special issue, which includes the theme of education and comparative psychology. My aim is to discuss teaching comparative psychology to undergraduate students, and consider the important roles this course plays in undergraduate psychology curricula. Although I use the language "comparative psychology course" throughout the article, the content is equally applicable to sister disciplines (e.g., comparative cognition, animal behavior, etc.). The scope of this article pertains to comparative psychology courses taught at universities within the U.S., though of course even within this restricted range not all will share the same experiences. Also, recognizing that this is an international journal, I hope that the issues raised still resonate with the broad readership, and perhaps cross pollination of our ideas will further enhance comparative psychology's status within higher education.

Although most readers likely identify as a comparative psychologist, or some closely related term, we have probably attained or seek to attain a graduate degree in something like experimental psychology or neuroscience. Current academic job advertisements in the U.S. rarely seek a "comparative psychologist", but rather an experimental psychologist or behavioral/cognitive neuroscientist. Depending on what the department seeking the new faculty member requires, comparative psychology might be listed as among the potential courses the candidate *may* teach. The reasons for this are beyond the scope of the current paper, but readers are encouraged to read Abramson's (2015) article on the status of comparative psychology in undergraduate education, and the peer commentaries that follow it. What I have described here certainly applies to my own experiences. In my positions at universities emphasizing undergraduate teaching, I have filled the roles of "behavioral neuroscientist" or "experimental psychologist", and teach courses by these and related names. Comparative psychology is an elective course I can occasionally offer when my teaching schedule allows. This puts me in the role of having to advocate for myself and my beloved discipline, often by asking to teach comparative psychology instead of a course that is generally more focused on human behavior (at least students hold that expectation). While my personal experiences are of course anecdotal, I venture to guess that those who were hired primarily to teach undergraduate courses as part of their faculty appointment have had similar experiences. Also, student readers seeking careers in academia and who hope to continue their work in comparative psychology might benefit from some guidance on what to expect in their roles as new faculty.

Although we may not be able to alter trends in hiring practices within higher education, we can certainly continue to articulate the value of comparative psychology to undergraduate programs. The comparative course is rich in content and can be broadly applicable to other basic and applied disciplines within psychology. Our field applies a rigorous scientific approach to behavior, and as such is relevant to research methodology and analysis. Furthermore, some of the major theoretical and historical traditions in psychology derive from individuals who studied animals. I offer these familiar reminders because they help frame the importance of comparative psychology within undergraduate curricula. Making a strong and clear connection between comparative psychology and undergraduate education creates a coherent rationale for making this course a standard offering to students pursuing a baccalaureate degree in psychology.

Assessment of Undergraduate Learning

Higher education has become increasingly assessment focused over roughly the past decade, and many psychology departments have been at the forefront of this trend (see Dunn, McCarthy, Baker, Halonen, & Hill, 2007; Halpern, 2010). In part this has stemmed from both external (e.g., legislative) and internal administrative pressure put upon departments and faculty to evaluate programs, course offerings, and, ultimately, student learning. It should be noted that, independent of top-down pressure, college and university faculty are also inherently curious about how to improve student learning. Just a few examples include the journals *Teaching of Psychology* and *Scholarship of Teaching and Learning in Psychology*, the yearly conferences devoted to teaching (e.g., Society for Teaching of Psychology, National Institute on the Teaching of Psychology), and the National Conference on Undergraduate Education in Psychology (see Halpern, 2010). Regardless of what motivates assessment of student learning at the course and programmatic level, it helps to have a framework from which to proceed. To assist all undergraduate psychology programs and faculty with their assessment efforts, the Board of Educational Affairs at the American Psychological Association (APA) assembled a task force to establish learning goals and outcomes for students in baccalaureate programs in psychology. Psychology departments are organized differently across institutions in the U.S. and beyond (e.g., within programs of education, humanities, or natural sciences), and the guidelines were written such that they could apply across settings. At the core:

A baccalaureate degree in psychology should document that students have the ability to think scientifically about behavior, the skills related to the conduct of research, and the values that reflect psychology as both a science and an applied discipline. -- APA guidelines for the undergraduate major (2006).

