

An Investigation on Wildlife Protection Consciousness of Middle School Students in Meizhou City, South China

Qihe Yang^{a*}, Huiying Zhu^b, and Hesheng Yang^c

Jiaying University, Meizhou, Guangdong, P. R. China, 514015

^ayangqh@jyu.edu.cn, ^bs.h.m.ily@foxmail.com, ^cyanghs@jyu.edu.cn

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Abstract: In order to understand the status of wildlife protection in middle school students in Meizhou city, this paper adopted questionnaire survey and randomly selected 8 middle schools as examples to investigate the consciousness and its influencing factors using SPSS 17.0 to carry out a statistical analysis of the survey data. The results showed that there were most students with a high level of wildlife protection consciousness among these students surveyed, accounting for over 60% of the total surveyed population. There was no significant difference in protection consciousness between males and females. The students in senior middle schools had a significantly stronger consciousness of protection than those in junior middle schools. The students' watching animal protection programs and visiting to zoos and protection education from their parents would have a significant positive impact on their protection consciousness. The students with higher level of wildlife protection consciousness also had higher quality of corresponding protection behavior. The students' participation in animal protection activities and parents' education are more important than the animal protection education from school education. Therefore, in order to improve the consciousness and quality of the protection of the middle school students, they cannot be completely dependent on the school, and should strengthen the joint participation of family and the society.

Wild animals, also called wildlives, are all non-domesticated animals that grow and reproduce in the wild [1]. China has a vast land area, rich climate and diverse terrain, and a great variety of wild animals which include more than 2100 species of terrestrial vertebrates (more than 450 mammals, 1180 birds and 320 reptiles and 210 amphibians) accounting for over 10% of the world's terrestrial vertebrates and are one of the countries with the largest number of wildlife species in the world [3-4]. However, with the increasing population and the expanding range of human activities, their habitats has been threatened, and many of them have been extinct or near extinction [5]. Wildlife is not only a natural resource, but also an important ecological resource. It is an irreplaceable important part of natural ecosystems. Each wild animal is a member of the ecosystem, through the relationship of food chains. The balance of the whole ecosystem will be seriously affected by a problem in one part of the chain. So the protection of wildlife is of great significance for biodiversity conservation and ecological balance [7-9]. Wildlife also plays a role in promoting economic development and meeting the needs of the people, which include important medicinal value, great use value, high commercial value, ecological ornamental value and potential development value. Therefore, protecting wildlife is not only the need to realize the harmonious development of man and nature, and the construction of ecological civilization, but also of great practical significance to maintain ecological balance, realize the sustainable development of social economy and efficiently utilize biological resources.

Consciousness does not reveal the nature of objective existence passively, but reflects the positive and dynamic experience state of the subject in this revelation. All these reactions and experiences occur fundamentally in the field of human social practical life[10]. In essence, wildlife protection consciousness is people's own thinking about wildlife, the conscious cognition of the

relationship between humans and animals, and the subjective thoughts and actions formed by individuals who make the rights and interests of their targets unharmed [11]. China has a population of nearly 1.4 billion, the juveniles accounted for about 43 % and are nearly 600 million, nearly half of whom are students. Their ecological civilization concept and ecological moral quality are related to the rise and fall of civilization construction of the whole society.

For middle school students, wildlife protection consciousness is the special cognition tendency of middle school students for wildlife. It is the subjective thought and action formed by the this cognition of the relationship between humans and animal, and the knowledge of wildlife through understanding the world of wild animals so as to protect the rights and interests of target animals from being harmed. If middle school students have a strong interest in wild animals, they will form a strong magnetic field effect. In contemporary society, wildlife protection and management is a new undertaking which has not been fully recognized by all aspects of society, and it is also a multi-disciplinary, multi-industry and multi-sectoral work, involving all aspects. The middle school students are in the critical period of the formation of outlook on life and values, easy to receive education. By studying the main factors influencing the formation of wildlife conservation consciousness of wildlife protection, we can conclude various educational methods, means, countermeasures, programs, and problems and so on that can arouse middle school students' strong interest in wildlife. We should guide them into wildlife conservation and management to become the future wildlife managers, researchers, propagandists and law enforcers. Invisibly, many people around them consciously abide by the Wildlife Protection Law, enhance their awareness of wildlife protection, and consciously join in the action of wildlife protection [12].

