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## **Considerations for an Integrated Undergraduate Comparative and Clinical Psychology Course**

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It has been established that comparative psychology is in danger of becoming a footnote in the history of psychology. Six pieces of evidence to support this problem are few graduate psychology programs, little or no mention in introductory psychology textbooks or courses, insufficient number of undergraduate courses in comparative psychology, few teaching exercises, declining membership in Division 6 of APA, and no recent textbooks in comparative psychology. Therefore, this article sought a viable solution to promote comparative psychology's interconnections to different psychology areas. Specifically, a solution for combining comparative psychology into clinical fields by creating a course that combines comparative and clinical psychology was conceptualized. The rationales, history, barriers, and benefits of creating a comparative and clinical psychology course were all examined to make a case for this solution. Concrete approaches to a course development covering domains such as cognitive, behavioral analysis, and scientific reasoning were presented. Also, the consideration of a capstone course that is approached from the perspective of challenge-based learning was recommended. This capstone course could offer students flexibility and promote problem-solving and innovative-think skills needed for careers. The rationales and recommendations covered in the article established that providing a course on comparative and clinical psychology can actually facilitate students to think differently about psychology and how exactly the different areas of psychology interconnect. In conclusion, it was determined that developing a course on the connectedness of comparative and clinical psychology is one way to help strengthen comparative psychology's rightful place in the broad field of psychology.

*Keywords:* behavioral, capstone, cognition, comparative, psychology, undergraduate

Comparative psychology has faced difficulties in recent decades despite its clear position as one of the historically most important branches of psychology (Abramson, 2015). Comparative psychology has been much less prominent in all psychology areas and has demonstrated a distinct place throughout academic psychology. When reviewing the status of comparative psychology, Abramson (2015) wrote, "something must be done before we lose an entire generation of undergraduates" (p. 2). Abramson (2015) also identified six pieces of evidence to support his concerns that comparative psychology was in danger of becoming "a footnote in the history of psychology" (p. 2). These pieces of evidence are:

- Few graduate psychology programs
- Little or no mention in introductory psychology textbooks or courses
- Insufficient number of course in comparative psychology at the undergraduate level
- Few teaching exercises
- Declining membership in Division 6 of the American Psychological Association (APA)
- No recent textbooks in comparative psychology

### **Comparative Psychology and an Interdisciplinary Focus**

When responding to Abramson's (2015) conclusions, several writers noted how comparative psychology benefits from the interdisciplinary focus prominent throughout the field (Bielert & Gallup, 2015; Furlong et al., 2015). McMillan and Sturdy (2015) commented on how comparative psychology benefits from the combined prominence that different subsets (e.g., comparative cognition) hold throughout academia.

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Vasconcelos and Pandeirada (2015) recognized the benefits that cross-developmental programs have for the standing of comparative psychology in college programs, even if the term “comparative psychology” is not the term used for the programs. Chiandetti and Gerbino (2015) further suggested that it may be best to view comparative psychology as one of the fundamental bases in psychology, whereby students may benefit from understanding how this branch fits in with other branches of psychology.

What each of the authors (Chiandetti & Gerbino, 2015; Vasconcelos & Pandeirada, 2015) responding to Abramson had in common was that they emphasized comparative psychology’s benefits by highlighting its relationship with other branches of psychology. Comparative psychology has much to offer on its own, but its strength may also come from seeing how it interrelates with other fields. Academic psychology has become very multidisciplinary, and students who are interested in modern research and academic careers may be more interested in fields that interrelate with other fields. Likewise, future students of academic and research psychology may also be more drawn to fields that interconnect with other areas, confirming Abramson’s (2015) concerns that this is likely the case with comparative psychology (Chiandetti & Gerbino, 2015; Vasconcelos & Pandeirada, 2015).

### **Promoting Comparative and Clinical Psychology**

There is another way to view the importance of the interconnectedness of comparative psychology and promote undergraduate students’ interest. It is more a numbers game when focusing on academe at the undergraduate level and increasing enrollment. Finding ways to demonstrate comparative psychology’s interconnections to different psychology areas will certainly be important for undergraduates who are interested in research and academic careers. This solution is important, but it only scratches the surface in addressing the Abramson’s (2015) undergraduate crisis. Strapp et al. (2018) indicated that while it is often downplayed, the fact remains that most psychology undergraduate students are simply not interested in research fields. It was found that a majority of psychology undergraduate students are mostly interested in the clinical fields of psychology (Strapp et al., 2018).

However, both inspiring large numbers of undergraduate and generating their interest in comparative psychology will be challenging if its importance is emphasized as only a way of connecting to other academic fields without presenting how it prepares students for an academic career (Strapp et al., 2018). Getting undergraduates sufficiently interested in comparative psychology may mean creating courses that meet the students’ interests and goals. For instance, for undergraduate psychology majors, that would mean combining comparative psychology into clinical fields.

Therefore, bringing awareness of the importance of comparative psychology is a way of restoring comparative psychology to its rightful place in psychology’s broad discipline. Typically, undergraduates interested in clinical fields often represent the future psychologists who make decisions in vital psychology organizations (e.g., APA). These psychology undergraduates are also the future psychologists who have input in academic psychology departments, either through full-time or adjunct positions. In these teaching positions, they influence other students who go on to make up different future generations of psychologists, and the torch is continually passed down. Therefore, having undergraduate psychology students understand and appreciate the importance of comparative psychology can positively impact comparative psychology’s status.

### ***The Numbers Game***

Seeing the impact of students interested in clinical fields and how it could help the numbers game of getting future psychologists acquainted with the importance of comparative psychology is shown in the numbers of the largest psychological organization in the world, the APA. In 2013, comparative psychology’s division of APA was one of the smallest divisions in APA (Green, 2016). During that same time period, three of the largest divisions were clinical psychology, psychotherapy, and independent practice (Green, 2016). Each of these divisions related explicitly to clinical fields. This relationship reflects the importance of clinical fields for APA members (Green, 2016). If members of these three largest fields had exposure to coursework

specifically addressing how their fields related to comparative psychology, it would likely go a long way to how these largest divisions interact with and impact this smallest division.

A further look into membership numbers shows how closely equivalent clinical and comparative psychology memberships can become if the members are so motivated towards comparative psychology (Green, 2016). When these membership numbers were published, the largest APA division was clinical neuropsychology, and the name of the comparative psychology division (Division 6) was actually “Behavioral Neuroscience and Comparative Psychology” (Green, 2016). It seems worthwhile to consider how these two fields, both of which have emphasis to some degree on the neurological bases of behaviors, could work together if each had members who were motivated. Therefore, educating and enlightening psychology students looking for clinical careers of the interconnectedness of their chosen fields and comparative psychology would be one way of increasing enrollment/membership and addressing the numbers game.

