

Chinese College Students' Attitudes towards Animal Welfare

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College students, specifically from veterinary, animal, agricultural, and life sciences majors represent the future professionals who will closely work with animal industry stakeholders. Therefore, it is important to understand their attitudes towards animals and their knowledge about animal welfare. A survey on Chinese college students was conducted across different majors and Chinese geographical regions to understand their attitude towards the animal Sentient and the Five Freedoms models for pets, laboratory, farm, and wild animals. Most of the respondents exhibited a good attitude towards both the animal Sentient and the Five Freedoms models, with best scoring for pet animals followed by wild animals. Respondents showed less concerns towards farm and laboratory animals. A previous animal welfare education, the ownership of animals, and the participation in laboratory work involving animals positively influenced the attitude of the respondents towards animal welfare.

Chinese college students

animal welfare

animal sentient

five freedoms

college majors

1. Introduction

Animal welfare has attracted increased media attention in recent years, with society becoming more aware of the link between animals' well-being and human health and the impact of the livestock industry on the environment ^[1]. Approximately fifty years ago, a science-based model was developed in order to capture the key aspects of animal welfare, namely the Five Freedoms model ^[2]. The Five Freedoms model was first formulated to describe the broader dimensions of animal welfare by incorporating subjective experiences, health status, and behavior ^{[3][4][5]}. On the other hand, the animal Sentient model refers to the notion that animals experience an array of emotions, from pain and suffering to pleasure and joy ^[6]. EU legally recognized animals as sentient beings since the enactment of the Treaty of Lisbon in 2007 ^[7], and till now, 32 countries have formally recognized non-human animals as sentient beings in their legislation ^[8]. In general, animal welfare is independent of the country where the animals are raised, but approaches to animal welfare may differ among countries also in relation to how different animal species are perceived ^[9]. The consideration of the physiological and behavioral needs of animals and the price a country is willing to pay to improve animal welfare can influence education, guidelines, and legislation developed to change the way animals are raised within a country ^{[9][10]}.

China is one of the fastest growing economies in the world, and, like many other developing countries, it is strongly affected by the level of national economic development ^[11]. China is one of the largest producers of animal products, which was made possible by the wholesale adoption of "Western intensive modern" farming techniques such as gestation farrowing crates and battery cages, which have been banned in Europe since 2013 ^[12]. The use

of these intensive farming practices, which have already been proven to threaten the welfare of the animals, is associated with China's history on disease control measures; the use of substances in animal husbandry and food processing has lead Western countries to ban the import of certain Chinese animal products with an impact on the national economy [13][14][15]. In addition, there is a fundamental lack of understanding of the importance of animal welfare among the majority of Chinese animal industry stakeholders, leading to very little legislation and few interventions to address welfare issues [16][17]. This situation may be linked to the fact that the science of animal welfare originated in the Western countries, and this concept was only introduced in China Mainland in the early 1990s, making it a very young discipline in this country [11][18]. For the last 20 years, China has tried to address animal welfare issues through some low-level legislation regarding the aspects of farm animal rearing, transport, and slaughter, which are mainly based on food safety concerns [19]. The development and improvement of animal welfare measures and legislation in China require first to understand and improve its key stakeholders' attitude towards animals.

During the last decade, in order to develop targeted actions to improve animal welfare, more attention has been paid to understand the attitude towards animals of stockpeople, veterinarians, researchers, university students, and consumers worldwide [13][17][20][21][22][23][24][25][26][27][28][29][30][31][32][33][34][35]. Different psychosocial factors have been identified as influencing people's attitude towards animals [36]. These include animal traits (similarity to humans, cuteness, and vulnerability), individual human attributes (gender, age, educational level, early environment, experience with animals), and cultural factors (history, religious beliefs) [32][35][37].