As a working document, a revision of the guidelines was published in 2013. The revised guidelines are organized around five general educational goals and their corresponding outcomes (Table 1). Within the outcomes listed in Table 1 are more specific recommendations of what students should achieve at the foundational level (upon completion of core courses), and baccalaureate indicators representing what a student should understand upon completion of the degree. Those who wish to map their comparative psychology class onto the APA (2013) benchmarks should of course consult the full document. However, in the section that follows, I will attempt delineate how comparative psychology fits within the language of the goals, outcomes, and specific indicators of the APA benchmarks.

Table 1

Goals and Learning Outcomes for Psychology Majors Quoted from the APA Guidelines for the Undergraduate Psychology Major (Version 2.0)

Goals	Outcomes
Goal 1: Knowledge base in psychology.	1.1 Describe key concepts, principles, and overarching themes in psychology 1.2 Develop a working knowledge of psychology's content domains 1.3 Describe applications of psychology
Goal 2: Scientific Inquiry and Critical Thinking	2.1 Use scientific reasoning to interpret psychological phenomena 2.2 Demonstrate psychology information literacy 2.3 Engage in innovative and integrative thinking and problem solving 2.4 Interpret, design, and conduct basic psychological research 2.5 Incorporate sociocultural factors in scientific inquiry
Goal 3: Ethical and Social Responsibility in a Diverse World.	3.1 Apply ethical standards to evaluate psychological science and practice 3.2 Build and enhance interpersonal relationships 3.3 Adopt values that build community at local, national, and global levels
Goal 4: Communication.	4.1 Demonstrate effective writing for different purposes 4.2 Exhibit effective presentation skills for different purposes 4.3 Interact effectively with others
Goal 5: Professional Development.	5.1 Apply psychological content and skills to career goals 5.2 Exhibit self-efficacy and self-regulation 5.3 Refine project-management skills 5.4 Enhance teamwork capacity 5.5 Develop meaningful professional direction for life after graduation

Mapping Comparative Psychology onto APA Benchmarks

Comparative psychology is relevant to each of the five goals in Table 1, though their applicability to each varies in depth, as we would expect from any course. The five goals include one that is content specific (Goal 1) and four that are skill based (Goals 2-5). Comparative psychology is uniquely applicable to Goals 1-3, and offers the same potential as other common psychology courses to address Goals 4 and 5. Below I provide a brief explanation and examples of how comparative psychology fits within each goal, and, in places, offer some assessment ideas for meeting these goals.

Goal 1: Knowledge Base in Psychology

Bachelor's level graduates should be versed in the major historical perspectives and contemporary content domains of psychology. Many historical figures in psychology and the enduring contributions they made involved animal research. It should be noted that among the baccalaureate indicators for Goal 1 in the APA (2013) guidelines states that graduates of psychology programs should be able to "Analyze the variability and continuity of behavior and mental processes within and across animal species" (p. 18). There is no clearer an invitation to integrate comparative psychology within psychology programs. Contemporary research in comparative psychology is relevant to some of the major content domains in psychology. This includes, but is not limited to, behavioral, cognitive, and biological perspectives. From a historical perspective, animal research was essential to the foundations of behaviorism. Highly influential work involving animal subjects contributed to the rise of cognitive psychology, and the molecular basis of learning and memory was discovered using animal models. One might argue that these few examples are not from comparative psychology per se. However, the field is highly interdisciplinary and therefore the breadth of our knowledge base will draw from related disciplines. A full review of how comparative psychology is relevant to Goal 1 is beyond the scope of this paper, but there are many excellent sources to consult (e.g., Boakes, 1984; Burghardt, 1985; Dewsbury, 2000; Griffin, 1992; Olmstead & Kuhlmeier, 2015; Richards, 1987).

