

## Why Asia Needs Comparative Psychology: Applications in Canine-Human, and Equine-Human Interactions

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Received: 27-11-2019

Accepted: 23-12-2019

**Abstract:** This article provides a brief history and description of comparative psychology and provides perspectives about the current state of comparative psychology and unique research opportunities in Asia. An argument is made for why comparative psychology is needed in Asia and practical, teaching, and other aspects and applications are discussed. The application of comparative psychology in equine-human and canine-human interactions and therapies are highlighted.

**Keywords:** Comparative Psychology, Teaching, Asia, Canine-Human Interactions, Equine-Human Interactions, Experimental Psychology.

### 1. Introduction

The purpose of this article is to promote an awareness of comparative psychology in professors and students and emphasize the importance of comparative psychology in Asian countries. This is the third in a series of papers highlighting the regional importance of comparative psychology with previous papers highlighting Africa and Egypt [1, 2].

We believe that including comparative psychology courses in university programs will be beneficial to students and professors. Students are encouraged to engage in the world around them in a way that challenges their critical thinking skills. Additionally, students are taught a unique research skill set, providing them with invaluable abilities. Comparative psychology promotes interdisciplinary research collaboration such that students contribute to a variety of fields

including social psychology, biology, and cultural anthropology.

### 2. Comparative Psychology: A Brief Introduction: *What is comparative psychology?*

The most common and widely accepted definition of comparative psychology is the cross-species comparison of behavior. The objective of comparative psychology is to use a comparative framework and experimental approach to provide a base of generalizable principles of psychology [3]. We think it is important to acknowledge the implications of comparative psychology research on human behavior. Most work done by animal behaviorists is meant to be integrated into our understanding of human behavior.

Studying comparative psychology builds important skills that make students good scientists and competitive candidates for career positions post-graduation. These skills include critical thinking, creative problem solving, analytical skills, observation, experiment and apparatus design and data interpretation [4, 5]. Using the senior author’s definition of comparative psychology, “the application of the comparative method to problems in psychology [1], makes the world the researcher’s laboratory and allows for seemingly endless opportunities.

To demonstrate the current state of comparative psychology (which is terribly lacking) and unique research opportunities in Asian countries we have developed the chart below (see Table 1). The data collected is evidence of the lack of comparative courses and programs in Asia. We were disappointed to see required courses in sports psychology and other, in our opinion, less relevant and applicable content requisite to obtain an undergraduate degree (at the University of

Yangon, for example) and a complete absence of comparative courses, even as electives.

This article presents a chart (see Table 1) of information about existing courses or programs in comparative psychology in selected Asian countries and provides ideas for research topics unique to these countries. Japan and Australia were omitted from due to the existing presence of comparative psychology courses and laboratories in their respective countries [6]. The chart (see Table 1) is by no means exhaustive but aims to serve as a means to generate research ideas and demonstrate the lack of comparative psychology in Asia. A special issue of the *International Journal of Comparative Psychology* addresses methodology, philosophical and theoretical enquiries, teaching comparative psychology, and provides a list of comparative psychology laboratories and advisors who would like to mentor students [5]. This journal is open access and free for everyone.

**Table 1. Comparative Psychology Courses and Unique Research Opportunities in Various Asian Countries**

Country	Unique Research Opportunities	Presence of a Comparative Psychology Program or Course	Institution Information
Afghanistan	Mix of ethnicities and tribes; Marco Polo sheep, Pallas’ cat (both species Near Threatened IUCN status)	None found	
Bahrain	Critically endangered Sociable Lapwing, Hawksbill sea turtle, and Green Sawfish	None found	
Cambodia	Critically endangered red-headed, white-rumped, and slender-billed vultures among other endangered species	None found	
China	Unique and ancient culture; Giant Pandas	Comparative Psychology courses offered	Peking University and Tsinghua University