### **Barriers to Combining Comparative and Clinical Psychology**

Now, granted that combining comparative and clinical psychology is a hopeful way of looking at how the APA functions, some may argue that the likelihood for members of one branch of the APA to work with another branch is limited at best and impossible at worst (Green & Cautin, 2017). Terms like “turf wars” are often used to describe large and professionally diverse organizations like the APA. This term applies even more when considering how clinical divisions and academic divisions often interact within these organizations (Wagstaff & Quartiroli, 2020). It could even be argued that students might start with the best intentions to work with colleagues in other fields, only to have those intentions thwarted when faced with the reality of the barriers among divisions’ members (Landrum, 2018).

In summation, what is suggested here is that students with interest in one area of psychology can best benefit psychology as a whole, along with each major branch of psychology, by education and bringing awareness of the branches’ degree of interconnectedness. In this way, branches that are least represented may be strengthened by those branches with more representation. This demonstrated branch collaboration and interconnectedness could serve as a practical model to psychology students of how comparative and clinical psychology can be combined from the undergraduate level to a professional level with positive outcomes.

### **Ways to Combine Comparative and Clinical Psychology**

Developing a course on the connectedness of comparative and clinical psychology is one way of strengthening comparative psychology’s rightful place in the broad scope of psychology. It deserves that place not only because of its historical contributions, including being central to many aspects of Freud’s theories and of B. F. Skinner’s work, but because of what it offers now to understanding psychological constructs (Marston & Maple, 2016). Comparative psychology is one of the more purely scientific psychological areas, given that working with animals allows for more opportunities for observation and variable manipulation. It also allows for more complex discussions of questions like “what are behaviors?” and “what makes something scientific?” These ways can help move clinical psychology away from the fundamental and simplistic view evident in “paint by numbers psychotherapy” (Silverman, 1996).

There has been some recent work on emphasizing the interconnection of clinical psychology and comparative psychology. Marston and Maple (2016) published a book specifically on this topic. This book was then followed by a special issue of *The International Journal of Comparative Psychology* titled “The Intersection of Comparative and Clinical Psychology” (Marston, 2017). Also, there was a recent special issue of *Clinical Psychology Review* on the related topic of the intersection of clinical psychology and evolutionary science (Hayes et al., 2020). Hayes et al.’s (2020) issue did not specifically address comparative psychology, but its emphasis was clearly on a field with a strong connection to comparative psychology. Another book that looks at the complex questions relevant for a more in-depth look into clinically relevant issues is *What Would Animals Say If We Asked the Right Questions?* by Vinciane Despret (2016). While comparative psychology is

the study of animals, it goes beyond this goal by using the data to learn more about humans. The core assumption is that the laws of behavior are the same for all species at some level. Hence, the understanding and knowledge gained by studying nonhumans (rats, dogs, cats, and other animals) can be generalized to humans (Abramson, 2015).

Each of these works validated that discussing the connection between comparative and clinical psychology is worth exploring. Material from any of these sources (Despret, 2016; Hayes et al., 2020; Martson, 2017; Martson & Maple, 2016) would be useful for considering the development of a course on the intersection between clinical and comparative psychology.

### **Shared History of Comparative and Clinical Psychology**

When discussing concepts, principles, and themes in a field, reviewing its history is important. Clinical psychology has over 100 years of history as a specific field, and comparative psychology has developed alongside it. These were two branches of psychology that were developed along the same path but with considerable crossover. Many important clinical constructs developed as a direct consequence of work in comparative psychology, but this part of clinical psychology is often forgotten (or at least not emphasized as much). A good starting point for a course on the intersection of clinical and comparative psychology would be a review of this important shared history.

### **The Relationship of Sigmund Freud and Comparative Psychology**

Sigmund Freud is considered one, if not the primary, founder of clinical psychology, and his work incorporated a great deal of work of comparative psychology researchers (Bennett & Blass, 1991). Before Freud became famous for his original studies on psychological mechanisms, nomenclature, and psychoanalysis, he was a crustacean neurobiologist. Even one of his most famous and controversial theories, the Oedipal complex, was developed primarily based on sociobiological research on animals (Morehead, 1999).

When Freud read the comparative psychology work of his day, he found considerable writings about competition starting at the very beginning of life. Freud used these writings as evidence of how competition for a place in a social group is genetically hardwired in all of us, and that instinct comes out soon after birth. As Freud saw it, this hardwiring was as much the case with humans as it was with other animals. For example, human infants are known to pinpoint the place of the dominant figure in the family (i.e., Freud identified this as always being the father) and recognize that this dominant figure has the attention and affection of the primary nurturing figure (i.e., Freud assumed this to always be the mother) (Morehead, 1999). Competition drives, which again Freud saw as genetically hardwired in all animals, kicks on, and the individual desires to compete and gain what it considers the dominant figure as possessing. However, since the infant cannot actually do anything about it, this results in a number of internal psychic conflicts that will impact the individual's lifelong psychological development (Morehead, 1999).

Charles Darwin's work on animals and evolution played a significant role in much of Freud's work. He referred to Darwin and his work more than twenty times and always "very positively" (Ritvo, 1974). Freud was also strongly influenced by the French naturalist Jean Baptiste Lamarck, who had his theory of evolution (Ritvo, 1965; Slavin & Kriegman, 1988). These researchers guided a great deal of Freud's work even if he construed their interpretations wrongly. Freud often made misguided conclusions based on these misinterpretations. In fact, Freud's use of Darwin's work was so misdirected that critics have concluded that he almost created his own theory of evolution (Smith, 2016).

Freud's branch of clinical psychology was called *psychoanalysis*, and it remained prominent throughout the 20<sup>th</sup> century (Smith, 2016). Although psychoanalysis has fallen more out of favor in recent decades, its prominence within clinical psychology's historical context remains. Comparative psychology played a major role in this branch of clinical psychology into the latter part of the 20<sup>th</sup> century. It could be

argued that this connection reached a high point in the late 1950s when a specific panel on “Psychoanalysis and Ethology” was held at the Midwinter Meeting of the American Psychoanalytic Association (Ostow, 1960). One paper presented was “The Study of Animal Behavior in Relation to Psychoanalysis.” This paper’s author, Charles W. Tiddle, referred to another symposium on ethology and psychoanalysis at the 1959 Congress of the International Psychoanalytic Association (Ostow, 1960).

