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Let Us Bring Comparative Psychology Back

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This article serves as the introduction to the special issue “The State of Comparative Psychology Today” for the *International Journal of Comparative Psychology*. Following opening comments, citations are provided in several areas all with the goal of stimulating students and professionals to help return comparative psychology to a prominent place in psychology. The material can be used as part of a reading list for a course in comparative psychology or as independent readings. It can also be used to shape a reasoned argument why comparative psychology should become a central part of a student’s training in psychology. Sections include books, citations on the history of comparative psychology, general issues related to comparative, teaching, and ancillary material such as websites, journals, videos and a free app for android phones that teaches students how to observe behavior.

I would like to thank Dr. Heather Hill for the opportunity to edit this special issue on The State of Comparative Psychology Today for the *International Journal of Comparative Psychology*. As I have written previously, I believe that we have become marginalized and on the verge of becoming a footnote in the history of psychology. Although I am not voicing the popular opinion, I can point to the fact that there are few graduate programs, little to no coverage in introductory psychology texts (and by extension little to no discussion in introductory psychology classes), insufficient number of courses in comparative psychology at the undergraduate level, few teaching exercises, declining membership in Division 6 of the American Psychological Association (Behavioral Neuroscience and Comparative Psychology), and no recent textbooks in comparative psychology (Abramson, 2015a, 2015b).

With regards to textbooks, it is interesting to note that at one time psychological textbooks with the word “Comparative” in the title were a regular occurrence with texts appearing in 1894, 1898, 1908, 1914, 1928, 1935, 1936, 1940, 1942, 1951, 1964, 1966, 1970, 1971, 1973, 1978, and 1996. The last textbooks appeared in 2002 (two books) with one of the books having a second edition (2008). This gap in texts is even more striking when we consider that there has been only two comparative texts in 22 years since the 1996 text. Citations for comparative psychology texts can be found in the “Book Section” of this article.

Perhaps even more striking than the “textbook gap” are the vanishing “Comparative Psychology” entries in the *Annual Review of Psychology*. The home page states (<http://www.annualreviews.org/journal/psych>):

The *Annual Review of Psychology*, in publication since 1950, covers the significant developments in the field of psychology, including: biological bases of behavior, sensation and perception, cognitive processes, animal learning and behavior, human development, psychopathology, clinical and counseling psychology, social psychology, personality, environmental psychology, community psychology, and more.

Comparative psychology is not mentioned in this *Annual Review* description, but in the early years of *Annual Review* a comparative entry was common. The lack of contemporary entries, like the lack of textbooks

and coverage in introductory texts, presents our field with a problem because many students and professionals looking for a concise treatment of the current state of psychology will never know that a comparative psychology even exists or frankly, existed. To provide some data, I searched each volume of *Annual Review* from 1950-2017. The results are provided in the table below and are grim. Of 68 volumes, an entry containing the word “Comparative” in the title appeared only 19 times with 13 of these entries occurring from 1950-1967. From 1968-2017 only 6 entries appeared – a period covering 49 years!

Even these six entries could be overly optimistic. In volumes 60 (2009) and 61 (2010), the format of *Annual Review of Psychology* changed to include “categories” under which entries appeared. The comparative entries in these two volumes did not provide an overview of the field but concentrated on a particular sub-field. These two volumes represent the only time the comparative category appeared. In volume 64 (2013) there was a new category called “evolutionary psychology”. In the next volume (65/2014) this category no longer existed and the *Annual Review of Psychology* ceased using categories starting with volume 66 (2015).

Table 1
Comparative Entries Appearing in the Annual Review of Psychology

Part A: Volumes containing entries with the word “Comparative” in the title

Vol 2 (1951), Vol 3 (1952), Vol 4 (1953), Vol 5 (1954), Vol 6 (1955), Vol 7 (1956), Vol 8 (1957), Vol 9 (1958), Vol 12 (1961), Vol 14 (1963), Vol 15 (1964), Vol 16 (1965), Vol 18 (1967), Vol 27 (1976), Vol 34 (1983), Vol 40 (1989), Vol 43 (1992), Vol 60 (2009), Vol 61 (2010)