Continued

Table 1. Continued

Indonesia	Macaca Nigra Project; research regarding tool use has been done in the Gunung Leuser National Park	Research is being done in the country, but no courses or programs were found (Research is being done by international researchers)	
Laos	Lao Loum and Lao Soung regional cultural divide; threatened hornbills	None found	
Malaysia	"Megadiverse" wildlife includes the likes of Proboscis monkeys and Rafflesia flowers	None found	
Maldives	Will be host of the 2020 International Conference on Comparative Psychology and Animal Models; opportunity for comparisons between islands	None found	
Myanmar	Home of more than 300 endangered species	None found	
Nepal	Endangered species including the red panda, snow leopard, Bengal tiger, Indian rhinoceros; Bengal fox, Indian pangolin, Tibetan fox and wolf	None found	
Philippines	Opportunity for comparisons between islands; endangered species like the rufous-headed hornbill and Philippine eagle	None found	
Saudi Arabia	Nearly extinct animals including the dugong, Arabian leopard (in captivity), striped hyena, sand cat, Nubian ibex, and rhim gazelle, Arabian oryx, Euphrates jerboa	None found	
South Korea	South Korea has unique traditions of criminal punishment and cosmetic surgery. A comparison between South Korean attitudes toward punishment, social humiliation, and criminals to other cultures' could be interesting.	None found	
Sri Lanka	Diverse wildlife and many endangered species including the Asian elephant, purple-faced langur, red slender loris, toque macaque, dugong, and marine turtles	None found	
Thailand	A comparison of beliefs and behaviors of the Theravada Buddhists versus other Buddhist schools of thought; pangolins, fishing cats, gibbons	None found	

Continued

Table 1. Continued

Vietnam	Comparisons of lowland versus highland cultures; Vietnamese salamanders and leaf turtles, gibbons, langurs	None found	
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### **Ethology v Comparative Psychology (What is not comparative psychology?)**

Many publications about comparative psychology make it a point to distinguish the area from ethology. The differentiation between ethology and comparative psychology has been a polarizing point of contention in the sciences. There are conflicting claims about the origin of the term comparative psychology. One account claims both terms emerged in nineteenth-century France [7]. After being central in debates at the Académie des Sciences in the 1930s the two schools of thought diverged [7]. Baron Cuvier, the head of the Académie and prominent scientist of the time, placed an emphasis on experimentally derived facts stemming from laboratory analysis. Former collaborator Geoffroy-Saint-Hilaire led the opposing school of thought whose emphasis was on behaviors as they are observed in nature. Cuvier's protégé Pierre Flourens later coined the term comparative psychology in an 1864 book critiquing Darwin's *The Origin of Species*. Geoffroy-Saint-Hilaire's son adopted the term ethology to describe the naturalistic approach to behavior in 1859 (the same year as *The Origin of Species'* initial publication). Although Darwin has been deemed the patron saint of ethology [8] and his influence on the field is more apparent, it is critical to acknowledge that Darwin contributed to the studies of behavior and mind as well as biology.

### **2.1 The History of Comparative Psychology**

#### **Origin**

The early history of comparative psychology has multiple alleged lineages that

have yet to be reconciled. After its genesis in the late nineteenth century, comparative psychology has two proposed histories: one in which Pierre Flourens, protege of Baron Cuvier is the premiere comparative psychologist and another in which George John Romanes, a student of Charles Darwin, takes this title. The field was off to an optimistic start at the beginning of the twentieth century. In 1907 C. Judson Herrick wrote, "Comparative psychology has arrived."

At its arrival comparative psychology brought with it experimental conditions and led psychology away from naturalistic and anecdotal evidence. It also ignited an interest in learning and revealed the phenomenon of conditioning. In 1913 John B. Watson delivered a series of lectures at Columbia University that began the approach which later became known as behaviorism [3]. With behaviorism came a shift from consciousness to behavior.

Comparative psychology has enjoyed holding a long-standing revered position in the realm of psychology, but its position is currently facing challenges. These challenges include few undergraduate course offerings, even fewer graduate programs, and a single textbook on the subject [4]. Further, introductory level psychology textbooks fail to allot adequate coverage to the field of comparative psychology.

### **2.2 Applications of Comparative Psychology**

Comparative psychology has the ability to link the natural and social sciences [9] and as such can be applied in numerous occasions and across disciplines. *The International*

*Journal of Comparative Psychology* dedicated a special issue to the influence of comparative psychology on advancements in clinical psychology [5]. Comparative psychologists implement homologies, analogies, and systematic variation in their analyses. Cross-species comparisons provide insight into biological adaptations and their evolutionary history. In this regard, comparative psychology is an asset to other fields including, but not limited to, biology, conservation biology, behavioral ecology, clinical psychology, evolutionary psychology, evolutionary development, and neurobiology. However, there are additional opportunities for comparative psychology to benefit political and cross-cultural psychology among others.