Goal 2: Scientific Inquiry and Critical Thinking

Comparative psychology relies on innovative and creative scientific methods. We can rightfully make the case that our discipline teaches students to adopt unique scientific and critical thinking skills because our subjects are nonhuman species. In order to study phenomena such as categorization, working memory, personality, self-awareness, communication, and theory of mind, comparative psychologists must devise unique methodologies or alter existing ones to accommodate nonlinguistic participants that vary greatly in behavior, physiology, sensory and perceptual capacities.

Our field offers some important lessons about scientific thinking and methodology that extend beyond studies of animal behavior. The legacy of Clever Hans endures among comparative psychologists, but of course the issues it raises with regard to experimenter influence, expectancies, and the need for double-blind control procedures applies throughout psychology.

The topic of anthropomorphism is rich with opportunity for students to hone their scientific thinking skills. Discussions of anthropomorphism offer a chance to address long-standing debates about the contents of other minds (human and nonhuman), experimental rigor, Darwinian continuity and discontinuity, parsimony, and many other core scientific and philosophical issues (Mitchell, Thompson, & Miles, 1997).

Goal 3: Ethical and Social Responsibility in a Diverse World.

Discussion of ethics applies to all psychological subfields, with specific principles varying according to the nature of the subject matter. A central concern within comparative psychology is the ethical justification for using animals in research. From my own experience most students are quite curious about animal research, but have very little knowledge or understanding of how it is done, or that there is even oversight and policy that guide its practice. The comparative psychology classroom is an excellent place to address misunderstandings and educate students about animal research and its role in basic science, medicine, and public health.

Educating students on the ethical principles and justifications for doing research with animals requires persistence. Devoting a single lesson to it probably will not suffice. Discussions about ethics are frequent in my comparative psychology classes. One of the major assignments I require is a group presentation on animal models for mental and neurological disorders. Groups of three or four students are tasked with reviewing original research on how animals have been used to study etiology and treatments for depression, anxiety, schizophrenia, stroke, brain and spinal injury, and many other topics. They are instructed to present background information on the rationale for using the animal model, the methods that were employed, the results, and how the research applies to human welfare. At the conclusion of each presentation the presenters are required to comment on how their views of animal research did or did not change over the course of doing the assignment. I have found this assignment to be among the most interesting and thought-provoking for the comparative class. It raises issues and questions students might not otherwise think about. The purpose is not to convince students to adopt a specific ethical stance, of course, but rather to help them develop an informed one. Also, the ongoing discussion about research ethics reduces the chance that the topic is soon forgotten afterthought once the term ends.

Lastly, outcome 3.3 of Goal 3 is about adopting values that build community across local and global levels. While this may not appear to be front and center to what we do in our comparative psychology courses,

we can certainly make the case that, broadly conceived, comparative psychology addresses issues of diversity. The APA (2013) guidelines limit coverage of diversity to humans, but behavior and cognitive abilities are incredibly diverse across the phylogenetic spectrum. For example, just as discussions of human intelligence are incomplete without addressing diversity, so too are discussions of animal intelligence. College students might have an intuitive sense that animals are “intelligent in their own right”, and a course in comparative psychology reveals the extent to which animals behave in complex ways that are both similar to humans, and specialized for responding to unique ecological circumstances. Interspecific behavioral diversity is also worthy of our ethical concern as it pertains to conservation efforts (Berger-Tal et al., 2016; Greggor, Clayton, Phalan, & Thornton, 2014). Thus, the comparative psychology course provides an opportunity to reinforce important lessons about conservation, and thereby contributes to meeting student learning outcomes concerning social responsibility and diversity.

Goal 4: Communication.