This brief overview of Freud’s background could add a deeper dimension to undergraduate psychology students’ education. Students will have the ability to dive into a deeper level of construct essential in understanding the psychological theory of the giant figure known as Freud. Typically, students are often provided just a minimal overview of Freud’s background in undergraduate education. Understanding the Oedipal complex requires a good deal of time, which is challenging for introductory psychology courses that typically cover many complex topics. Examining the origins of the Oedipal complex confirmed that Freud was trying to understand the complexities of social behaviors. Students often find the Oedipal complex bizarre, at best, and offensive, at worst. Having time in a course to properly examine the Oedipal complex’s origins, even if they were origins that ended up being misguided, can afford students an opportunity to look much deeper into their selected field. As students later examine psychoanalytic work related to ethology and other comparative psychology branches, they will discover how multifaceted work in psychology continued even beyond the gurus discussed in their introductory texts. Students may have the opportunity to take a more in-depth look at their field beyond the basics in other introductory courses while also having the opportunity to value the shared history between comparative and clinical psychology.

### **Skinner, Pavlov, Maslow, Lorenz, and Comparative Psychology**

B.F. Skinner is another excellent example and possibly provides an even better example than Freud because his work came directly from animal experiments. His work leads directly to all the concepts and principles impacting psychology from the fields of behavioral psychology, behavior modification, and cognitive-behavior therapy (O’Donohue, 2001). Ivan Pavlov’s classical conditioning, one of the major constructs used throughout psychology, resulted in behaviorism (which influenced Skinner’s work) and also directly influenced the whole field of neuropsychology (O’Donohue, 2001). Abraham Maslow, who started his career researching primates, identified how different needs seem to have priority (White & Pierce, 2000). Maslow then switched to studying humans in the same vein, developing the famous “Hierarchy of Needs” and was credited with being one of the founders of Humanistic Psychology (White & Pierce, 2000). Konrad Lorenz studied ducks and imprinting from where he developed theories of attachment, which led to attachment theory, which is one of the primary theories underlying much of modern psychotherapy (Vicedo, 2009).

Each of these theorists (Skinner, Pavlov, Maslow, and Lorenz) could be a key focus on a historical section of the comparative and clinical psychology course. Certainly, looking at any one of these theorists individually would show the trajectory with which clinical psychology has developed in conjunction with comparative psychology.

Developing a course that draws from the founding fathers of psychology would allow for a more complex understanding of the constructs involved. For example, many undergraduate courses allow only for a superficial discussion of the Oedipal complex, and, often, students may surmise Freud as being either deranged or debase (Mayes, 2009). By designing a course that introduces undergraduates to a more complex psychology framework, they would be able to critically examine and recognize complex and sometimes unusual psychological development processes. Humans and animals alike are subject to different forces throughout their lives, and many of these forces may seem disturbing in or out of context (O’Donohue, 2001). Competition and sex are essential for survival, and how an individual develops those instincts initially can only be understood in very complex ways (Ostow, 1960). Even if Freud was wrong with the theory he ultimately developed, consideration of the complex forces and issues considered with the theory’s development is important to fully understanding it. That is true of all the theorists mentioned in this section (*Skinner, Pavlov, Maslow, Lorenz, and Comparative Psychology*), and it is this complex understanding that a potential course in comparative and clinical psychology should provide.

## **Method**

### **Comparative and Clinical Psychology Course Conceptualization**

This article presents an outline of how a course on the intersection of comparative and clinical psychology might be conceptualized. Its benefits for psychology in general, and clinical and comparative psychology specifically, are that it presents material likely not considered in other courses. A proposed course on comparative and clinical psychology would be different from any other psychology course. If such a course is offered, it may be limited in most colleges or universities. A combined course would increase the understanding and appreciation of comparative psychology by showing specifically what it provides to the clinical fields considered by most psychology undergraduate students. Students in the clinical fields will gain a broader view of the complexities of their potential clinical field. Such a course may also provide students with a way to appreciate specific boundaries when considering research outside of human studies.

#### ***Proposed Course Conceptualization***

The conceptualization of a course combining comparative and clinical psychology would be one where students entering their final years of undergraduate study could have the opportunity to access various available career paths. Part of this proposed course could address careers requiring graduate training and ones that typically require only undergraduate education. Since discussing careers only requiring an undergraduate degree might be more limited than discussing graduate career and education, a course that looks at multiple psychology branches would offer a good overview. Instructors could talk about the fields that involve working with animals, along with those working with humans. In this way, students enrolled with interest in the clinical fields would have the opportunity to study other career paths. In this way, a course in comparative and clinical psychology would help broaden students' view of what might the professional world offer for not only human welfare but also animal welfare.

#### ***General Course Overview***

In conceptualizing this potential course, there are a few considerations. First, the course should be designed for an undergraduate program but more geared towards advanced undergraduate students. Second, it may be beneficial to offer as an elective course. Third, although the term “comparative psychology” is used throughout this article, the course name might need to be reconsidered. Students might not immediately recognize that comparative psychology refers to study of animals or include the study of human behavior, and they may inadvertently miss this course opportunity. Fourth, the faculty or subject matter expert developing this course may want to consider alternative names that clearly highlight the role of animals' studies to better inform and grab potential students' attention.

This fifth consideration is particularly beneficial to keep in mind when developing this course. Students reaching their last year of undergraduate often seek opportunities to more broadly understand their selected field. This desire is true, regardless if students have plans for graduate school or the workforce. A course covering clinical and comparative psychology would allow students to explore the intersection of these two fields, one covering primarily animal psychology and the other human psychology, which are vastly different in many ways.

#### ***Course Guidelines to Consider***

When the APA published guidelines for undergraduate psychology majors several years ago (American Psychological Association, 2016), they provided a clear recommendation of what should be included in psychological degree courses. Considering these guidelines is important when conceptualizing a course to be added to psychology degree offerings. Listed below are the guidelines that are most relevant to the course discussed in this article. This list provides guidance on the specific issues to consider when developing this comparative and clinical psychology course. The American Psychological Association (2016) guidelines for

undergraduate psychology courses are:

- Describe key concepts, principles, and overarching themes in psychology
- Develop a working knowledge of psychology's content domains
- Describe applications of psychology
- Use scientific reasoning to interpret psychological phenomena
- Engage in innovative and integrative thinking and problem-solving

### **Developing a Working Knowledge of Psychology's Content Domains**

Typically, this guideline for a psychology course relates to defining and exploring the different branches of psychology. This guideline would include looking at, for example, the differences between humanistic and behavioral psychology or the differences between cognitive and social psychology. These are important issues to include during the course development since many undergraduate courses marginally cover these topics and domains. Most discussion of the different domains often looks at only the practical aspects without looking at the more profound questions that should be uncovered. Incorporating comparative psychology back into the general study of psychology can be important for delving deeper into the content of these fields by bringing philosophy back into guiding research questions (Brown & Abramson, 2019).