1. Study objects and Methods

1.1 Study objects

The questionnaires were distributed to the class and conducted in an anonymous, untime-limited manner. Before filling in the questionnaire, we explain the purpose of survey to the students surveyed, let them understand that the survey will not bring them adverse effects in order to remove the students' concerns, so that they can truthfully reflect their true thoughts on the questionnaire. This survey had entered the stage of analysis, summary and writing since April 2018.

From the beginning of October 2017 to the end of December 2017, we conducted a questionnaire survey by random investigation. The subjects were in junior Grade 2 of Yingchuan Middle School, junior Grade 1 of the First Middle School, senior Grade 2 of Huangjin Middle School in Fengshun County, junior Grade 1 of Guangde Middle School, junior Grade 3 of the First Middle School of Tianjiabing in Dapu County, senior Grade 1 in Suiwen Middle School, senior Grade 1 in Tianjiabing Middle School, senior Grade 2 in Wuhua Senior Middle School in Wuhua County. A total of 500 student questionnaires were distributed, 489 were recovered and 476 were valid. The effective rate of recovery was 95%. Among them, 232 males, 244 femalets, 49 junior Grade 1 students, 94 junior Grade 2 students, 47 junior Grade 3 school students, 186 senior Grade 1 students, 100 senior Grade 2.

1.2 Study Methods

Questionnaire survey: the questionnaire adopts the closed form, among which, there were 18 closed investigation items. The closed questions are considered from four aspects: (1) the basic situation of the students (gender, grade, etc.); (2) the level of students' wildlife protection consciousness, (3) the influence of parents' education, school wildlife protection education, and interest factors on the students' wild animal protection consciousness, (4) the behavior of students' wildlife protection consciousness.

1.3 Data analysis and processing

Data were collected and input into the computer. Statistical software SPSS17.0 was used to conduct descriptive analysis, Pearson correlation analysis, t test of independent samples, univariate

analysis, LSD multiple comparison, regression linear analysis, and principal component analysis on the factors affecting the wildlife protection awareness of middle school students.

2. Results and analysis

2.1 Current situation of wildlife conservation consciousness in middle school students

This study comprehensively analyzed the status quo of wildlife protection consciousness of middle school students from 9 survey projects, in which the following 9 questions were respectively used to reflect the level of wildlife protection consciousness of middle school students: Cognition of wildlife resource protection (1-3 points in assigned range); Views on bile extraction from live bears (1-3 points); Understanding of the species of endangered wildlife (1 point for each choice, 8 points for total). Understanding of *the law of the People's Republic of China on wildlife protection* (1-3 points); Views on trade in wildlife and its products (1-4); Opinions on whether to eat wild animals (4-6 points for positive correlation, 1-3 points for negative correlation, multiple choice and multiple score); Recognition of the uncivilized behavior of edible wild animals (1-3); Views on the release measures (1-3); Understanding the existing problems in the wildlife protection in China (1 point for choosing one, 4 points for total). Then we synthesized its score, according to the score recognized the consciousness level, and compiled the Table 1. The score below 22 was considered low; between 22-30 (including 22) was average; between 30-38 (including 30) score was high; above 38 (including 38) was very high. The results showed that 17.0% of these surveyed students had a very high level of the consciousness, 52.5% had a high level, 22.9% average level, and 7.6% low level. Table 1 showed that the mode is 250 and the corresponding items are high, indicating that the concentration trend of wildlife protection consciousness level of middle school students is high (Table 1).