Different surveys to assess the attitudes towards animal welfare of different animal industry stakeholders have been carried out in China in the past [17][19][38][39][40][41][42][43][44][45][46][47], including some on college students [13][48][49][50]. College students—particularly those from veterinary, animal, agricultural, and life sciences majors—represent the future generation of professionals who will work closely with animal industry stakeholders who will be influenced on how animals will be raised and treated. Therefore, it is critical to understand these students' attitude towards animals and their knowledge about animal welfare in order to develop targeted educational programs depending of the areas of animals studies that need to be improved [51]. The first survey on Chinese college students carried out between 2002–2003 [49] revealed that a high percentage of respondents (90%) were concerned about the treatment of animals and their suffering, while a small percentage of students (15%) still supported the use and consumption of wildlife. It is important to keep in mind that this survey was conducted during the SARS epidemic in China, which might have caused a change in people's perception towards animals, especially wildlife [49]. Moreover, Chinese college students from foreign language majors showed concerns with the treatment of animals in the country, in particular with animal experimentation, and they did not agree that humans could use the animals as they saw fit [48]. Even though these studies were carried out in affluent cities such as Beijing, Shanghai, and Guangzhou, where the residents' high living standards may have biased the results, the findings of these surveys have still shown that Chinese society was changing its approach towards animal welfare [48]. Another survey that compared the attitudes towards animals of students from 13 Eurasian countries [13], showed that Chinese respondents had the lowest scores for the consideration towards animal welfare issues, even though a slight improvement of their perception towards animals was observed compared to past studies [45][46][48]. The study reported that almost half of the respondents from China never heard of the term “*animal welfare*” [13].

This could be explained by the fact that even Chinese legislation such as the Animal Husbandry Law (2005) did not include the term “*animal welfare*”, which underlines the fact that many legislators were of the opinion that animal welfare could not become a topic codified in the law [52]. Nevertheless, in the study of Phillips et al. [13], Chinese respondents still showed high concerns about wildlife protection, which might have been influenced by the cultural background and the place of origin of the students or an indication of the increased information regarding zoonosis transmission from wildlife to humans [13][53]. The recent COVID-19 pandemic has also affected the approach of Chinese society towards the human–animal relationship; despite the fact that the origin of the Sars-Cov-2 has not been yet determined, the epidemic has caused a dramatic change of attitude of the Chinese public in particular towards wildlife, including the government, who issued a new Wildlife Animal Protection legislation at the end of 2020.

2. Chinese College Students' Attitudes towards Animal Welfare

In line with previous surveys [13][48][49][50], the current study showed that the majority of Chinese college students' supported the idea that the animals of the classes considered (pets, farm, laboratory, and wild animals) have sentient characteristics, and that they should be guaranteed basic animal welfare standards, while only a small percentage (2.7%) did not agree with both models considered. Higher uncertainty rates were found for items related to the animal Sentient model (69.2%) compared to the Five Freedoms model (30.8%). These results might suggest that the concept of animal welfare and needs may be better understood than the sentient aspects of animals. Therefore, the development of courses within Chinese universities that increase the awareness of animals' capacity to experience emotions or possess certain traits present in humans is needed. Considering animals as sentient beings would probably result in more consideration for their welfare.

Among students, females showed better attitudes towards animals than males. Significant gender differences exist in animal welfare attitudes in the literature [13][19][28][54][55][56][57][58][59]. In general, females represent the primary family caretakers, which makes them more prone to develop positive attitudes that can go beyond the family care and be extended to animals [60]. The psychological literature demonstrated that females tend to be more empathetic than males towards both humans and other animals, showing greater concern for their welfare and suffering, while males have the tendency to assume a more “dominionistic attitude” towards it [35][61][62][63][64]. In addition, since females are more engaged with animals than males are, they are keener to believe that animals experience emotions, while males tend to be more skeptical about this concept [64]. The unbalanced male-to-female ratio (1:4) in the present study may also have impacted the results.