#### ***Cognitive Domain***

For example, undergraduate courses on cognitive processes typically discuss the mechanics of topics such as memory and language. Students may only learn how memory works and what factors contribute to developing language during these cognitive courses. However, more in-depth questions about these topics may later arise for clinical professionals, even those individuals who do not move beyond obtaining a graduate degree. For instance, if an individual with a bachelor's degree in psychology is working as a psychological assistant and is informed that a patient has autism and "can't communicate well," understanding the neurological and physiological processes underlying language may not be enough. Even understanding the processes by which the person learned language is not going to help. What will be helpful is having some sort of understanding of "what is communication?" Answering this question can help the individual develop a plan for either targeting those aspects of communication that the patient has or identifying what sorts of alternatives might be available for assisting the patient. This additional information is where a previous comparative and clinical psychology course would become valuable for this professional's practical application.

Integrating comparative psychology with clinical psychology can answer important questions regarding what is meant by "communication" (Nelson, 2020). This solution is one example of how developing a course covering human and nonhuman animal behaviors will allow for a more complex way of addressing issues that will be important in many clinical areas. For example, a course may be designed to invite students to ask questions about whether nonhuman animals have formal language and whether intelligence can be considered the same for human and nonhuman animals. Students will discover that for many years, it was thought that formal language and intelligence only existed in humans, but more recent scholarly research has shown that the issue is more complex (Pepperberg, 2020). Much of this is based on the roles of rule-governed behaviors and the importance of syntax for communication and intelligence (Pepperberg, 2020).

Hence, designing a course domain that examines the complexities of communication issues can help students understand the deeper components that are important for understanding human psychology. For example, studying gestures and nonverbal forms of communication in comparative psychology can be important in understanding what is meant by communication and the complexity of defining communication (Bourjade et al., 2020).

#### ***Behavioral Analysis Domain***

Modern behavioral analysis is probably the area where comparative psychology most directly relates



to modern clinical fields. One needs only to look at two major behavioral analysis journals, the *Journal of Applied Behavior Analysis (JABA)* and the *Journal of the Experimental Analysis of Behavior (JEAB)*, to see that relationship. JABA is primarily dedicated to behavioral analysis work for the clinical field, and JEAB is primarily dedicated to nonhuman animal behavioral analysis. Still, there is considerable crossover between the two (shown in articles like Saville et al., 2002). These journals present some of the most important modern concepts in behavioral analysis. Their pages show just how many of these concepts rely on both the human and nonhuman animal research of these journals. One example is *behavioral momentum theory*, which addresses the relapse of behaviors following treatment and the loss of reinforcement (Brown et al., 2020; Pritchard et al., 2014). A comprehensive understanding of this important concept comes from a review of articles both in *JEAB* (e.g., Brown et al., 2020) and *JABA* (e.g., Pritchard et al., 2014).

Behavioral analysis is often presented on only an elementary level in undergraduate courses. Basics about reinforcement schedules, extinction, stimulus conditions, and operant conditions are typically covered, but more complex concepts, like behavioral momentum theory are minimally addressed (Abramson, 2018; Frieder et al., 2018). Since so much of behavioral analysis has grown from comparative psychology research, having a course that addresses both clinical and comparative domains would allow for discussion of these more advanced concepts. This behavioral analysis content could be particularly useful for students entering the final undergraduate years since behavioral analysis represents (through certification of a certified behavior analyst) a whole separate career option (Abramson, 2013). Also, if students are entering the workforce right after school, then they can be provided an understanding of the various ways behavioral analytic concept can be used within treatment planning tasks. Having a course that delves into the many more complex behavioral analysis issues would help students be better clinicians, whether their clinical work involves graduate school or a job right after completing undergraduate education.

In summation, finding ways to make the subject of comparative psychology interesting would involve finding alternative ways to connect the subject to other subjects that interest students. Covering the crossover between clinical and comparative psychology facilitates the addition of domains that may otherwise seem totally unrelated to either branch. For instance, there is evidence that comparative psychology can be related to parapsychology (Somers et al., 2020). Therefore, strategically designed domains of a comparative and clinical psychology course would help students recognize just how fascinating the psychology field is by looking at all the branches and its interconnectedness with other branches.

### ***Other Content Domains: Using Scientific Reasoning***

Scientific reasoning is essential in all areas of psychology, and its place in clinical psychology has been emphasized in recent decades with the prominence of *empirically-validated treatments (EVT)*. This term, EVT, is used to underscore the importance of empirical research to confirm treatment effectiveness. Even though this approach has been deemed the gold standard of treatments, it has been justifiably criticized for the extent to which it limits how empirical research is used (Berg, 2019). This approach looks only at results demonstrating that one treatment has measurably better outcomes compared to another approach rather than looking at approaches that incorporate what research has shown for understanding psychological phenomena. Essentially, what is typically emphasized when discussing EVT are research studies that compare large groups of individuals who receive one treatment to those who received others or no treatment at all. This narrow, straightforward approach for determining treatment effectiveness leaves little to no room or consideration for complexities and diversity.

For example, cognitive-behavioral therapy (CBT), often hailed as the most empirically-validated treatment, promotes universality in treatment that can downplay and minimize the importance of diversity of clients and practical clinical environments (Rogers-Sirin, 2017).

However, CBT also earned its reputation as the most robust EVT based on empirical research on cognitive processes and function. This reputation includes research on the causal role of cognitions in generating emotions and behaviors. It also includes cognitions that act on the mechanism of behavioral and

emotional change in theory-supported ways (Lorenzo-Luaces et al., 2015). CBT is also based on research supported in fields like cognitive neurogenetics that make up the much broader area of research on how human cognition works (David et al., 2018). Hence, when considering the place of basic research in clinical decisions, it is worth noting that even the empirical support for cognitive-behavior therapy is based on more than just treatment research.