Table 1 The present situation of wildlife protection consciousness of investigated students

Level of consciousness	Frequency	Valid Percent	Accumulative perception
Very high	81	17.0	17.0
high	250	52.5	69.5
Average	109	22.9	90.5
low	36	7.6	100.0
Total	476	100.0	

2.2 Effect of individual factors on wildlife conservation consciousness of middle school students

Table 2 The Pearson correlation analysis between variables

Parameters	Gender	Grade	Interest	Level of consciousness
Gender	1.000			
Grade	-1.22**	1.000		
Interest	0.021	0.096*	1.000	
Level of consciousness	0.020	0.291**	0.235**	1.000

Note: **Correlation is significant at the 0.01 level; *Correlation is significant at the 0.05 level (Significance test of 2-tailed).

The personal factors involved in this study refer to students' gender, grade and interest. According to the level of wildlife protection consciousness from low to high, the scale was compiled with a maximum score of 46 points and a minimum score of 14 points. Then Pearson correlation analysis was conducted with SPSS statistical software. The results showed that there was no significant correlation between gender and the level of wildlife conservation consciousness (refers to the score of protecting consciousness, the same below), but there was a significant positive correlation between grade and the consciousness and the correlation coefficient was 0.291, indicating that the protection consciousness level of senior students was higher than that of junior students. There was a significant positive correlation between interests and the level of

consciousness, and the correlation coefficient of 0.235 indicated that students who usually liked watching animal programs or visiting zoos had higher protection consciousness level than those who did not (Table 2).

2.2.1 Analysis on the difference in the consciousness of middle school students of male and female

The number of males surveyed was 232, with an score of 31.95 ± 5.48 (mean \pm SD, the same below), that of females was 244, with an score of 31.69 ± 6.86 . There was no significant difference between males and females in the level of wildlife protection consciousness ($P > 0.05$), and there was no statistical difference between male and female middle school students.

2.2.2 Analysis on differences in the consciousness of middle school students of interests

Among the survey population, there were 331 people who liked watching TV programme about animal protection and participating in various social activities of animal protection and their consciousness score was 32.78 ± 5.71 , but the score of other 145 people who didn't like was only 29.63 ± 6.66 . The t test of the independent sample of the effect of these interests on the score of protection consciousness ($P < 0.05$) showed that there was significant difference, namely whether normally like the watching or participating has a significant impact on the consciousness of these students.

2.2.3 Analysis on the difference in the consciousness of middle school students of grades

Levene variance homogeneity test shows that the significant probability of grade is below 0.05, and its variance is not homogeneous. The data analysis showed that P value was below 0.05, so there was significant difference in the conservation consciousness among the students in different grades.

