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The Influence of the Framework and Emotion Related to Animal Protection among Teenagers in China

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ABSTRACT

This study is based on Regulatory Fit Theory, Cognitive Dissonance Theory, and the Elaboration Likelihood Model (ELM) to explore factors affecting teenagers' awareness and behavior regarding wild animal protection. Experiment 1 aimed to examine whether emotional and rational advertising appeal frames differentially influence wild animal protection among teenagers. Participants were 66 junior middle school students from Beijing, China. The Questionnaire Regarding Wild Animal Protection Awareness and the Questionnaire Regarding Wild Animal Protection Behavior were used. Results showed that rational and emotional advertising appeals did not significantly influence teenagers' wild animal protection awareness or behavior. Experiment 2 explored the effect of attribute framing and emotion on wild animal protection awareness and behavior among 43 junior middle school students using the same questionnaires. The results were as follows: (1) Framing and emotion interactively influenced wild animal protection awareness and behavior; (2) Under the negative frame, negative emotions had a stronger effect than positive emotions; and (3) Under positive emotions, the positive frame had a stronger effect than the negative frame. These findings suggest that framing and emotion can influence teenagers' wild animal protection awareness and behavior.

Keywords: Framework; Emotion; Wild Animal Protection; Teenager

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ARTICLE INFO

Received: 10 May 2025 | Accepted: 15 June 2024 | Published Online: 30 July 2025
DOI: https://doi.org/10.30564/jpr.v7i3.10188

CITATION

Zhao, W., Yang, J., Zhang, P., 2025. The Influence of the Framework and Emotion Related to Animal Protection among Teenagers in China. Journal of Psychological Research. 7(3), 21–37. DOI: https://doi.org/10.30564/jpr.v7i3.10188

1. Introduction

Since early 2020, many cases of pneumonia of unknown cause have been reported throughout the world, referred to as "novel coronavirus pneumonia (NCIP)"[1]. One study has shown that the new virus found in patients belongs to the coronavirus family, which includes coronaviruses found in humans, bats and other wildlife[2]. The virus may infect people when they hurt wildlife, and the harm inflicted by humans on wild animals will eventually be returned to humans. We should promote the prohibition of hunting and use of wild animals. The Elaboration Likelihood Model (ELM) proposed by Petty and Cacioppo points out that the way of persuasion will affect the behaviour of an individual[3]. The Elaboration Likelihood Model contains two routes, central route and peripheral route. The central route is an individual's careful examination of evidence and other relevant clues through a detailed cognitive process, and in this route, the individual thinks carefully about the information. The peripheral route means that information changes in a convenient and fast way; in this route, individuals will be persuaded by simple fringe information (e.g., the source of the information)[4]. Some studies have shown that the framework of the message can affect the route when people think[5]. The framework affects people, having two different reactions to two different ways of expressing[6].

1.1. The Framework

The framework originates from the problem of an Asian disease studied by Kahneman and Tversky[6]. In their study, participants were required to select between a confirmed consequence that led to the certain survival of one third of 600 hypothetical patients (200 people) and a risky probabilistic consequence, a one-third probability that all 600 people would survive and a two-thirds probability that no one would survive. The study found that frameworks can influence people's decisions, and different types of frameworks have different effects on decision-making. Regulatory Focus theory helps to better understand frameworks; different decision-making results are caused by the difference between different expected goals[7]. The framework was divided into three categories: risky framework, attribute framework and goal framework, and this study applies the attribute framework. The attribute framework will influence individuals' encoding and assessment of the object or its characteristics[8].

1.2. The Attribute Framework

The attribute framing refers to the tendency of message recipients to evaluate objects framed positively more favorably than they do objects framed negatively, although one description is implied as the complement of the other, and they are logically equivalent[9]. In general, messages framed positively are more persuasive than those framed negatively, probably because they generate more positive associations[10]. For example, people tend to choose foods described as containing 80% lean hamburger instead of those containing 20% fat hamburger[11]. Attribute frameworks affect humans in many ways. For example, those exposed to a positive framework rated the human papillomavirus (HPV) vaccine as more effective than those exposed to a negative framework and the control group[12]. In addition, people with low thinking conversion ability are more susceptible to attribute framework than those with high thinking conversion ability[13,14]. A study has shown that the attribute framework plays an important role in information transmission in the field of news broadcasting[15].

1.3. Advertising Appeal Framework

The attribute framework is adopted in media communication in the form of the advertisement appeal. As early as 1986, Berkman and Gilson studied the application of the advertising appeal framework[16]. They defined advertising appeal as an attempt at creativity that inspires consumers' motives for purchase and affects consumers' attitudes toward a specific product or service. Subsequently, Schiffman and Kanuk (2007) continued to study the framework effect. From their viewpoint, advertising appeal was suppliers' application of psychological motivating power to arouse consumers' desire and action for buying while sending broadcasting signals to change receivers' concepts of the product[17]. Kotler divided advertising appeal into rational and emotional appeal[18]. In order to meet the varying demands of their target consumers, advertisers commonly use rational appeal and emotional appeal in their advertising in an attempt to influence consumer behavior[19], and print advertisements are dominated by emotional appeal[20]. Rational appeal focuses on the rational thinking process of consumers, in which the

functional demands of products or brands and their measurable interests play a crucial role. Therefore, rational appeal is defined as the degree of paying attention to a rational purchase[21]. Emotional appeal is aimed at consumers' psychological, social or symbolic needs, so as to stimulate their emotions, give play to their emotional mechanism, and finally encourage consumers to buy products[22].