Comparative psychology and animal learning can be used to teach psychology as a science in the classroom and encourages interest in STEM fields. There are additional practical applications in pet industry litigation [10] and training farm animals for the benefit of agriculture [11]. Basic principles of comparative psychology can be used to understand learning and can be implemented into companion and support animal training programs. In this way, comparative psychology can benefit both humans and animals in a companion or therapy capacity.

The remainder of this paper will focus on canine therapies, equine therapies, and early education employability. There are significantly fewer canine and equine therapy resources in Asia than the United States and comparative psychology can be used to educate individuals about these therapies and other options of service and therapy training. Additionally, comparative psychology will provide an individual with a skillset that will be beneficial when they are searching for a job.

### 3. Canine Therapies

#### 3.1 The Canine-Human Bond

Canines and humans have a unique history together, making the dog an ideal

partner for humans. As a result of their coevolution with humans, dogs have become adept at working with humans in a variety of roles (e.g. guarding and herding livestock, hunting animals, human protection, and companionship). Dogs are pack animals, which enables them to form a pack with their family, creating a mutually beneficial relationship [12].

Researchers have found that the human-canine relationship is beneficial to both parties [13]. Studies found that both dog and human blood pressure levels lowered following an interaction during which the person was petting the dog [13, 14]. Researchers have also found that interacting with a dog can have positive effects on human social interactions, leading the individual to interact more with other people [15]. Veterans who previously were unable to be in social situations for a variety of reasons (i.e. PTSD, depression, and anxiety) increased the frequency of going out in public after obtaining a service dog [15].

Currently, the research focusing on the canine-human bond has begun to focus on the biological mechanisms that are thought to play a role in the formation and maintenance of this bond [16, 17]. Researchers believe that oxytocin, prolactin, and dopamine play a role in human-canine interactions and the formation of the canine-human bond [17]. Nagasawa and colleagues [16] suggested that an oxytocin feedback loop might play a role in the bond between dogs and their owners after they found an elevation in owner urine oxytocin levels following a gazing session with their dog. The literature on the canine-human bond explains why people share a unique bond with their dogs, making them the perfect human companion.

#### 3.2 Service Dogs

Following World War I, soldiers that were blinded while serving in the war were

provided with guide dogs [18, 19]. The guide dogs that were used by these soldiers were the first documented case of humans using service dogs [18, 19]. In the United States, the American with Disabilities Act (ADA: <https://www.ada.gov>) states that a service dog must be trained to perform tasks that aide an individual with either a physical or psychological disability. Specifically, the tasks must be directly related to the individual's disability, such as providing an alert to warn of an oncoming seizure for an individual with epilepsy. A dog is not considered a service dog if it is trained to do a trick such as fetching the newspaper for an individual that does not have a disability preventing himself/herself from retrieving the paper. In the United States, service dogs can be trained to help individuals with a variety of different disabilities (e.g. diabetes, epilepsy, PTSD, an individual that is blind, an individual that has a mobility issue, etc.). Service dogs are considered working animals since they aid the individuals that they work with. The ADA allows them to have access to public areas such as stores, restaurants, and sports arenas[18]. Additionally, the Fair Housing Act (FHA) allows them to have access to private living areas that are not pet friendly such as homes, apartments, and condos [18]

Two of the main factors that prevent individuals with disabilities from obtaining service dogs are the cost and the availability of service dogs. Service dogs take a long time to train with the training depending on the type of tasks the dog is being trained to perform. Service dogs typically go through a year of very intense training with some types of service dogs going through further training [20]. The wait time to be matched with a service dog can be a year or longer [15]. Individuals searching for a service dog have other options for finding a service dog. It is starting to become more popular for individuals to use shelter dogs and to train their own service dog or to work with a trainer. Another option that some people use

is that they train a pre-existing pet as a service dog.

Service dogs are very expensive for the organizations that train and match the dogs and for the individual that will own the dog [20]. The cost of training and matching a service dog can range from approximately \$33,000 to \$60,000 (e.g. seeing eye dog or autism service dog) per dog depending on the type of service dog [20]. The owner of the service dog typically has to pay a portion of the cost in order to get the dog plus the additional costs of caring for the dog throughout its' life (e.g. food, medical care, possibly grooming, etc.)[20]. One way that individuals can minimize the expenses of a service dog is that they can work with a nonprofit organization or see if the expenses associated with their service dog can be deducted as medical expenses[20].