Part B: Volumes containing no entries with the word “Comparative” in the title

Vol 1 (1950), Vol 10 (1959), Vol 11 (1960), Vol 13 (1962), Vol 17 (1966), Vol 19 (1968), Vol 20 (1969), Vol 21 (1970), Vol 22 (1971), Vol 23 (1972), Vol 24 (1973), Vol 25 (1974), Vol 26 (1975), Vol 28 (1977), Vol 29 (1978), Vol 30 (1979), Vol 31 (1980), Vol 32 (1981), Vol 33 (1982), Vol 35 (1984), Vol 36 (1985), Vol 37 (1986), Vol 38 (1987), Vol 39 (1988), Vol 41 (1990), Vol 42 (1991), Vol 44 (1993), Vol 45 (1994), Vol 46 (1995), Vol 47 (1996), Vol 48 (1997), Vol 49 (1998), Vol 50 (1999), Vol 51 (2000), Vol 52 (2001), Vol 53 (2002), Vol 54 (2003), Vol 55 (2004), Vol 56 (2005), Vol 57 (2006), Vol 58 (2007), Vol 59 (2008), Vol 62 (2011), Vol 63 (2012), Vol 64 (2013), Vol 65 (2014), Vol 66 (2015), Vol 67 (2016), Vol 68 (2017)

Part C: Volumes containing entries related to comparative psychology but without the term “Comparative” in the title

Vol 21 (1970) Bitterman & Schoel, Vol 25 (1974) Harris & Brady, Vol 29 (1978) Dickinson & Mackintosh, Vol 41 (1990) Spear, Miller, & Jagielo, Vol 43 (1992) Roitblat & Von Fersen, Vol 44 (1993) Timberlake, Vol 46 (1995) Krasne & Glanzman, Vol 54 (2003), Staddon & Cerutti, Vol 56 (2005) Domjan, Vol 68 (2017) Gershman & Daw.

The current state of comparative psychology is painful. After teaching comparative psychology at Oklahoma State University for 25 years, I have a number of stories about being marginalized, as many other colleagues do. In one case a fellow faculty member commented that “anyone can do what you do” despite the fact that not many other psychologists can report having worked with many species “from ants to elephants to people” over the course of a 30+ year career. Another example involved the following response by an action editor of *American Psychologist* to the original submission of an article entitled “A crisis in comparative psychology: Where have all the undergraduates gone?” (Abramson, 2015a, 2015b): the manuscript would not be sent for review because comparative psychology is, in effect, a trivial area of psychology that is just too

inconsequential to be considered for readers of *American Psychologist*. In some ways comments such as these demonstrate the lack of knowledge and respect such individuals have about comparative psychology, highlighting the state of comparative psychology.

Frankly, I do not understand why, at least in my view, our field is dying. I could not conceive of a more interesting area of psychology. As an undergraduate I worked with fish, rats, pigeons, ants, roaches, bees, humans and had the opportunity to observe monkeys. This work continued as a graduate student and now as a professional (Abramson, 2005). While much of my work focused on animal behavior, I always considered, and defined, comparative psychology as the “Application of the comparative method to problems in psychology.” As such, the world is literally our laboratory and no psychological problem – whether applied, basic and/or theoretical – is beyond our scope (Abramson & Lack, 2014). We have a unique set of experimental and philosophical skills (Muckler, 1963), which can be applied to an aspect of our field in which we search for “universal rules of behavior” – certainly a noble enterprise.

We also have a way of thinking that is, frankly, different from other psychologists and a way of doing science that is distinctive. We routinely use concepts such as homologies, analogies, and systematic variation when considering our results and we maintain a focus on replication. If a reader would like evidence for this latter assertion one need go no further than to read the article by the Open Science Collaboration (2015). This international group of scientists sought to replicate some of the more well-known findings of selected social and cognitive psychology experiments and could not do so for 50% of the cognitive experiments and 75% of the social experiments. Their paper has been cited over 1,500 times. All one has to do is search Google using the phrase “problems of replication in psychology” and, if this can be believed, 42,000,000 items are listed – and comparative psychology is considered obsolete?

Our unique way of approaching a topic allows us to contribute to areas as diverse as cultural anthropology, political science, neurobiology, computer engineering, app development, cross-cultural psychology, animal – human interactions, law, agriculture, enrichment, philosophy, mathematical modeling, history of science, learning, perception, and a host of others – and comparative psychology is considered obsolete? A recent special issue in *The International Journal of Comparative Psychology* on the intersection between comparative psychology and clinical psychology illustrates the influence of comparative psychology on today’s advancements in clinical psychology (https://escholarship.org/uc/uclapsych_ijcp Vol 30).

In my view, there is no psychology as important as comparative psychology. The skills and perspective of a comparative psychologist would make them a highly valued member of any research team. Comparative psychology should be taught not only at the college level but in high school as well.

In addition to the skills and perspectives offered by a comparative psychologist, it is worth noting that if we consider 1879 as the founding of experimental psychology (Heidbreder, 1933), the use of the phrase “comparative psychology” appeared as early as 1858 (Weinland, 1858) – 21 years before the formal founding of psychology as a scientific discipline. Moreover, three years before the founding of psychology, Spencer (1876) published “The comparative psychology of man.” Furthermore, the first comparative psychological society was started by Mills in 1885 (Mills, 1887) just six years after the formal founding of psychology as a scientific discipline and five years before the founding of the American Psychological Association. I would also add that our field contains some of the greatest names in the history of psychology including African Americans (Abramson, 2006) and women (Scarborough & Furomoto, 1989). Comparative psychology is an endeavor worthy of respect from our peers and each other. Is all this to be forgotten?