Communication skills can be assessed using various methods in most core undergraduate psychology courses. In my own course I have required research papers, poster presentations and oral presentations given by small groups. None of these are novel ideas, and whether any of them are feasible will depend on factors such as class size (my own sections cap at 30 students). One less familiar option that meets this goal is participation in the Association for Psychological Science’s Wikipedia Initiative. I have previously required students to identify topics of interest, read original research on the topic, and update, edit, or even create new Wikipedia entries that are relevant to comparative psychology.

Goal 5: Professional Development.

“Comparative psychologist” is among the 68 career options that the APA (2013) guidelines list for individuals with an advanced degree and “animal trainer” is among the 76 listed for those earning a bachelor’s degree. It should be noted that “polygraph examiner” is also included on this list. While the task force is commended for representing comparative psychology in Version 2.0, it would benefit those of us working in the field, and who provide academic advising to undergraduate students, to recommend some revisions for 3.0. Meanwhile, the Animal Behavior Society provides a career guide for undergraduate and graduate degree holders and would serve as a useful reference.

Conclusion

Higher education in the U.S. has become increasingly focused on assessment of academic programs, teaching practices, and student learning. The APA benchmarks provide a guide for how undergraduate psychology programs set their curricula, and for how to assess student learning at both course and programmatic levels. It is important that comparative psychology specifically, and research with animals broadly, is represented in these benchmarks. Our field has slightly better representation in Version 2.0 of the APA (2013) guidelines in comparison to the first version (which only mentioned animals in the context of discussion on research ethics). Research involving animals has contributed greatly to the major historical developments in psychology, and continues to form the backbone of the scientific study of behavior and cognition. Our field poses exciting challenges in scientific methodology and contributes to discussion of ethical principles concerning not just research practices, but broader environmental and conservation concerns.

An essay such as this would probably be unnecessary for social, developmental, or clinical psychology courses, or even for courses related to behavioral neuroscience or cognitive psychology. So is comparative psychology at the undergraduate level in crisis? Abramson (2015) posed this question, and although not all commenters agreed, the fact that the question is even being asked should remind us that we cannot take our field (and the propagation of our academic identities) for granted. Many of us who are faculty members were not hired because we are comparative psychologists, but rather because we were trained in an area that makes us attractive candidates to teach core undergraduate courses pertaining to neuroscience and experimental psychology. Whether one thinks undergraduate comparative psychology is in crisis might largely be a function of one's home institution. For many of us, we were not recruited or asked specifically to teach comparative psychology. Rather, we ourselves try to recruit interest, and must ask to teach it. Whatever strategy gathers that support is worth trying; as I have suggested here, outlining how comparative psychology aligns with undergraduate educational benchmarks is one way.

Our goal is not just in educating psychology majors about the importance of animal behavior. Non-psychology majors taking introductory psychology should be exposed to comparative psychology as well. Abramson (2015) noted that very few introductory psychology texts include comparative psychology as a key perspective or discipline. Furthermore, from my own point of view, which I suspect is shared by many, animal research probably appears underrepresented in introductory psychology courses. There are several reasons for this, which are beyond the scope of the current essay. However, I can say from personal experience that the content that eventually appears in textbooks for introductory psychology gets pushed and pulled in so many different ways before it eventually makes its way to our students. I have endured the feedback of scores of chapter reviewers and focus group participants who all teach introductory psychology. I have not once had a reviewer ask for more animal behavior content, and this is not because chapter drafts were already heavy with it. If anything the opposite was true. I have, however, been asked (urged) to remove animal studies to make room for human-based ones.

These reviewers are not unlike many of our departmental colleagues. They are either unaware or disinterested in comparative psychology—just as we may be about their teaching and research about human behavior. We advocate for our own respective disciplines. Making a clear and explicit case for how comparative psychology courses meet the core objectives of undergraduate education in psychology is a direct means of such advocacy. Mapping the comparative psychology course onto the objectives outlined in the APA guidelines may be one useful strategy for accomplishing this. At very least, doing so allows us to use a common language and set of goals shared by our colleagues, regardless of study species.

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