Therefore, adopting a view that only treatments showing effectiveness in controlled environments are empirically supported may alienate approaches soundly supported by basic research not conducted in controlled settings. When considering basic research in clinical decisions, it is worth noting that even the empirical support for cognitive-behavior therapy is based on more than just treatment research.

Applying scientific reasoning to a proposed comparative and clinical psychology course may inspire students to start thinking about different ways of answering the question, “what makes psychotherapy effective?” By presenting comparative psychology research and human psychology research, students can consider how this research needs to be entered in treatment decisions. If our studies of humans and animals are considered beneficial for understanding how we all behave, think, and feel, should they not be given importance in therapy decisions? Is it really the case that the only way to determine if a treatment is effective is to investigate results in very limited clinical settings? Does our understanding of how behavior, emotions, cognitions, and personality count when deciding how to treat someone? These are all questions that can be addressed in a course designed to look at the importance of basic psychological research.

### ***Other Content Domain: Using Capstone***

A course designed to address the intersection of clinical and comparative psychology could be on the level of an advanced psychology course and, more specifically, a capstone course. Halonen and Dunn (2018) recommended that advanced psychology major courses focus on career preparation and the inclusion of capstone courses. These are courses typically integrative and allow students to combine knowledge gained from different areas (Charlton & Lymburner, 2011; Cranney & Dunn, 2011; Cranney & Botwood, 2012). Based on a review of the relevant literature, Hamilton et al. (2018) concluded that the purpose of capstone courses is to enable students to incorporate and apply their knowledge to efficiently address social and behavioral problems at individual, community, and government levels, both locally and globally.

Therefore, providing a course that addresses the intersection of clinical and comparative psychology would best be considered as a capstone course that is approached from the perspective of challenge-based learning. This challenge-based learning capstone is an approach in which students work actively with professors and possibly other stakeholders to use information gained in courses to form relevant questions and address those questions (Kohn Rådberg et al., 2020). In this way, the proposed course could look like a science, technology, engineering, and mathematics (STEM) course but with more opportunities for students to apply what they learn to address problems or future careers. Project solutions could be either community projects or research ideas, depending on the students’ educational interest. Capstones may allow students the much-needed flexibility to develop projects and plans for addressing challenges. This flexibility may help develop problem-solving and innovative-think skills necessary for careers that may not be addressed in STEM courses (Brewley et al., 2017).

## **Discussion**

### **The Case for Designing a Comparative and Clinical Psychology Course**

When looking at comparative psychology, the emphasis is often on graduate education. This focus is reasonable given that comparative psychology is typically considered a research and academic field. Graduate education generally is the logical step for an undergraduate to take when considering a career in comparative psychology (Abramson & Black, 2017). Clinical psychology fields are also ones that typically require graduate

training. Here, the requirement for graduate work typically relates to concerns about licensure. Even if a student is not interested in academic or research work, clinical work usually requires licensure which involves graduate education.

Graduate education is often emphasized throughout undergraduate programs. Very often, these programs are seen as primarily preparing students for the next step in their education. Undergraduate psychology programs often emphasize that their role is to help students prepare to decide which of the many specialties in psychology they plan to pursue. In this way, undergraduate psychology programs mirror that of undergraduate medical education (Menken & Sheps, 1984). Undergraduate psychology programs outside of the United States are even more specific in this emphasis. They are typically five years in length and designed to prepare professional psychologists (Brewer, 2006).

### ***Pitfalls of Undergraduate Psychology Programs***

There are legitimate criticisms that undergraduate psychology programs focus more on graduate education and not enough on helping psychology undergraduates prepare for the workforce after graduation (Ciarocco, 2018). Only 13% of individuals in the U.S. earning bachelor's degrees in psychology obtain higher psychology degrees (Appleby, 2018). There is less focus on helping students in those programs (approximately 85%) who plan to go directly into the workforce. These data suggest that undergraduate education should focus more on the "development of employability skills" (Jackson, 2009, p. 207). An improvement for undergraduate education, including psychology majors, would be to underscore broad skills development that students can use in the workplace or in graduate or professional schools (Strohmetz et al., 2015). Appleby (2014) highlighted the importance of college courses geared towards work habits and educational experiences for all employment levels, rather than just courses associated with graduate education. Having a covert curriculum within colleges and universities can be a major pitfall and contribute to undergraduates' failure to launch into careers after graduation (Appleby, 2014).

### ***Appeal, Rationale, and Benefits for Modification of Undergraduate Programs***

It is apparent that undergraduate programs need to help students, by adapting curricula to add courses that prepare students for matriculation as the goal, as well as preparation for the work force (Appleby, 2014; Strohmetz et al., 2015). Even if they initially enrolled wanting a higher level clinical career, most psychology undergraduates will choose to enter the job market after college graduation. Therefore, it would be in the students' best interest to design undergraduate programs with courses that prepare departments and faculty to help students recognize all available options. For instance, having the opportunity to understand and even work with animals would be one reliable avenue for helping these students. Having the opportunity to explore these areas within a course relating to their clinical interests would allow students to pursue other possible interest without giving up entirely giving up initial career interests. Obviously, not all students taking a course in comparative and clinical psychology would choose to give up a clinical career for one focused on nonhuman animals. However, having exposure to such a course may offer students the opportunity to broaden their career options. This opportunity is a point reinforced when considering that individuals who pursued animal studies ranked their experience with animals second only to family influence for their career choices (Serpell, 2005).

**Benefits of Modifying Psychology Undergraduate Programs.** Modifying psychology undergraduate programs to improving students' ability to launch into careers has many benefits. Therefore, considering the role of undergraduate courses in guiding students' direction and employment skills after graduation gives even more weight to the potential benefit of a comparative and clinical psychology course for students. This consideration becomes even vital when dealing with students who may enter undergraduate psychology programs hoping for a clinical career but later become disenchanted with the limited available clinical fields unless pursuing two or more years of graduate education. Another consideration is students initially hoping for a clinical career but becoming skeptical during abnormal psychology courses during which they are exposed to the very specific problems often faced clinically. The present authors have the experience of hearing multiple stories of psychology undergraduates starting graduate school but, during clinical

practicum, saw their first patient and decided, “I just can’t do this.” It seems reasonable to conclude that if this sort of thing can happen that far along with one’s education, students would be even more likely to change their career goals while still at the undergraduate level.