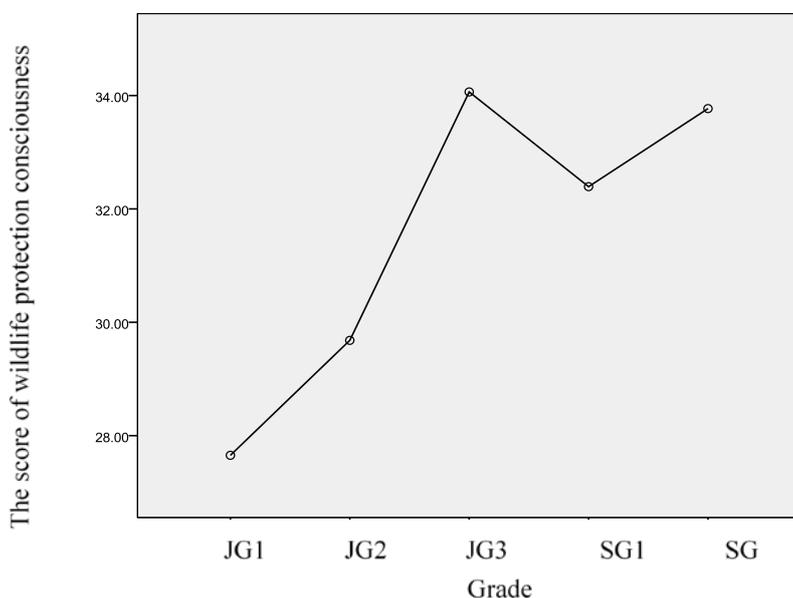


Fig.1 Score of wildlife protection consciousness of the different grades

Multiple comparisons of the protection consciousness among these students in different grades showed (Table 3) that there was no significant difference in the consciousness score between JG1 and JG2, but there was between JG1 and JG3, SG1 or SG2. There was also significant difference between JG2 and JG3, SG1 or SG2. While there was no between JG3 and SG1 and SG2, and also no between SG1 and SG2. To sum up (Figure 1), there is no significant difference in level of the consciousness among the third grades, JG3, SG1 and sSG2, but their level of consciousness was significantly higher than that of JG1 and JG2.

2.3 Effect of educational factors on wildlife conservation consciousness of middle school students

There are not only individual factors but also educational factors that affect the wildlife protection consciousness of these students. Conventional thinking holds that the education of parents and schools is necessarily related to the wildlife protection consciousness of middle school students. The level of parental education and wildlife conservation consciousness, school education and wildlife conservation consciousness were analyzed by linear regression analysis.

The data analysis showed that the corresponding P value of parental education is below 0.05, which indicates that parental education can significantly affect the level of wildlife conservation consciousness of the surveyed students. The corresponding P value of this aspect of school education exceeds 0.05, which indicates that parents' education on animal protection is more important than the relevant school education.

Then the regression coefficient between parental education and the consciousness score of these students was analyzed. The linear regression equation can be obtained as follows: $Y(\text{the consciousness score}) = 29.19 + 1.860X$ (parent education), which shows that for every point of parental education on wildlife conservation, the corresponding awareness score increases by 1.860.

Based on the factor correlation matrix, the R characteristic root and eigenvector of the correlation matrix were calculated after the original data are standardized, and the contribution and variance contribution rate of each principal component were calculated according to the number of each factor characteristic root and original variable. Table 3 shows that the number of principal components can be determined by the contribution rate of cumulative variance to more than 68.619%, and 3 principal components can be obtained and represent 68.619% of the comprehensive information of all factors which include gender, grade, interest, parents' education, and school education. Then they are expressed in sequence by using $X_1, X_2, X_3, X_4,$ and X_5 . Then Z_1 represents 1st principal component, Z_2 represents 2nd one, and Z_3 represent 3rd one. The principal component equation can be obtained:

$$Z_1 = -0.120X_1 - 0.151X_2 + 0.378X_3 + 0.719X_4 + 0.758X_5$$

$$Z_2 = -0.106 X_1 + 0.818X_2 + 0.623X_3 + 0.107X_4 - 0.111X_5$$

$$Z_3 = 0.872 X_1 - 0.301X_2 + 0.390X_3 + 0.080X_4 - 0.236X_5$$

According to the regression equation, the 1st principal component affecting the protection consciousness of these students is the education of parent and school; the 2nd is grade and interest, and the 3rd is gender.

Table 3 The principal component analysis of wildlife protection consciousness of Middle school students

Component	Initial eigenvalue			Extract sum of squares and load			Rotation sum of squares and load		
	Summation	% of variance	Cumulative %	Summation	% of variance	Cumulative %	Summation	% of variance	Cumulative %
1	1.343	26.853	26.853	1.343	26.853	26.853	1.272	25.436	25.436
2	1.085	21.695	48.547	1.085	21.695	48.547	1.093	21.856	47.292
3	1.004	20.072	68.619	1.004	20.072	68.619	1.066	21.327	68.619
4	0.814	16.285	84.904						
5	0.755	15.096	100.000						