### *3.3 Therapy Dogs*

It is common for people to use the terms service dog and therapy dog interchangeably even though they are quite different. Unlike service dogs, therapy dogs do not have access to public places such as grocery stores, restaurants, and sports arenas. Therapy dogs go through significantly less training than service dogs since they are not task trained to help someone with a disability [18-21]. In order to qualify as a therapy dog, the dog has to pass a test that certifies the dog as a therapy dog. Therapy dogs usually are an individual's pet that is given special permission to enter a specific site where the dog provides therapeutic relief to individuals who need comfort (e.g. individuals in a nursing home, hospital, and college campus) [22-25]. Currently, all therapy dogs do not undergo behavioral examinations and role-playing stimulations as part of the selection process; however, Mongillo and colleagues [26] suggest that implementing these measures would help to distinguish unsuitable (e.g. dogs that are

aggressive, fearful, and reactive) and suitable dogs (e.g. dogs that are reliable, predictable, and good or excellent social behaviors) for therapy work.

The environments that therapy dogs work in have the potential to be stressful to both the dog and his/her handler; however, researchers have studied therapy dogs and their handlers and did not find an increase in the stress levels of either individual [27, 28]. A study examining therapy dogs following working with children in the pediatric oncology setting did not find significant increases in cortisol levels following interactions with the patients, which suggests that the work was not stressful to the therapy dogs [27]. Additionally, a study that measured the handler and therapy dog social synchrony showed synchrony between the dyads when they were working with neither the dog nor the handler showing stress-related signs [28].

Canine therapy has a variety of physiological and psychological benefits to the individuals interacting with the therapy dog [24, 25]. College students who interacted with a therapy dog prior to exams expressed a reduction in stress and an increase in reported energy and happiness levels following their interactions with the therapy dog [24]. A different study measuring students' perceived stress and physiological stress prior to finals week found that students' perceived that their stress levels were reduced following an interaction with a therapy dog [29]. Researchers did not find significant differences in salivary samples measuring nerve growth factor (sNGF) and alpha amylase (sAA) following the students' interactions with the therapy dog, indicating there were not any differences in physiological stress levels between the control group and the group that interacted with the therapy dog [29].

In hospital and nursing home settings, patients were found to have lower blood pressure and heart rate levels due to an

interaction with a therapy dog [22, 23]. The combined decrease in blood pressure and heart rate levels indicates reductions in physiological stress and anxiety responses. In one study, Hinic and colleagues [30] found that hospitalized children had significantly lower levels of state anxiety following a brief pet therapy visit. Researchers are still learning about the different positive effects that canine-human interactions have on both people and the dog.

### *3.4 Canines in Asia*

Comparative psychology can be used to help with animal-human relationships throughout Asia. Presently, there is little literature on canine therapy or service dogs in Asia. This lack of literature is possibly due to the low number of service dog programs throughout Asia. Assistance Dogs International [31] lists three programs in Asia as members of their worldwide coalition: Hong Kong Guide Dog Association (HKGDA) [32], Japan Hearing Dogs for Deaf People (JHDDP) [33], and Taiwan Guide Dog Association [34]. The International Guide Dog Federation [35] lists one program in China, two programs in Hong Kong, nine programs in Japan, one program in South Korea, and two programs in Taiwan. Eleven guide dog organizations from Japan, Korea, and Taiwan formed the ASIA Guide Dog Breeding Network with the goal of enhancing the guide dog breeding system [36].

A list of the service dog training programs throughout various Asian countries along with websites and contact information for the programs are included below (see Table 2). The list of programs below was procured through a Google search using the terms "Asia service dogs" and "Asia Canine Therapy." The number of programs that exist throughout Asia is probably a little larger due to smaller and less well-known programs that might not have websites.