**Benefits of Designing a Comparative and Clinical Psychology Course.** Providing a course on comparative and clinical psychology can actually facilitate students to think differently about psychology and how the different areas of psychology interconnect. Students will benefit from connecting the different parts of psychology, and they may even take different and sometimes unique approach to address problems relevant to the psychology field. Whether this will be a comprehensive and multilevel approach that students take directly into the work arena or graduate school, it is still the case that it is a comprehensive approach that will likely serve the students well throughout their careers. Exposure to this way of thinking will also provide students with an increased ability to handle novel problems as they arise. This exposure is important given that helping students develop new and multifaceted ways of addressing problems and gaining knowledge that will serve them throughout their lives are two major factors that have often been missing from college courses (Fink, 2013; Starr-Glass, 2020).

A comparative and clinical psychology course could also be beneficial by considering diversity by engaging different perspectives. For instance, comparative psychology has often emphasized the importance animal species’ cultural and biological diversities (Mironenko & Rafikova, 2020). Therefore, studying different animal species is a way of looking at how diversity as a general concept is highlighted throughout comparative psychology (Galef & Whiten, 2017). Openness to diversity is an issue important throughout all clinical fields of psychology, and looking at it through the lens of comparative psychology helps strengthen its importance even more. Studying diversity across all animal species is a way of taking huge steps in truly understanding diversity as a factor in understands behaviors and psychological constructs. For example, from 1921-1946, the studies within the *Journal of Comparative Psychology* covered 14 different species a year; from 1983-1987, there were 102 species per year, and, from 2010-2015, there were 144 species per year (Stevens, 2017).

Developing a comparative and clinical psychology course that would be provided as an elective will provide novel benefits. Typically, undergraduate students are not looking for college courses to be “information dumps” but rather looking for ways to impact their world directly (Hope, 2016). Academic advisors and professors are often encouraged to present course materials to students in personally meaningful ways (Amizruzzaman, 2020) and not in a manner requiring rote memorization. Therefore, having a course that addresses a different way of looking at psychology encourages thinking about ways to combine different psychology branches and look at ways to directly use this material for research or community projects.

## Conclusion

In summation, it has been established that comparative psychology has been much less prominent in all areas of psychology despite its distinct place throughout academic psychology. To address the danger of comparative psychology becoming “a footnote in the history of psychology,” (Abramson, 2015) various psychology leaders suggested an interdisciplinary focus or cross-development programs in college programs (Bielert & Gallup, 2015; Furlong et al., 2015). Therefore, finding ways to demonstrate comparative psychology’s interconnections to different areas of psychology was deemed a viable solution. Specifically, getting undergraduates sufficiently interested in comparative psychology may involve creating courses that meet the students’ interests and goals.

This need was the catalyst of this article that sought to provide a solution that involves combining comparative psychology into clinical fields by creating a course that integrates comparative and clinical psychology. The rationale, history, course conceptualization, barriers, and benefits of creating a comparative and clinical psychology course were discussed in making a case for this solution. Suggestions for practical approaches to course development would involve a course covering domains such as cognitive psychology, behavioral analysis, and scientific reasoning. The consideration of a capstone course that is approached from

the perspective of challenge-based learning was recommended. This comparative and psychology capstone course could offer students flexibility and promote problem-solving and innovative-thinking skills needed for careers.

Therefore, it was established that providing a course on comparative and clinical psychology can actually facilitate students to think differently about psychology and how the different areas of psychology interconnect. Students will benefit from connecting the different parts of psychology and may discover approaches to address problems relevant to the psychology field. In supposition, it was established that developing a course on the connectedness of comparative and clinical psychology is one way of strengthening comparative psychology's rightful place in the broad scope of psychology.

## References

- Abramson, C. I. (2015). A crisis in comparative psychology: Where have all the undergraduates gone? Additional comments. *Comprehensive Psychology*, 4, 7. <https://doi.org/10.2466/10.IT.4.7>
- Abramson, C. I. (2018). Let us bring comparative psychology back. *International Journal of Comparative Psychology*, 31. Retrieved from <https://escholarship.org/content/qt81j662cd/qt81j662cd.pdf>
- Abramson, C. I., & Black, T. E. (2017). Importance of comparative psychology in pet industry litigation. *Journal of Social Sciences*, 13(1), 118-123. <https://doi.org/10.3844/jssp.2017>
- American Psychological Association. (2016). Guidelines for the undergraduate psychology major: Version 2.0. *The American Psychologist*, 71(2), 102. <https://doi.org/10.1037/a0037562>
- Amizruzzaman, S. (2020). A validity and reliability study of undergraduate students' engagement, self-efficacy, and course selection decision-making scales (Doctoral dissertation, Kent State University). [http://rave.ohiolink.edu/etdc/view?acc\\_num=kent1593428981293444](http://rave.ohiolink.edu/etdc/view?acc_num=kent1593428981293444)
- Appleby, D. C. (2014). A skills-based academic advising strategy for job-seeking psychology majors. In R. L. Miller & J. G. Irons (Eds.), *Academic advising: A handbook for advisors and students Vol. 1: Models, Students, Topics, and Issues*. <http://teachpsych.org/ebooks/academic-advising-2014-voll>
- Appleby, D. C. (2018). Preparing psychology majors to enter the workforce: Then, now, with whom, and how. *Teaching of Psychology*, 45(1), 14-23. <https://doi.org/10.1177/0098628317744944>
- Bennett, S., & Blass, R. B. (1991). *The development of vicissitudes of Freud's ideas on the Oedipus complex: The Cambridge Companion to Freud*. University of California Press.
- Berg, H. (2019). Evidence-based practice in psychology fails to be tripartite: A conceptual critique of the scientocentrism in evidence-based practice in psychology. *Frontiers in Psychology*, 10, 2253. <https://doi.org/10.3389/fpsyg.2019.02253>
- Bielert, C. F., & Gallup, A. C. (2015). A clarion call or a swan song? Commentary: A crisis in comparative psychology: Where have all the undergraduates gone?. *Frontiers in Psychology*, 6, 1867. <https://doi.org/10.3389/fpsyg.2015.01867>
- Bourjade, M., Cochet, H., Molesti, S., & Guidetti, M. (2020). Is conceptual diversity an advantage for scientific inquiry? A case study on the concept of 'Gesture' in comparative psychology. *Integrative Psychological and Behavioral Science*, 54, 805-832. <https://doi.org/10.1007/s12124-020-09516-5>
- Brewer, C. L. (2006). Undergraduate education in psychology: United States. *International Journal of Psychology*, 41(1), 65-71. <https://doi.org/10.1080/0020759044400048>
- Brewley, D. N., Boindala, P. S., & Sinclair, J. L. (2017). Ideation to execution: Flipping an undergraduate pre-calculus course to create significant learning experiences. In *Flipped Instruction: Breakthroughs in Research and Practice* (pp. 338-354). IGI Global. <https://doi.org/10.4018/978-1-5225-1803-7.ch019>
- Brown, E. A., & Abramson, C. I. (2019). Aristotelean-Thomistic approach of comparative psychology. *International Journal of Comparative Psychology*, 32. <https://escholarship.org/uc/item/74d658bt>
- Brown, K. R., Greer, B. D., Craig, A. R., Sullivan, W. E., Fisher, W. W., & Roane, H. S. (2020). Resurgence following differential reinforcement of alternative behavior implemented with and without extinction. *Journal of the Experimental Analysis of Behavior*, 113(2), 449-467. <https://doi.org/10.1002/jeab.588>
- Charlton, S., & Lymburner, J. (2011). Fostering psychologically literate citizens. In J. Cranney & D. S. Dunn (Eds.), *The psychologically literate citizen* (pp. 234-248). Oxford University Press.
- Chiandetti, C., & Gerbino, W. (2015). Comparative psychology: A perspective rather than a discipline. Commentary: A crisis in comparative psychology: Where have all the undergraduates gone? *Frontiers in Psychology*, 6, 1828. <https://doi.org/10.3389/fpsyg.2015.01828>