Over the years I have been asked by many people both in the United States and abroad to provide a general list of articles and materials that may be of use in stimulating interest in comparative psychology. While there are few courses in comparative psychology, a student can create their own major and/or course of study. Such a student and their faculty advisor may not have an idea where to start – this article may help. As another example, a faculty member seeing the importance of comparative psychology may wish to integrate some material into their classes – this article will help. The material presented in this article will also be of use for those trying to convince their department to offer a course in comparative psychology.

The article presents several categories including teaching activities, books, and articles of general interest (Table 2); selected websites are also listed. This article does not claim to be exhaustive but it does contain material that I have found useful over the years and I suspect that much of the material will be on the shelves and reading lists of any comparative psychologist. Some of the material comes from the *International Journal of Comparative Psychology (IJCP)*. Unlike many publishing houses such as the American Psychological Association, scientists without access to a library are not charged fees to look at an article. The *IJCP* plays an important role as access to its articles are free world wide and the authors of the papers are not required to pay open access fees.

Section 1: Books

In this section I list some of the books that I have found worthwhile (Table 3). Of special interest are the early textbooks in comparative psychology. It is quite interesting to read these books and note how the field has changed over the years. Some of these books can be found on the internet by doing an on-line search and downloading them for free. These texts, and other books cited here, often contain histories of comparative psychology – especially those by Dewsbury (1984a, 1984b, 1990). Some excellent historical information can also be found in Tobach (1987). Readers interested in an Aristotelian – Thomistic view of comparative psychology can find much material in Augros and Stanciu (1987) and Wallace (1996). The encyclopedias edited by Bekoff (2004, 2007) represent just one of the many ways material can be used to stimulate interest in comparative psychology. I have also included books containing selected papers of comparative psychologists such as Theodore C. Schneirla (Aronson, Tobach, Rosenblatt, & Lehrman, 1972) and the African American Charles Henry Turner (Abramson, Jackson, & Fuller, 2003). For those readers interested in material on the “application of the comparative method to problems in psychology” can find much in Bornstein (1980). The book by Wenner and Wells (1990) describes how their careers were almost destroyed because they did not agree that the experimental evidence supported the dance language of the honey bees. This controversy continues to the present day. An interesting book that is seldom mentioned is Vance Packard’s (1950) *Animal IQ*. Packard is perhaps best known for his work on the psychology of persuasion (Packard, 1957). Another interesting book is *The naked ape* written by Desmond Morris (1967). Morris has a number of books on animal behavior. I would like to note that the classic three volume set on comparative psychology written by Warden, Jenkins, and Warner, (1935, 1940) seems to have a misprint in my copy where the year of publication of volume 3 (1936) supersedes the year of publication of volume 2 (1940).