In line with previous studies on college students from Western countries [32][33][65][66], younger Chinese respondents exhibited better attitudes towards animals than older ones. These findings could be attributed to the fact that younger students are not yet affected by the hardening of the study that is observed in certain scientific majors (veterinary, animal, agricultural, life sciences, and medicine) in advanced years, which often involves practices on animals [67][68]. In contrast, Levine et al. [26] found that younger students scored worse in attitudes towards animals than older ones. The authors explained that younger students might not have yet been involved in animal welfare

classes, which could influence their knowledge and attitudes towards animals. The Chinese government introduced animal welfare classes (non-mandatory) in high schools in 2018, which could explain why, in the current study, younger respondents scored better than older ones.

It is believed that the living place, including the environment and type of work practices can shape the attitudes of the people [60][69], including their attitudes towards animals. The present study showed that Chinese college students from the Northwest region showed better attitudes towards animal Sentient and Five Freedoms models than those coming from the Southwest region. The provinces from Northwest China are mostly characterized by arid (desert) and semi-arid environments where farmers mainly breed small ruminants and camels, with farming activities being mostly represented by pastoral systems and small back-yard farms. Small-scale farms and pastoral systems could create proximity with animals, predisposing habitants to exhibit better attitudes towards animals [70]. In addition, this region has also undergone a series of sustainable developmental projects in the last thirty years in order to alleviate poverty by providing incomes from wildlife management and environmental protection [71][72]. On the other hand, the provinces from Southwest China are characterized by human-animal conflicts, and they also include major wildlife trafficking routes from Southeast Asia [73][74]. Provinces from Southwest China, in particular Yunnan, contain China's largest tropical forest and are characterized by an imbalance between nature conservation and economic development that have led to increased conflicts between humans and Asian elephants (*Elephas maximus*) for instance [73]. Poaching activities are still ongoing in these areas, and being habituated to such practices that may be linked to bad attitudes towards animals [72][73][74].

Family income has been found to be a predictor of attitude towards animals with opposite results depending on the study. For example in a study, respondents from families with lower income scored better in their attitudes towards animals [60], while a different survey showed that higher education and higher income were predictors of better attitude towards animals [75]. In our study, Chinese college students coming from higher-income families and lower number of family members exhibited better attitudes towards animals both for the animal Sentient and the Five Freedoms models. The respondents of the current survey are living in a country that is much richer and with stronger societal changes compared to the reality where their parents grew up [48], and this situation may generate a feeling of well-being which might compel people to extend the same condition to animals [76][77].

Chinese college students who owned an animal during their childhood or at the time of the survey showed better attitudes towards animals and exhibited lower uncertainty rates than those who did not own animals at all. In general, affectionate childhood interactions with animals are associated with more humane attitudes towards them [35][78][79][80], while more exploitative or consumptive interactions early in life or during adulthood tend to result in more utilitarian perspectives [80][81]. This result emphasizes the importance of having young generations interacting positively with animals in order to develop a sense of respect and protection towards them. Unfortunately, in this study it was not possible to assess the type of animal the students owned currently or during their childhood, which would have given more information on how this factor would affect their attitudes towards animals.

The students' attitude differed depending on the animal class considered. The striking outcome was that students from all majors had better consideration towards pets, with dogs being the class considered as the most sentient.

This result is consistent with the findings of the study of Phillips et al. [13], where Chinese respondents gave dogs a high sentient capacity (even higher than human infants). China has the world's largest dog and cat population with an estimated 180 million companion animals with approximately 2% of Chinese households owning dogs, and 6% owning cats [82][83]. The amount of money spent on companion animals has also doubled over the past decade [84][85]. In addition, dog eating is rejected by the majority of the Chinese young generations, many of whom are very active in animal protection organizations [86]. Therefore, young Chinese generations should be encouraged to pursue further education and activities that support the welfare of dogs and cats in China in order to favor more improvements in the field, such as the establishment of a pet animals' protection legislation that is still missing in the country.