**Table 2.** Assistance, Service, and Therapy Dog Training Programs in Various Asian Countries

Country	Name of Assistance, Service, or Therapy Dog Training Programs	Program Websites	Program Contact Information
Afghanistan	None		
Bahrain	None		
Cambodia	None		
China	China Guide Dog Association	<a href="http://www.guidedog.org.tw">www.guidedog.org.tw</a>	Email: <a href="mailto:chinaguidedog@aliyun.com">chinaguidedog@aliyun.com</a> Phone: +86 411 8611 0172
	China Guide Dog Training Centre: Established in 2006	<a href="http://www.chinaguidedog.org/">http://www.chinaguidedog.org/</a>	Email: <a href="mailto:chinaguidedog@aliyun.com">chinaguidedog@aliyun.com</a> Phone: +86 411 8611 0172
	Hong Kong Guide Dogs Association (HKGDA): Established in 2011	<a href="http://www.guidedogs.org.hk">http://www.guidedogs.org.hk</a>	Email: <a href="mailto:info@guidedogs.org.hk">info@guidedogs.org.hk</a> Phone: +852 31881736
	Hong Kong Seeing Eye Dog Services (HKSEDS): Established in 2011	HKSEDS Website: <a href="http://www.seeingeyedog.org.hk">www.seeingeyedog.org.hk</a>	Email: <a href="mailto:services@seeingeyedog.org.hk">services@seeingeyedog.org.hk</a> Phone: +852 2628 1833
Indonesia	None		
Japan	Chubu Guide Dogs for the Blind Association: Established in 2013	<a href="http://www.chubu-moudouken.jp">www.chubu-moudouken.jp</a>	Email: <a href="mailto:chubu@tcp-ip.or.jp">chubu@tcp-ip.or.jp</a> Phone: (81) 52 661 3111
	East Japan Guide Dog Association: Established in 1974	<a href="http://www.guide-dog.jp">www.guide-dog.jp</a>	Email: <a href="mailto:info@guide-dog.jp">info@guide-dog.jp</a> Phone: (81) 2 86 52 3883
	Guide Dog and Service Dog and Hearing Dog Association of Japan	<a href="http://www.hojyoken.or.jp">www.hojyoken.or.jp</a>	Phone: (81)45 951 9221
	Hokkaido Guide Dogs for the Blind Association: Established in 1970	<a href="http://www.h-guidedog.org">www.h-guidedog.org</a>	Phone:(81) 11 582 8222
	Hyogo Guide Dogs for the Blind Association: Established in 2004	<a href="http://www.moudouken.org">www.moudouken.org</a>	Email: <a href="mailto:info@moudouken.org">info@moudouken.org</a> Phone: (81) 78 995 3481

Continued



Table 2. Continued

	Japan Educational Institute for the Trainers of Hearing Dogs and Service Dogs (JEITHDSD)	Facebook Page: <a href="https://www.facebook.com/JEITHSD">https://www.facebook.com/JEITHSD</a> )	
	Japan Guide Dog Association (J.G.D.A.): Japan's first guide dog school, Established in 1967	<a href="http://www.moudouken.net/en/">www.moudouken.net/en/</a>	Email: <a href="mailto:info@moudouken.net">info@moudouken.net</a> Phone: (81) 3 5452 1266
	Japan Hearing Dogs for Deaf People (JHDDP): Established 2011	<a href="http://www.hearingdog.or.jp">http://www.hearingdog.or.jp</a>	Email: <a href="mailto:inf@hearingdog.or.jp">inf@hearingdog.or.jp</a> Phone: (81) 265 85 4615 (81) 265 85 5290
	Kansai Guide Dogs for the Blind Association: Established in 1980	<a href="http://www.kansai-guidedog.jp">www.kansai-guidedog.jp</a>	Email: <a href="mailto:info@kansai-guidedog.jp">info@kansai-guidedog.jp</a> Phone: (81) 771 240323
	Kyushu Guide Dog Association: Established in 1981	<a href="http://www.fgda.or.jp">www.fgda.or.jp</a>	Email: <a href="mailto:fgda@pop02.odn.ne.jp">fgda@pop02.odn.ne.jp</a> Phone: (81) 92 324 3169
	Nippon Lighthouse Guide Dog Training Centre: Established in 1970	<a href="http://www.lighthouse.or.jp">www.lighthouse.or.jp</a>	Email: <a href="mailto:tahara@lighthouse.or.jp">tahara@lighthouse.or.jp</a> Phone: (81) 721 720914
Laos	None		
Malaysia	None		
Maldives	None		
Myanmar	None		
Nepal	None		
Philippines	None		
Saudi Arabia	None		
South Korea	Samsung Guide Dog School: Established 1994	<a href="http://mydog.samsung.com/">http://mydog.samsung.com/</a>	Phone: (82) 31 320 8935
Sri Lanka	None		