Table 2

Recommended Articles

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- Abramson, C. I. (2006). Charles Henry Turner: Pioneer of comparative psychology. In D. A. Dewsbury, L. T. Benjamin, Jr., & M. Wertheimer (Eds.), *Portraits of pioneers in psychology: Volume VI* (pp. 37-49). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Abramson, C. I. (2005). Learn by doing. In T. Benson, C. Burke, A. Amstadter, R. Siney, B. Beins, & W. Buskist (Eds.), *Teaching of psychology in autobiography: Perspectives from exemplary psychology teachers* (pp. 1-7). Washington, DC: American Psychological Association.
- Abramson, C. I. (2015a). A crisis in comparative psychology: Where have all the undergraduates gone? *Frontiers in Psychology*, 6, 1500. doi: 10.3389/fpsyg.2015.01500
- Abramson, C. I. (2015b). A crisis in comparative psychology: Where have all the undergraduates gone?: Additional comments. *Innovative Teaching*, 4,7. doi: 10.2466/10.IT.4.7
- Abramson, C. I. & Lack, C. W. (Eds.). (2014): *Psychology gone astray: A selection of the racist and sexist literature from early psychological research*. Hampshire, UK: Onus Books.
- Bitterman, M. E., & Schoel, W. M. (1970). Instrumental learning in animals: Parameters of reinforcement. *Annual Review of Psychology*, 21, 367-436.
- Dickinson, A., & Mackintosh, N. J. (1978). Classical conditioning in animals. *Annual Review of Psychology*, 29, 587-612.
- Domjan, M. (2005). Pavlovian conditioning: A functional perspective. *Annual Review of Entomology*, 56, 179-206.
- Gershman, S. J., & Daw, N. D. (2017). Reinforcement learning and episodic memory in humans and animals: An integrative framework. *Annual Review of Psychology*, 68, 101-128.
- Harris, A. H., & Brady, J. V. (1974). Animal learning – Visceral and autonomic conditioning. *Annual Review of Psychology*, 25, 107-133.
- Heidbreder, E. (1933). *Seven psychologies*. New York, NY: Appleton-Century-Crofts, Inc.
- Krasne, F. B., & Glanzman, D. L. (1995). What can we learn from invertebrate learning. *Annual Review of Psychology*, 46, 585-624.
- Mills, T. W. (1887). Comparative psychology: Its objects and problems. *The Popular Science Monthly*, 30, 651-660.
- Muckler, F. A. (1963). On the reason of animals: Historical antecedents to the logic of modern behaviorism. *Psychological Reports*, 12, 863-882. doi: 10.2466/pr0.1963.12.3.863
- Open Science Collaboration (2015). Estimating the reproducibility of psychological science. *Science*, 349, 943. <http://dxidoi.org/10.1126/science.aac4716>.
- Roitblat, H. L., & Von Fersen, L. (1992). Comparative cognition: Representation and process in learning and memory. *Annual Review of Psychology*, 43, 671-710.
- Spear, N. E., Miller, J. S., & Jagielo, J. A. (1990). Animal memory and learning. *Annual Review of Psychology*, 41, 169-211.
- Staddon, J. E. R., & Cerutti, D. T. (2003). Operant conditioning. *Annual Review of Psychology*, 54, 115-144.
- Scarborough, E., & Furomoto, L. (1989). *Untold lives: The first generation of American women psychologists*. New York, NY: Columbia University Press.
- Timberlake, W. (1993). Animal behavior: A continuing synthesis, 44, 675-706. *Annual Review of Psychology*, 44, 675-706.
- Weinland, D. F. (1858). A method of comparative animal psychology. *Proceedings of the American Association for the Advancement of Science*, 12, 256-266.
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Table 3