2.4 The quality of wildlife protection behavior and the level of consciousness of these students

2.4.1 The quality of wildlife protection behavior

The quality level of wildlife protection behavior of these students was graded. The quality level of wildlife protection behavior was mainly reflected by the following five questions: Whether to pay attention to wildlife protection (assignment range 1-4 points); Whether have eaten wild animals

(1-4 points); The attitude when seeing someone eating wildlives (1-3); Whether to follow medical advice when a doctor prescribes a prescription for endangered wildlives and their organs or tissues (1-3)? Willingness to work on wildlife or environmental protection(1-3). Data analysis shows as follows (Table 4), with the score for each item = mean±SD of each item, combined with the analysis of Table 4, the scores of each item tend to be the highest in the range of the lowest score and the highest score, which shows that the level of wildlife protection behavior quality of these students is high.

Table 4 Description table wildlife behavior quality level

Subject	Score Value	The lowest mark	The highest mark
Concern about wildlife conservation (C)	2.41±0.79	1	4
Whether have ever eaten wild animals (WH)	3.46±0.80	1	4
Attitude of wildlife conservation (A)	2.39±0.76	1	3
Whether to follow medical advice when a doctor (WF)	2.11±0.83	1	3
Willingness to work on wildlife or environmental protection (WI)	2.47±0.71	0	3

Note: the symbols in parentheses are abbreviations for these subjects and will appear in Table 5.

2.4.2 Correlation analysis between wildlife protection behavior quality and level of the consciousness

The Pearson correlation analysis showed that there was a significant correlation between the level of wildlife conservation behavior quality and the level of consciousness for these students (Table 5). There is a significant positive correlation between these subjects, except between WH and WI (Table 5).

Table 5 The Pearson correlation analysis between variables

Subject	C	WH	A	WF	WI	level of consciousness
C	1.000					
WH	0.071	1.000				
A	0.287**	0.308**	1.000			
WF	0.245**	0.176**	0.288**	1.000		
WI	0.297**	0.086	0.288**	0.266**	1.000	
level of consciousness	0.131**	0.296**	0.209**	0.213**	0.216**	1.000

** . There was significant correlation at the level of 0.01 (bilateral). Note:**Correlation is significant at the 0.01 level.

3. Discussion

3.1 There was no significant difference in wildlife protection consciousness between different genders

An (2007) found that ^[13] middle school students of different genders scored very significantly on wildlife protection values in Shanghai and the females were significantly better than males, were mainly due to the following reasons: An's investigation was carried out in 2007, when Chinese society was still in the early stages of development of wildlife protection, since the establishment of the Ministry of Environmental Protection of the people's Republic of China in 2008, the public has paid enough attention to environmental protection. The phenomenon of preference for sons over daughters still exist. At that time, there were obvious differences in ideological education between boys and girls, boys were usually spoilt, mischievous, curious and hyperactive, and although curious about wildlife, they were not very protective, and sometimes turn wild animals into their teasing objects. Girls were taught to study the classics and know the rules of propriety, and be

gentle and kind, naturally have a curiosity, protection, close heart, so their wildlife protection consciousness is obviously superior to boys. But with the rapid development of society, the ideological and economic environment are gradually changing, their social status is gradually improving. Female's attitudes to social responsibility, outlook on life and nature are becoming more and more similar to male's, which makes females have more psychological characteristics of males in the traditional sense. At the same time, the males will have more psychological characteristics of traditional female talent. Therefore, the psychological and personality differences between males and females seem to have become smaller and smaller in modern society. Together with the government's increased publicity for environmental protection, especially wildlife protection, through various media, the gender gap between the males and females has gradually disappeared.