Continued

Table 2. Continued

Taiwan	Huikuang Guide Dog Foundation Taiwan: Established in 1991	<a href="http://www.guidedog.tw">www.guidedog.tw</a>	Email: <a href="mailto:HK@guidedog.tw">HK@guidedog.tw</a> Phone: (886) 2 2998 5588
	Taiwan Guide Dog Association: Established in 2002	<a href="http://guidedog.org.tw">guidedog.org.tw</a>	Email: <a href="mailto:tgda@guidedog.org.tw">tgda@guidedog.org.tw</a> Phone: +8862 2827 2107
Thailand	None		
Vietnam	None		

### Japan

As of 2014, Japan has eleven guide dog breeding and training programs [37]. Japan was the second country after the United States to start training service dogs for individuals with hearing impairments [33]. In 1938, an American with a guide dog stopped in Japan, introducing Japan to guide dogs [37]. The following year, four guide dogs were imported from Germany for blind soldiers and to start a breeding program, but they were not bred due to war [37].

The Japan Hearing Dogs for Deaf People program (JHDDP) was established in 1965 and is Japan's fifth hearing dog training program, but Japan's first internationally accredited program [33]. JHDDP provides individuals who pass the training with a Japanese Temporary Certificate (TC) for traveling overseas. In 2006, JHDDP opened Japan Educational Institute for the Trainers of Hearing Dogs and Service Dogs (Mobility Support) (JEITHDSD: <https://www.facebook.com/JEITHSD>) to train assistance dog trainers using academic theory [33].

### China

Like Japan, China has one service dog-training program that is recognized by Assistance Dogs International, the Hong Kong Guide Dog Association (HKGDA) [32]. HKGDA

was established in 2011, but was not recognized as a full member of the International Guide Dog Federation until 2018. The program has matched 30 dogs with visually impaired individuals between 2011 and 2019. Starting in 2017, the organization began breeding service dogs locally [32].

In 1975, two dogs named Opal and Winta were brought to Hong Kong to be trained as guide dogs [38]. Unfortunately, both dogs died from illnesses before they were fully trained. Hong Kong did not have any qualified instructors, so there was a period of 36 years where Hong Kong did not have any service dog programs or dogs. Then, in January of 2011 the Taiwan Guide Dog Association gifted Hong Kong with a dog to train as a guide dog named Google, who was later followed in March by a gift of a second dog, Iris, to train as a guide dog. In 2012, Google became the first locally trained guide dog and was paired with Mr. Huang Minjun. Since then, more guide dogs have been trained and successfully matched with individuals [38].

### Asian Laws Protecting Assistance, Guide, and Service Dogs

Like the United States, China, Japan, South Korea, and Taiwan have laws protecting the rights of guide dogs and the individuals that they help [34, 39-41]. In China, guide dogs and the individuals that they help are

protected under The Law on the Protection of Disabled People's Republic of China [39]. According to this law, guide dogs have the right to public places and transportation. The law states that a guide dog cannot be refused access to these places [39]. Additionally, South Korea amended the welfare laws for the disabled in 2000 to include the rights of guide dogs and the individuals that they help [40]. Meanwhile in Taiwan, it is illegal to interfere with the work of a guide dog, which is punishable by a fine [34].

Japan and Taiwan both have laws that define the standards and certification of guide dogs [34, 41]. Dogs in Taiwan must have a professional training personnel certification document in order to be a guide dog and the individuals that they assist are required to carry a user certificate and their dog's documentation [34]. The dogs are also required to wear vests or saddles when they are out in public [34].

In 2002, Japan established the Act on Assistance Dogs for Physically Disabled Persons, which defines the standards and certification of assistance dogs [41]. Assistance dogs in Japan (i.e. guide dogs, hearing dogs, and service dogs for mobility) are required to have a certificate and an assistance dog sign. Unlike the United States, service dogs in Japan only are for individuals with physical disabilities not psychological impairments [41].