Recommended Books

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- Abramson, C. I. (1990). *Invertebrate learning: A laboratory manual and source book*. Washington, DC: American Psychological Association.
- Abramson, C. I. (1994). *A primer of invertebrate learning: The behavioral perspective*. Washington, DC: American Psychological Association.
- Abramson, C. I., Shuranova, Z. P., & Burmistrov, Y. M. (Eds.). (1996). *Russian contributions to invertebrate behavior*. Westport, CT: Praeger.
- Abramson, C. I., & Jackson, L. D., & Fuller, C. (Eds.). (2003). *Selected papers and biography of Charles Henry Turner (1867-1923), Pioneer of comparative animal behavior studies*. Lewiston, NY: The Edwin Mellen Press.
- Abramson, C. I., & Lack, C. W. (Eds.). (2014). *Psychology gone astray: A selection of the racist and sexist literature from early psychological research*. Hampshire, UK: Onus Books.
- Amsel, A., & Rashotte, M. E. (Eds.). (1984). *Mechanisms of adaptive behavior: Clark L. Hull's theoretical papers with commentary*. New York, NY: Columbia University Press.
- Aronson, L. R., Tobach, E., Rosenblatt, J. S., & Lehrman, D. S. (Eds.). (1972). *Selected writings of T. C. Schneirla*. San Francisco, CA: W. H. Freeman and Company.
- Augros, R., & Stanciu, G. (1987). *The new biology*. Boston, MA: New Science Library.
- Bekoff, M. (Ed.). (2004). *Encyclopedia of animal behavior* (Vol. 1-3). Westport, CT: Greenwood Press.
- Bekoff, M. (Ed.). (2007). *Encyclopedia of human-animal relationships: A global exploration of four connections with animals* (Vol. 1-4). Westport, CT: Greenwood Press.
- Bornstein, M. H. (1980). *Comparative methods in psychology*. Hillsdale, NJ: LEA.
- Brown, D. E. (1991). *Human universals*. New York: McGraw-Hill Education.
- Catania, A. C., & Harnad, S. (Eds.). (1988). *The operant behaviorism of B. F. Skinner: Comments and consequences*. Cambridge, UK: Cambridge University Press.
- Denny, M. R., & Ratner, S. C. (Eds.). (1970). *Comparative psychology: Research in animal behavior*. Homewood, IL: Dorsey Press.
- Dewsbury, D. A. (1978). *Comparative animal behavior*. New York, NY: McGraw-Hill.
- Dewsbury, D. A. (1984a). *Comparative psychology in the twentieth century*. Stroudsburg, PA: Hutchinson Ross.
- Dewsbury, D. A. (1984b). *Foundation of comparative psychology*. New York, NY: Van Nostrand Reinhold.
- Dewsbury, D. A. (Ed.). (1990). *Contemporary issues in comparative psychology*. Sunderland, MA: Sinauer Associates.
- Gray, P. H. (1966). *Introduction to general psychology: A self-selection textbook. The comparative analysis of behavior*. Dubuque, IA: W. C. Brown Company Publishers.
- Greenberg, G., & Haraway M. M. (Eds.). (1998). *Comparative psychology: A handbook*. New York, NY: Garland Publishing, Inc.
- Greenberg, G., & Haraway, M. M. (2002). *Principles of comparative psychology*. Boston, MA: Allyn & Bacon.
- Hutchins, M. (Ed.). (2004). *Grzimek's animal life encyclopedia: Vol 1 Lower metazoans and lesser deuterostomes 2nd edition*. Detroit: Thomson Gale. (Note: This is a multi-volume set published over a number of years.)
- Holmes, S. J. (1911). *The evolution of animal intelligence*. New York, NY: Henry Holt and Company.
- Leroy, C. G. (1870). *The intelligence and affectability of animals from a philosophic point of view, with a few letters on man*. London, England: Chapman and Hall.
- Lester, D. (1973). *Comparative psychology: Phyletic differences in behavior*. New York, NY: Alfred Publishing Company.
- Lombardi, L. (2011). *Animals behaving badly*. New York, NY: Perigee Book.
- Lubow, R. E. (1977). *The war animals*. New York, NY: Doubleday & Company, Inc.
- Maier, N. R. F., & Schneirla, T. C. (1935/1964). *Principles of animal psychology*. New York, NY: Dover.
- Marston, D. C., & Maple, T. L. (2016). *Comparative psychology for clinical psychologists and therapists: What animal behavior can tell us about human psychology*. Philadelphia, PA: Jessica Kingsley Publishers.
- Morgan, C. L. (1894). *An introduction to comparative philadelphiaology*. London, England: Walter Scott, Limited.
- Morris, D. (1967). *The naked ape*. New York, NY: McGraw-Hill.
- Moss, F. A. (Ed.). (1942). *Comparative psychology* (revised edition). New York, NY: Prentice-Hall, Inc.
- Packard, V. (1950). *Animal IQ: The human side of animals*. New York, NY: The Dial Press.
- Packard, V. (1957). *The hidden persuaders*. New York, NY: David McKay.
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- Papini, M. R. (2002/2008). *Comparative psychology: Evolution and development of behavior*. Upper Saddle River, NJ: Prentice Hall.
- Pavlov, I. P. (1957). *Experimental psychology and other essays*. New York, NY: Philosophical Library.
- Pitt, F. (1927). *Animal mind*. New York, NY: Frederick A. Stokes Company.
- Ratner, S. C., & Denny, M. R.. (Eds.). (1964). *Comparative psychology: Research in animal behavior*. Homewood, IL: Dorsey Press.
- Razran, G. (1971). *Mind in evolution: An east-west synthesis of learned behavior and cognition*. Boston, MA: Houghton Mifflin.
- Richelle, M., & Lejeune, H. (1980). *Time in animal behavior*. Oxford, England: Pergamon Press.
- Romanes, G. J. (1898). *Mental evolution in animals*. New York, NY: D. Appleton and Company.
- Stone, C. P. (Ed.). (1951) *Comparative psychology* (3rd ed.). Westport, CT: Greenwood Press.
- Thorpe, W. H. (1956). *Learning and instinct in animals*. London, England: Methuen.
- Thorpe, W. H. (1979). *The origins and rise of ethology: The science of the natural behaviour of animals*. London, England: Heinemann Educational Books Ltd.
- Tobach, E. (Ed.). (1987). *Historical perspectives and the international status of comparative psychology*. Hillsdale, NJ: LEA.
- Tolman, E. C. (1951). *Purposive behavior in animals and men*. Berkeley, CA: University of California Press.
- Thorndike, E. L. (1911). *Animal intelligence: Experimental studies*. New York, NY: The MacMillan Company.
- Vauclair, J. (1996). *Animal cognition: An introduction to modern comparative psychology*. Cambridge, MA: Harvard University Press.
- Wallace, W. A. (1996). *The modeling of nature: Philosophy of science and philosophy of nature in synthesis*. Washington, DC: The Catholic University of America Press.
- Warden, C. J. (1928). *An outline of comparative psychology*. London, England: Kegan Paul, Trench, Trubner & Co., Ltd.
- Warden, C. J., Jenkins, T. N., & Warner, L. H. (1935). *Comparative Psychology – A comprehensive treatise: Vol. 1. Principles and methods*. New York, NY: Ronald Press.
- Warden, C. J., Jenkins, T. N., & Warner, L. H. (1940). *Comparative Psychology – A comprehensive treatise: Vol. 2. Plants and invertebrates*. New York, NY: Ronald Press.
- Warden, C. J., Jenkins, T. N., & Warner, L. H. (1936). *Comparative Psychology – A comprehensive treatise: Vol. 3. Vertebrates*. New York, NY: Ronald Press.
- Washburn, M. F. (1908). *The animal mind: A text-book of comparative psychology*. New York, NY: MacMillan.
- Waters, R. H. (Ed.). (1960). *Principles of comparative psychology*. New York, NY: McGraw-Hill.
- Watson, J. B. (1914). *Behavior: An introduction to comparative psychology*. New York, NY: Henry Holt and Company.
- Wenner, A. M., & Wells, P. H. (1990). *Anatomy of a controversy: The question of a “language” among bees*. New York, NY: Columbia University Press.
- Yerkes, R. M. (1907). *The dancing mouse: A study in animal behavior*. New York, NY: Macmillan.
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Section 2: Articles on the History of Comparative Psychology