3.2 Interests have a significant effect on wildlife conservation consciousness of middle school students

Many studies have confirmed that interests have a significant impact on wildlife protection consciousness among middle school students [15-16], which is similar to the results of this study. Students who usually like to watch programs about animals or visit zoos have higher consciousness of wildlife protection than those who do not. Interests encourage students to have a strong interest in an activity and lead to a behavioral preference for an activity, thus forming a behavior habit. The middle school students who usually like watching animal programs or visiting zoos can raise their consciousness of animal protection and develop a good habit of caring for animals. The curiosity of juniors arouses their desire to explore wild animals. Middle school students have a heavy learning task and seldom have the opportunity to see rich and colorful natural phenomena. And juniors are growing up, full of intense curiosity about the magical world of nature, and they like to touch and explore something new. They have a strong desire to be close to nature and wild animals, to explore nature, protect the eco-environment, so they usually develop the consciousness and behavior habit of watching programs about animals or visiting zoos. These habits, in turn, increase their consciousness of environmental protection.

3.3 Senior middle school students had a stronger consciousness of wildlife protection than junior ones

An (2007) [13] found that the junior middle school group was obviously superior to the senior middle school group, but this study concluded the opposite. The opposite conclusion may be due to that the environment of the investigation area is different. An's survey site is Shanghai, while Shanghai is a big city with developed economy. The middle school students usually come into contact with tall buildings, books and cellphones, etc., rarely have the opportunity to watch the rich and colorful natural scenes of wildlife survival. The junior middle school students are relatively easy to accept intuitive, image, dynamic things, like observation and have more input and attention than in senior middle school students. At the beginning of this century, the national environmental protection education was still in its infancy and lacked sufficient attention. Therefore, the environmental consciousness of senior middle school students at that time was not as good as that of junior ones. In contrast, this survey site is Meizhou, which is a city with the title of "national garden city", within the region, 80% of the area is mountainous, and known as "the back garden of the pearl river delta". Therefore, the surveyed students in Meizhou had more opportunities to contact with the rich and colorful nature from an early age than those in Shanghai. And this phenomenon directly led to the curious junior ones have a strong interest in wildlife. In addition, the local government has put forward the idea of building ecological Meizhou and greening Meizhou in recent years, so the middle school students know the importance of protecting the environment and wildlife. As they grow older, the senior high school students begin to learn to think rationally and understand that "although we do not need to know more about wildlife, we should respect and protect wildlife." With the increase of age, the level of wildlife protection consciousness of the senior students is higher than that of the junior ones. And because of the small difference in age, cognitive characteristics and psychological structure of students of the same age group, there is no significant difference in the level of wildlife conservation consciousness between Grade 1 and

Grade 2. The findings of this study are similar to those of Li (2014).

3.4 Parental education was more important than school education on wildlife protection for these students

The middle school stage is the critical period of formation of outlook on life values; they are easy to receive education. The education of parents' words and deeds has an important influence on the formation of middle school students' outlook on life and values. Many studies also show that there is an inevitable correlation between parents' education and middle school students' consciousness of wildlife protection [14-16]. If parents educate their children about wildlife protection, which not only satisfies their minors' curiosity, but also arouses their interest in nature and wildlife, the children have long been in this family environment exerting a subtle influence on them gradually and been influenced by what they constantly see and hear. By imperceptibly paying more attention to wildlife, the subconscious will release goodwill to wildlife and be willing to approach and protect them. Therefore, parental education can significantly affect the level of wildlife conservation consciousness of middle school students. The results of this study show that the school education on wildlife conservation has little effect on the consciousness of middle school students, which is contrary to the results of most studies [14-16]. This study revealed that parents' education on animal protection is more important than school education. Raising the consciousness of wildlife conservation is a long-term process, not an overnight process, and until now, most schools still lack the experience of carrying out ecological moral education. Ecological moral education remains at the evolutionary stage of environmental education or the sublimation of moral education. Although some schools have carried out courses or activities on wildlife protection, the number of times has been very small, which can not effectively arouse the interest and exploration desire of middle school students to wildlife. Parents, by contrast, have a long, lasting influence on their children, in most of rural schools, students are usually non-resident, and children spend far more time with their parents than teachers, so parents' education is more important than schooling. Therefore, school education on wildlife conservation has little impact on wildlife awareness among middle school students.

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