### ***Factors Impacting Service Dog Popularity in Asia***

Walther and colleagues [42] suggested that the differences in the number of service dog programs in Asia and the United States might be due to the different cultural attitudes towards dogs in public. The JHDDP website [33] lists the high price of a service dog (over 30,000 yen or \$276) along with cultural differences in how dogs were regarded. Historically in Japan, dogs were regarded as

dirty, which led to people having an issue with having dogs indoors [33]. Assistance, guide, and service dog programs in Asia are actively working on educating the public about their dogs and making an effort to make their dogs accessible to those who need them. Many of the programs listed in the chart (see Table 2) lend out service dogs for free to qualifying individuals [41]. Programs such as Hong Kong Seeing Eye Dog Services (HKSEDS) participate in public outreach events at schools and different public and private organizations to educate people about service dogs with the hopes of influencing cultural attitudes around service dogs [38].

In the literature, there is no mention of the use of dogs to assist individuals that have psychological disabilities (i.e. anxiety, depression, PTSD). Furthermore, the literature does not mention owner training programs or the option for owners to train their own dogs. Like the United States, Asian countries do not have a manual or an online course that teaches the general public how to train their own service or therapy animal. Comparative psychology can be used to provide individual owners with the tools to train currently owned dogs as well as to improve their relationship with their dog through the use of learning theory.

## **4. Equine Therapies**

### ***4.1 Equine-Human Interactions***

Additionally, comparative psychology can be used to promote the equine-human relationship. Horses have been a foundation of human societies for thousands of years but only recently have they transitioned from their role in transportation and work to one of therapy and companionship. In previous centuries, the horses' primary function in society was one of transportation and agricultural work, but with an increase in technology in developing nations, the horse has been used less for mobility and more for

pleasure and recreation. As a result, the role of the horse has changed from a necessity of work to one of companionship, which has opened up new opportunities for using horses in animal-assisted therapies.

### *Equine-assisted activities and therapies (EAAT)*

Equine-assisted activities and therapies (EAAT) involve the practice of improving physical, mental, and spiritual wellbeing of the human participant through interaction with the horse. The practice of EAAT may include therapeutic riding, hippotherapy, equine-facilitated learning (EFL), and equine-assisted psychotherapy (EAP) [11]. Therapeutic riding and hippotherapy include a riding component where the client or participant engages in mounted exercises that includes bilateral rhythmic stimulation in the rider which has

been shown to provide physiological benefits to individuals with cerebral palsy [43, 44], neuromuscular disorders [45], spinal injuries [46], and even for elderly persons [47, 48].

Unlike hippotherapy, EFL and EAP focus on the psychological and educational benefits of working with a horse partner and often focus on single persons with a horse or group of horses. There are a variety of different models and activities involved in EFL and EAP and a number of organizations have developed specific methods of using horses to obtain the desired educational or psychological results (see Table 3). Additional EAAT programs, like those available through MiMer Centre and the University of Denver, train practitioners to understand the equine-human interaction to create individualized plans based on the needs of the EAAT facility or the participants (see Table 3).

**Table 3. Organizations and Resources for Equine-Assisted Activities and Therapies (EAAT).**

<b>Name and Location</b>	<b>Type</b>	<b>Focus</b>	<b>Target Population</b>	<b>Link to Information</b>
Horses Offering People Enrichment (HOPE) Beijing, China	Non-profit organization and Therapeutic Riding Facility	Hippotherapy	Children with special needs and orphans.	<a href="http://hopebeijing.org">http://hopebeijing.org</a>
Minds in Motion Education and Research Centre (MIMER Centre)	Non-profit organization	International education, training, and research in EAAT	EAAT professionals, aspiring EAAT professionals, and guidance to EAAT facilities. Training is targeted and tailored for needs of facility /program/ individual.  Offers trainings in trauma-focused equine-assisted psychotherapy for mental health professionals.	<a href="http://mimercentre.org/">http://mimercentre.org/</a>