Here, I cite some articles about the history of comparative psychology (Table 4). These articles cover a wide range of subjects including biographies of both American and Russian comparative psychologists such as Frank Beach (Dewsbury, 1990), Leonard T. Hobhouse (Tolman, 1987), Boris Iosifovich Khotin (Malakhovskaya, 1992), T. Wesley Mills (Murray, 1990), Douglas Alexander Spalding (Gray, 1962), Charles Henry Turner (Abramson, 2009), V. A. Wagner (Krementsov, 1992), and Robert Mearns Yerkes (Wight & Smith, 1998). Of interest is an article on the work of James McConnell (Rilling, 1996). McConnell was one of the early pioneers in using the planarian to understand the molecular analysis of learning.

Table 4

Articles About the History of Comparative Psychology

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- Abramson, C. I. (2009). A study in inspiration: Charles Henry Turner (1867-1923) and the investigation of insect behavior. *Annual Review of Entomology* 54, 343-359. doi: 10.1146/annurev.ento.54.110807.090502
- Aleksandrova- Howell, M., Abramson, C. I., & Craig, D. P. A. (2011). Coverage of Russian psychological contributions in American psychology textbooks. *International Journal of Psychology*, 47, 76-87. doi: 10.1080/00207594.2011.614618.
- Bodson, L. (1996). Some of Aristotle's writing about bird behavior and issues still current in comparative psychology. *International Journal of Comparative Psychology*, 9, 26-41.
- Dewsbury, D. A. (1990). Frank A. Beach's unpublished textbook on comparative psychology. *Journal of Comparative Psychology*, 104, 219-226.
- Dewsbury, D. A. (1992). Triumph and tribulation in the history of American comparative psychology. *Journal of Comparative Psychology*, 106, 3-19.
- Dewsbury, D. A. (1997). Edward Bradford Titchener: Comparative psychologist? *American Journal of Psychology*, 110, 449-456.
- Dewsbury, D. A. (1998). Animal psychology in journals, 1911-1927: Another look at the snark. *Journal of Comparative Psychology*, 112, 400-405.
- Dewsbury, D. A. (1998). A note on the early editorial policies of the Journal of Comparative Psychology. *Journal of Comparative Psychology*, 112, 406-407.
- Dewsbury, D. A. (2012). A history of the behavior program at the Jackson laboratory: An overview. *Journal of Comparative Psychology*, 126, 31-44.
- Gray, P. H. (1962). Douglas Alexander Spalding: The first experimental behaviorist. *Journal of General Psychology*, 68, 333-346.
- Greenwood, J. D. (2016). All the way up or all the way down?: Some historical reflections on theories of psychological continuity. *Journal of Comparative Psychology*, 130, 205-214.
- Jacobs, I. F., & Osvath, M. (2015). The string-pulling paradigm in comparative psychology. *Journal of Comparative Psychology*, 129, 89-120.
- Klopfer, P. (1994). Konrad Lorenz and the national socialists: On the politics of ethology. *International Journal of Comparative Psychology*, 7, 202-208.
- Krementsov, N. L. (1992). V. A. Wagner and the origin of Russian ethology. *International Journal of Comparative Psychology*, 6, 61-70.
- Malakhovskaya, D. B. (1992). Boris Iosifovich Khotin (1895-1950). *International Journal of Comparative Psychology*, 6, 3-4.
- Murray, D. J. (1990). A Canadian pioneer of comparative psychology: T. Wesley Mills (1847-1915). *International Journal of Comparative Psychology*, 3, 205-214.
- Rilling, M. (1996). The mystery of the vanished citations: James McConnell's forgotten 1960s quest for planarian learning, a biochemical engram, and celebrity. *American Psychologist*, 51, 589-598.
- Schleidt, W., Shalter, M. D., & Moura-Neto, H. (2011). The hawk/goose story: The classical ethological experiments of Lorenz and Tinbergen revisited. *Journal of Comparative Psychology*, 125, 121-133.
- Somenzi, V (1994). On the origins of ethology. *Bollettino di Zoologia*, 61, S1, 13-14.
- Spencer, H. (1876). The comparative psychology of man. *Mind*, 1, 7-20.
- Tolman, C. W. (1987). The comparative psychology of Leonard T. Hobhouse: Its context and conception. *International Journal of Comparative Psychology*, 1, 85-96.
- Whissell, C., Abramson, C. I., & Barber, K. R. (2013). The search for cognitive terminology: An analysis of comparative psychology journals. *Behavioral Sciences*, 3, 133-142. doi: 10.3390/bs3010133
- Wight, R. D., & Smith, K. A. (1998). Making place for a comparative scientist: Robert Mearns Yerkes at Harvard, 1902-1917. *International Journal of Comparative Psychology*, 11, 133-143.
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Section 3: General Issues