- Ciarocco, N. J. (2018). Traditional and new approaches to career preparation through coursework. *Teaching of Psychology, 45*(1), 32-40. <https://doi.org/10.1177/0098628317744963>
- Cranney, J., & Dunn, D. (2011). *The psychologically literate citizen: Foundations and global perspectives*. Oxford University Press.
- Cranney, J., & Botwood, L. (2012). Review of the aims, outcomes and accreditation standards for Australian undergraduate psychology education. [http://www.groups.psychology.org.au/Assets/Files/CranneyBotwood\\_Green\\_Paper\\_UG\\_Psych\\_Ed\\_Final\\_180612.pdf](http://www.groups.psychology.org.au/Assets/Files/CranneyBotwood_Green_Paper_UG_Psych_Ed_Final_180612.pdf)
- Daly, M., & Wilson, M. I. (1999). Human evolutionary psychology and animal behaviour. *Animal Behaviour, 57*(3), 509-519. <https://doi.org/10.1006/anbe.1998.1027>
- David, D., Cristea, I., & Hofmann, S. G. (2018). Why cognitive behavioral therapy is the current gold standard of psychotherapy. *Frontiers in Psychiatry, 9*, 4-12. <https://doi.org/10.3389/fpsy.2018.00004>
- Despret, F. (2016). *What would animals say if we asked the right questions?* University of Minnesota Press.
- Fink, L. D. (2013). *Creating significant learning experiences: An integrated approach to designing college courses*. John Wiley & Sons.
- Frieder, J. E., Zayac, R. M., Ratkos, T., Donahue, N., Ware, M., & Paulk, A. (2018). Essential readings for undergraduate students in behavior analysis: A survey of behavior analytic faculty and practitioners. *Behavior Analysis in Practice, 11*(4), 327–333. <https://doi.org/10.1007/s40617-018-0260-x>
- Furlong, E. E., AuBuchon, S., Kraut, J., Joiner, N., Knowles, J., Lewis, K., & Furlong, J. (2015). From crisis to crowd control. Commentary: A crisis in comparative psychology: Where have all the undergraduates gone? *Frontiers in Psychology, 6*, 1729. <https://doi.org/10.3389/fpsyg.2015.01729>
- Galef, B.G. & Whiten, A. (2017). The comparative psychology of social learning. In J. Call (Ed.), *APA handbook of comparative psychology* (pp. 411–440). American Psychological Association.
- Green, C. (2016). APA division membership throughout the years. <https://psyborgs.github.io/projects/apa-division-memberships/>
- Green, C. D., & Cautin, R. L. (2017). 125 years of the American Psychological Association. *American Psychologist, 72*(8), 722. <https://psycnet.apa.org/doi/10.1037/amp0000208>
- Halonen, J. S., & Dunn, D. S. (2018). Embedding career issues in advanced psychology major courses. *Teaching of Psychology, 45*(1), 41-49. <https://doi.org/10.1177%2F0098628317744967>
- Hamilton, K., Morrissey, S. A., Farrell, L. J., Ellu, M. C., O'Donovan, A., Weinbrecht, T., & O' Connor, E. L. (2018). Increasing psychological literacy and work readiness of Australian psychology undergraduates through a capstone and work-integrated learning experience: Current issues and what needs to be done. *Australian Psychologist, 53*(2), 151-160. <https://doi.org/10.1111/ap.12309>
- Hayes, S. C., Hofmann, S. G., & Wilson, D. S. (2020). Clinical psychology is an applied evolutionary science. *Clinical Psychology Review, 101892*. <https://doi.org/10.1016/j.cpr.2020.101892>
- Hope, J. (2016). Get your campus ready for Generation Z. *Student Affairs Today, 19*(7), 1-7. <https://doi.org/10.1002/say.30253>
- Jackson, D. (2009). Undergraduate management education: Its place, purpose and efforts to bridge the skills gap. *Journal of Management and Organization, 15*(2), 206-223. <https://doi.org/10.5172/jmo.837.15.2.206>
- Kohn Rådberg, K., Lundqvist, U., Malmqvist, J., & Hagvall Svensson, O. (2020). From CDIO to challenge-based learning experiences—expanding student learning as well as societal impact? *European Journal of Engineering Education, 45*(1), 22-37. <https://doi.org/10.1080/03043797.2018.1441265>
- Landrum, R. E. (2018). Affordances and alignments: Continuing challenges in advising undergraduate psychology majors. *Teaching of Psychology, 45*(1), 84-90. <https://doi.org/10.1177/0098628317745462>
- Lorenzo-Luaces, L., German, R. E., & DeRubeis, R. J. (2015). It's complicated: The relation between cognitive change procedures, cognitive change, and symptom change in cognitive therapy for depression. *Clinical Psychology Review, 41*, 3-15. <https://doi.org/10.1016/j.cpr.2014.12.003>
- Mayes, C. (2009). The psychoanalytic view of teaching and learning, 1922–2002. *Journal of Curriculum Studies, 41*(4), 539-567. <https://doi.org/10.1080/00220270802056674>
- Marston, D. (2017). Exploring the intersection of comparative and clinical psychology: An introduction. *International Journal of Comparative Psychology, 30*. <https://escholarship.org/uc/item/68n0q8kk>
- Marston, D., & Maple, T. (2016). *Comparative psychology for clinical psychologists and therapists*. Jessica Kingsley Publishers.
- McMillan, N., & Sturdy, C. B. (2015). Commentary: A crisis in comparative psychology: Where have all the undergraduates gone?. *Frontiers In Psychology, 6*, 1589-1598. <https://doi.org/10.3389/fpsyg.2015.01589>
- Menken, M., & Sheps, C. G. (1984). Undergraduate education in the medical specialties: The case of neurology. *New England Journal of Medicine, 311*, 1045–1048. <https://doi.org/10.1056/NEJM198410183111610>
- Mironenko, I. A., & Rafikova V.A. (2020). Concerning the history of comparative psychology in Russia. *Vestnik of Saint Petersburg University Psychology, 10*(1), 61–72. <https://doi.org/10.21638/spbu16.2020.105>