Furthermore, in line with previous surveys conducted on Chinese students [13][43][48][49], the respondents of the current study showed positive attitudes towards wild animals, which was also reflected by a lower uncertainty rate. Shuxian et al. [49] have pointed out that the epidemic of SARS in China in 2003 might have influenced a positive change in the societal attitudes towards wildlife eating and animal treatment in general. An increase of information regarding zoonosis (i.e., diseases transmitted from animal to human) could explain the raise of interest towards wildlife welfare [17]. A similar situation might have also happened in the current survey, which was carried out when China experienced the first outbreak of COVID-19, which has been subjected to a huge media exposure, including discussions on the illegal wildlife trade that is still considered the main trigger of the pandemic. Therefore, wildlife protection is becoming a very complex and challenging public policy issue in China, and an increase of concerns towards the welfare of wild animals is observed in young generations [45][46][47][87].

Regarding farm animals, Chinese people have been found to consider the welfare of this animal class as an attribute of the food safety and quality concepts, with more importance given to these than to other attribute specifically related to animals [88][89][90]. Animals regarded with positive emotions (dogs and cats), or that display human-like behaviors or represent beauty symbols tend to be exempt from harmful exploitation [32][91][92], while "utility animals" such as farm animals do not seem to evoke high empathetic responses with subsequently low considerations towards them [35][93][94]. Therefore, more education regarding the conditions of farm and laboratory animals should be further developed.

Finally, Chinese college students showed the least concern for farm and laboratory animals. A previous study showed that Chinese college students had a certain concern for the use of animals in experimentation [50]. Students agreed that the use of laboratory animals for testing cosmetics and household products was unnecessary and should be stopped. In addition, they did not agree with the statement that humans had the right to dispose of animals as they saw fit [50]. Nonetheless, the level of concern of the students towards laboratory animals in the current study was still moderate. It is interesting to notice that, despite this lower level of concerns towards laboratory animals by Chinese college students, the *Guidance on Kind treatment of Laboratory Animals* legislation issued in 2006 in China, is the only one that recognizes the Five Freedoms and the avoidance of unnecessary suffering to animals [95]. In addition, several Chinese airlines (AirChina, China Southern, China Eastern) announced in March 2012 the suspension of the transport of animals used in research, as the public began to oppose to the use of animals in experimentation under the widespread publicity of PETA [11]. This might also explain why in the

current study, the participation in laboratory work involving animals was associated with better attitudes towards animal Sentient and the Five Freedom models and lower uncertainty rates compared to students who did not perform lab work with animals. Students who participated in laboratory work with animals might have developed some concerns related to the animals' treatment during experimentation.

Chinese students from veterinary, human health, and nurse majors showed the highest differences in scoring depending on the animal class. Previous studies found that respondents from scientific majors such as veterinary, agricultural sciences, pharmacy, and medical schools were more likely to accept the use of animals for experimentation [88]. A previous study found that veterinary students showed lower considerations towards farm animals, believing that this animal class did not experience pain in the same way other animals, such as pets, do [26]. They were also found to be more likely to believe that dogs and cats had more cognitive abilities than farm animals, and to consider various procedures to be more humane for farm animals than for pets [26][51]. These outcomes should seriously be taken into consideration to develop specific educational programs for Chinese students of the majors that are related to animals in order to reduce the animals class bias.

Chinese college students who participated in animal welfare lectures showed a better attitude towards animals and had a lower uncertainty rate than those who did not. Participation in animal welfare courses appears to have a number of positive effects on students' knowledge and attitudes towards animals. In a previous study, students enrolled in the animal welfare courses were able to identify more of the factors that have an impact on animal welfare (biological functioning, ability to exist in natural state, feelings), demonstrating that the courses were effective in helping students to better appreciate the broad range of criteria that should be used in assessing animal welfare [54]. Such animal welfare lectures may benefit to become mandatory.

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