This section contains a wide range of articles on general issues related to comparative psychology. Several of these articles are part of special issues. The material include problems (real or imagined) associated

with comparative psychology (Lockard, 1971), applications of comparative psychology (Abramson & Black, 2017), the evolution of intelligence (Bitterman, 1965a) and the identity of comparative psychology (Beckers, DeHouwer, & Dwyer, 2016; Doré, & Kirouac, 1987; Innis & Staddon, 1989; Médioni, 1987).

Table 5

Recommended Readings Regarding General Issues in Comparative Psychology

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Section 3: Teaching Comparative Psychology

I have spent a considerable portion of my career developing inquiry-based exercises for use in a comparative psychology course. Many of these articles are cited below (Table 6). Of special interest is the use of pet stores as animal and human research centers (Abramson, Huss, Wallisch, & Payne, 1999). Many of these activities are summarized in Abramson, Curb, Barber and Sokolowski (2011). A wide range of material suitable for a class in comparative psychology can be found in *Psychological Reports* including many articles that compare two or more species in the same paper (Abramson, Curb, & Barber, 2011). A paper by Varnon and Abramson (2013) describes the adaptation of the Propeller microcontroller (Parallax, Rocklin, CA) for comparative experiments. Literally, a comparative laboratory suitable for field and laboratory-based work can be developed for under \$200.00 and be placed in the palm of one's hand. The Abramson 2015b article describes several ways in which a professor can stimulate interest in comparative psychology. In addition to these articles, there are others that discuss the importance of comparative psychology for a liberal arts education (White, 2007) and activities in early comparative courses (Kline, 1899). Two exercises that interest students is

a writing exercise where students contact comparative psychologists (Abramson & Hershey, 1999) and another where comparative psychologists are turned into official United States postage stamps (Abramson & Long, 2012). Quick response codes (QR codes) can be imbedded into the stamps that lead the user, for example, to student-created websites <https://comparativestamps.wixsite.com/comparativestamps>). Other material can be found from time to time in the journal *Teaching of Psychology* and *American Biology Teacher*.

Table 6

Examples of Inquiry-Based Laboratory Exercises and Teaching Applications for Comparative Psychology

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Section 4: Ancillary Material

This section contains a wide variety of material including journals with the word “comparative” in the title and websites. The former I have found useful in showing students that the comparative method is of value across numerous disciplines. Many of the websites listed below we have developed in our laboratory and highlight some of our work. An online search will uncover many others developed by other comparative psychologists. One site that helps students visualize experimental methods is the *Journal of Visualized Experiments* (<https://www.jove.com/>). There is also a web link to the obituary site of the American Psychological Association. This site provides citation information to the obituaries found in the *American Psychologist* and contains several obituaries of comparative psychologists. I have also included some YouTube videos of teaching demonstrations and research from our laboratory. One of the videos describes what we call the “Fish stick” which is a simple way of training fish. Another video shows a rattlesnake pressing a lever to regulate its temperature. A horse training video is also listed. This video is important as the experiment was controlled by the micro-controller described in Section 3. Finally, two videos are presented highlighting the importance of comparative psychology. We have also developed a free app to teach students about observing behavior. The rationale for the development of this app was to teach students how to observe behavior in aquariums, zoos, and pet stores. This app, which has been translated into English, Russian, Portuguese, and Spanish is available for android type cell phones and is free. Finally, two websites are listed where historical articles can be downloaded free of charge.