- Morehead, D. (1999). Oedipus, Darwin, and Freud: One big, happy family?. *The Psychoanalytic Quarterly*, 68(3), 347-375. <https://doi.org/10.1002/j.2167-4086.1999.tb00537.x>
- Nelson, E. (2020). What Frege asked Alex the parrot: inferentialism, number concepts, and animal cognition. *Philosophical Psychology*, 33(2), 206-227. <https://doi.org/10.1080/09515089.2019.1688777>
- O'Donohue, W. T. (2001). *The psychology of B. F. Skinner*. Sage Publications.
- Ostow, M. (1960). Psychoanalysis and ethology. *Journal of the American Psychoanalytic Association*, 8(3), 526-534. <https://doi.org/10.1177/000306516000800309>
- Pepperberg, I. M. (2020). The comparative psychology of intelligence: Some thirty years later. *Frontiers In Psychology*, 11, 973. <https://doi.org/10.3389/fpsyg.2020.00973>
- Pritchard, D., Hoerger, M., & Mace, F. C. (2014). Treatment relapse and behavioral momentum theory. *Journal of Applied Behavior Analysis*, 47(4), 814-833. <https://doi.org/10.1002/jaba.163>
- Ritvo, L. B. (1965). Darwin as the source of Freud's neo-Lamarckianism. *Journal of the American Psychoanalytic Association*, 13(3), 499-517. <https://doi.org/10.1177%2F000306516501300302>
- Ritvo, L. B. (1974). The impact of Darwin on Freud. *The Psychoanalytic Quarterly*, 43(2), 177-192. <https://doi.org/10.1080/21674086.1974.11926667>
- Rogers-Sirin, L. (2017). Psychotherapy from the margins: How the pressure to adopt evidence-based-treatments conflicts with social justice-oriented practice. *Journal for Social Action in Counseling & Psychology*, 9(1), 55-78. <https://doi.org/10.33043/JSACP.9.1.55-78>
- Saville, B. K., Beal, S. A., & Buskist, W. (2002). Essential readings for graduate students in behavior analysis: A survey of the *JEAB* and *JABA* boards of editors. *Behavior Analyst*, 29-35. <https://doi.org/10.1007/BF03392042>
- Serpell, J. A. (2005). Factors influencing veterinary students' career choices and attitudes to animals. *Journal of Veterinary Medical Education*, 32(4), 491-496. <https://doi.org/10.3138/jvme.32.4.491>
- Silverman, W. H. (1996). Cookbooks, manuals, and paint-by-numbers: Psychotherapy in the 90's. *Psychotherapy: Theory, Research, Practice, Training*, 33(2), 207-216. <https://psycnet.apa.org/doi/10.1037/0033-3204.33.2.207>
- Slavin, M. O., & Kriegman, D. (1988). Freud, biology, and sociobiology. *American Psychologist*, 43(8), 658-661. <https://doi.org/10.1037/0003-066X.43.8.658.b>
- Smith, R. J. (2016). Freud and evolutionary anthropology's first just-so story. *Evolutionary Anthropology: Issues, News, and Reviews*, 25(2), 50-53. <https://doi.org/10.1002/evan.21476>
- Somers, A., Byrd, M. D., Curliss, B., Lay, V., Jones, I. T., & Abramson, C. I. (2020). The application of comparative psychology to parapsychology: A recommendation. *Natural Science*, 12(6), 320-328. <https://doi.org/10.4236/ns.2020.126029>
- Starr-Glass, D. (2020). Significant learning experiences and implied students, *On The Horizon*, 28(1), 55-62. <https://doi.org/10.1108/OTH-09-2019-0067>
- Stevens, J. R. (2017). Replicability and reproducibility in comparative psychology. *Frontiers in Psychology*, 8, 862-869. <https://doi.org/10.3389/fpsyg.2017.00862>
- Strapp, C. M., Drapela, D. J., Henderson, C. I., Nascimento, E., & Roscoe, L. J. (2018). Psychology students' expectations regarding educational requirements and salary for desired careers. *Teaching of Psychology*, 45(1), 6-13. <https://doi.org/10.1177%2F0098628317744943>
- Strohmetz, D. B., Dolinsky, B., Jhangiani, R. S., Posey, D. C., Hardin, E. E., Shyu, V., & Klein, E. (2015). The skillful major: Psychology curricula in the 21st century. *Scholarship of Teaching and Learning in Psychology*, 1(3), 200. <https://psycnet.apa.org/doi/10.1037/stl0000037>
- Vasconcelos, M., & Pandeirada, J. N. (2015). Forgetting the past and neglecting the future. Commentary: A crisis in comparative psychology: Where have all the undergraduates gone? *Frontiers In Psychology*, 6, 1823. <https://doi.org/10.3389/fpsyg.2015.01823>
- Vicedo, M. (2009). The father of ethology and the foster mother of ducks: Konrad Lorenz as expert on motherhood. *Isis*, 100(2), 263-291. <https://doi.org/10.1086/599553>
- Wagstaff, C. R., & Quartiroli, A. (2020). Psychology and psychologists in search of an identity: What and who are we, and why does it matter? *Journal of Sport Psychology in Action*, 1-12. <https://doi.org/10.1080/21520704.2020.1833124>
- White, R. E., & Pierce, B. D. (2000). On Maslow, monkeys, and evolution. *Academy of Management Review*, 25, 696-701. <https://www.jstor.org/stable/259197>

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