**Continued**

Table 2. Continued

Institute for Human Animal Connection University of Denver	Non-profit Organization	Educational opportunities for mental health practitioners to learn about EAAT	Mental health professionals	<a href="https://www.du.edu/humananimalconnection/">https://www.du.edu/humananimalconnection/</a>
Professional Association of Therapeutic Horsemanship (PATH) International	Non-profit Organization	International network of accredited and certified PATH facilities and practitioners. Hippotherapy, Therapeutic Riding, Equine-Facilitated Learning.	Children and Adults with special needs.	<a href="https://www.pathintl.org/">https://www.pathintl.org/</a>
Equine Assisted Growth and Learning Association (EAGALA) International	Non-profit Organization	International network of accredited and certified EAGALA facilities and practitioners. No riding. Ground-based equine activities for individuals and groups.	Children and Adults with emotional disorders. Group and Leadership work for organizations and companies.	<a href="https://www.eagala.org/index">https://www.eagala.org/index</a>
Eponaquest International	Private Organization	Training and Education Program for Emotional and Spiritual Connection with Horses	Individuals looking for connection with horses through mind, body, and spirit. Works with equine-assisted psychotherapy	<a href="https://eponaquest.com/">https://eponaquest.com/</a>

## 4.2. Horses in Asia

The practice of EAAT is relatively new as an international practice and almost non-existent in most of Asia. In fact, according to a recent article in Beijingkids, EAAT is relatively unknown in Asia, with growing interest in China [49]. This emerging interest in animal-assisted therapies and interventions has created new opportunities for growth in this field. Although a few established centers have been developed, namely in Beijing [49], there are still very few practicing EAAT centers in Asia as compared to the rest of the world. A quick search on through the two largest international EAAT organizations, the Professional Association of Therapeutic Horsemanship (PATH) and the Equine Assisted Growth And Learning Association (EAGALA), showed no associated programs in Asia. There is a lot of potential for growth, though, and a seminar in November 2016, led by Swedish HealthCare [50], helped introduce equine-assisted activities and therapies to China with the hope of creating more opportunities to develop EAAT in various regions in the country and around Asia. The interest and attendance suggested a need for more EAAT trainings and education throughout the continent.

## 5. Future Directions

### 5.1 Companion animal relationships and human health

In summary, comparative psychology could be applied to companion canine-human and equine-human interactions to improve relationships, learning or training, animal welfare, and even human health. Asia has demonstrated an interest in these areas. We implore Asian universities to develop courses and programs to offer training in comparative psychology and animal-human interactions to accommodate this demand.

## 5.2 Employability

In addition to its use in these applications, the skills one develops while studying and doing research using the comparative framework are beneficial in aspects outside of research. The comparative approach generates a better worldview in its practitioners. It provides ample opportunities to develop skills making them a well-qualified career candidate. Research from the World Economic Forum has suggested the way to close the skills gap in Asia is to reform the education system to train students in both relevant technological skills as well as soft skills such as critical thinking, problem solving, adaptability, innovation or creativity, and communication [51]. Expanse employment-centric entity LinkedIn corroborated this notion claiming that the skills gap is a global problem and soft skills are the solution [52]. Each of the previously mentioned skills contributes to a graduate's employability and will certainly be attained while studying comparative psychology.

## 5.3 Early education

Further, the use of comparative psychology as a science can be implemented in classrooms to teach these skills at a younger age and promote an interest in STEM fields. With the world as their laboratory and accessibility through advancements like the handheld experimental controller [53] which costs less than \$200 research can be done anywhere. Primary students could do experiments in the classroom or in their own backyards.

## 6. Discussion

It is our belief that comparative psychology offers a valuable framework for social and natural sciences and beyond. We believe students and educators would benefit from incorporating comparative psychology

courses or materials into their programs. The senior author of this article has been asked for materials and information from correspondents wishing to incorporate comparative psychology at their universities worldwide. While we aimed to be informative yet concise this article, even complemented by the two preceding it, is not an exhaustive resource. For additional readings, classroom materials, or help establishing a program or course in comparative psychology at your institution please contact the corresponding author. Another easily accessible resource for articles of interest in comparative psychology is the *International Journal of Comparative Psychology*, which is open access and available worldwide via the Internet.

We hope to have developed an interest in comparative psychology in the reader and think it bears reiteration that we would be glad to assist in the adaptation of materials and development of courses. Further, we welcome the opportunity for collaboration with your laboratories and institutions.

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### Acknowledgments:

This work was funded in part by a Lawrence L. Boger Professorship in International Studies.

**Funding:** No funding was received for conducting this study.

**Conflict of Interest:** The Authors has no conflicts of interest to declare that they are relevant to the content of this article.

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