A list of resources that are available directly:

a. *Websites where historical articles and books can be downloaded.* The first site “Classics in the history of psychology” is a resource developed by Dr. Christopher D. Green of York University in Toronto Canada. The second listing is the “Internet Archive. This was started in 1996 and has already digitized within its holdings over 11 million books and texts. The material within the website is also freely available.

1. Classics in the history of psychology: psychclassics.yorku.ca
2. Internet archive: <https://archive.org>

b. *APA Obituary Website.* This site provides citation information to visit the *American Psychologist* for obituaries (<http://www.apa.org/about/governance/president/published-obituaries.aspx>).

c. *Journals.* Many journals publish articles on animal behavior. Some of the more well-known include *Advances in Comparative Psychology*, *Advances in the Study of Behavior*, *Animal Behavior*, *Anthrozoos*, *Behaviour*, *International Journal of Comparative Psychology*, *Ethology*, *Frontiers in Psychology*, *Journal of Comparative Psychology*, and *Journal of Experimental Psychology: Animal learning and cognition*. However, it is important to remind the reader that comparative psychology should not be restricted to the study of animal behavior. Therefore I would encourage you to ask students to look at journals with the word “comparative” in the title. Some that I have found useful include: *Comparative Civilization Review*, *Comparative Cognition and Neuroscience*, *Comparative Drama*, *Comparative Medicine East and West*, *Comparative Politics*, *Journal of Comparative Economics*, and *Journal of Comparative Policy Analysis*. A search on the website Web of Science Journal Abbreviation titles (http://images.webofknowledge.com/images/help/WOS/B_abrvjt.html) lists 72 journals with the word “Comparative” leading the journal’s title and 18 with the word “comparative” following the word “Journal.”

d. *The trials of life: A natural history of behaviour.* These are a series of 12, fifty minute episodes on animal behavior hosted by David Attenborough (https://en.wikipedia.org/wiki/The_Trials_of_Life).

e. Drs. Robert Epstein and B. F. Skinner with pigeons – Part 1 (<https://www.youtube.com/watch?v=QKSvu3mj-14>)
Drs. Robert Epstein and B. F. Skinner with pigeons – Part 2 (<https://www.youtube.com/watch?v=erhmslcHvaw>)

f. *Museum exhibits and Video clips.*

Oklahoma State University Psychology Museum
(<http://psychology.okstate.edu/museum>)

The Charles Henry Turner Website:
(<http://psychology.okstate.edu/museum/turner/turnermain/html>)

Planarians in the psychology classroom:
(<http://psychology.okstate.edu/faculty/abramson/plan.html>)

Classical conditioning of proboscis extension in honey bees:
(<http://psychology.okstate.edu/faculty/abramson/beeexperiment1.html>)

The use of correspondence in the classroom:
(<http://psychology.okstate.edu/faculty/abramson/corr.htm>)

PETSCOPE: Using pet stores to increase the classroom study of animal behavior:
(<http://psychology.okstate.edu/faculty/abramson/petscope.html>)

Classical conditioning of withdrawal response in the earthworm:
(<http://psychology.okstate.edu/faculty/abramson/worms.html>)

A time-line of comparative psychology:
(<http://comparativepsych.wixsite.com/mysite>)

A history of comparative psychology in stamps:
(<https://comparativestamps.wixsite.com/comparativestamps>)

Operant conditioning in goldfish
(<http://www.youtube.com/watch?v=FsonPCR6EZg>)

Operant conditioning in the honey bee
(http://www.youtube.com/watch?v=KzT_qejHv3Y&feature=mfu_in_order&list=UL)

Advice from professors in psychology programs: Comparative Psychology
(<http://www.drkit.org/psychology/>)

Operant conditioning in rattlesnakes
(<https://www.youtube.com/watch?v=sT996Xz-O28>)

Water searching behavior in planarians
(<https://youtu.be/OtZRAOqBdsU>)

What is Comparative Psychology?
(<https://www.youtube.com/watch?v=klzmlGITntE>)

Operant conditioning in horses
(<www.youtube.com/watch?v=26zKz0nbqNw&list=UUqEiHO7osHC-TMskomLvqiw>)
Behavioral observation app. (<https://play.google.com/store/apps/details?id=blindsniper.matheus.observationdemo>) (English, Portuguese, Spanish, Russian, translations)

Section 5: Conclusion

In conclusion, this article contains material useful for anyone interested in comparative psychology. The material is not exhaustive and should be supplemented by additional information specific to the reader's interests and laboratories. I have used the materials to generate interest in comparative psychology at the both the undergraduate and graduate level. The material can also be used to craft an argument as to why comparative psychology should be returned to a place of honor. In closing, I would like to note that I would be glad to assist anyone in developing a comparative program and/or implementing any of the teaching demonstrations my laboratory has developed.

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