1.4. Emotion

It is found that decision-making behavior is influenced not only by the information framework, but also by emotion. When people are emotionally aroused, they are more likely to believe that animals need to be protected[23]. Immediate emotions (such as anger, fear, anxiety, etc.) arising from current events have a direct impact on decision-making[24,25]. The interaction between emotion and framework also influences decision-making. Under the negative framework, negative emotions happen more strongly than positive emotions in the donation behavior[26]. According to the Regulatory Fit Theory proposed by Higgins[27], when the strategy selected by individuals in pursuit of goals is consistent with the current regulation, individuals tend to choose the strategy pattern with high matching rate with the current regulation. After that, some scholars used this concept to explain emotion and information frameworks, and found that when the emotion of an individual is promoted with the situation in which the individual is located, the role of adjustment and matching can be felt. The higher the adjustment and matching, the better the individual feels regarding the matched situation and the worse they feel regarding the mismatched situation[28]. Cognitive Dissonance Theory can also explain the influence of information matching on individual decision-making; it links actions and attitudes. According to the Cognitive Dissonance Theory, people tend to maintain internal consistency and stability. It holds that dissonance is experienced whenever one cognition that a person holds follows from the opposite of at least one other cognition that the person holds[29], that is, people tend to maintain the coordination between their own attitudes and behaviors. Cognitive dissonance adversely affects the structure of an individual's inner world. Therefore, people will use various methods to reduce the disharmony between cognition, attitude and behavior. And then, strive to achieve a balanced, stable, unified and harmonious state[30]. Emotions can also affect people's willingness to protect wildlife. Human fear of wildlife leads to hostility toward wildlife[31], so it reduces their willingness to protect wildlife. For example, snakes were killed massively in many countries because of people's fear[32]. Pet owners' affectionate attitude also keeps a positive attitude toward wildlife protection[33].

1.5. Wild Animal Protection

Wild animals, also known as wildlife, are non-domestic animals that grow and breed in the wild[34]. China includes more than 2,100 species of terrestrial vertebrates, accounting for more than 10% of the world's terrestrial vertebrates, and is one of the countries with the largest wildlife diversity in the world[35]. However, as the population increases and the range of human activities expands, their habitat is threatened, and many have become extinct or are threatened with extinction[36]. Previous studies have found that emotions affect awareness of wildlife; therefore, public attitudes and priorities toward wildlife management are key to successful conservation[37]. Most people now think that the biblical rule of animals means that everyone has a responsibility to protect animals[38]. It shows that people's awareness of wild animal protection has improved. Previous research on wild animal protection awareness is extensive, for example, in studies of wild animal protection awareness in primary school students, university students and city dwellers[39–42]. The results show that the factors affecting the awareness of wild animal protection include religious belief, education level and media coverage of animals. The change in awareness affects the change in behavior. People have begun to change their wild animal protection behavior, for example, the government has established law enforcement monitoring in wildlife habitats and improved the law on wildlife protection[43,44], researchers have reduced the number of animals used in experiments[45], middle school students watch animal programs to improve the awareness of animal protection, etc.

Wild animal protection awareness and behavior have been affected in a propagandist way[46]. The content of propagandist information and the emotion aroused by propagandist information play a role in the effect of publicity. The purpose of this study was to explore the relationship between framework and emotion regarding wild animal protection awareness and behavior, so as to improve teenagers' wild animal protection awareness and behavior.

2. Experiment 1

The first experiment studied the influence of a rational and emotional advertising appeal framework on the awareness and behavior of teenagers regarding wild animal protection, under the following hypothesis:

Hypothesis 0. *There was no significant difference in the scores of wild animal protection consciousness and behavior between the emotional appeal group and the rational appeal group.*

Hypothesis 1. *The scores of the emotional appeal group for wild animal protection awareness and behavior will be significantly higher than those of the rational appeal group.*

2.1. 1A Formal Experiment

2.1.1. Participants

The participants were 87 junior middle school students from Beijing in China, and 66 were valid participants: 35 male and 31 female, aged 12 to 14; 36 were randomly assigned to the emotional advertising appeal framework group and 30 were assigned to the rational advertisement appeal framework group.

2.1.2. Measures

Questionnaire regarding wild animal protection awareness. The questionnaire was referenced to the "2007 Chinese Version of Environmental Concern Scale", adapted version, after changing, respectively, items 5, 6, 7, 8, 9, and 10 in the topic "natural" to "wild animals". Five subscales formed the questionnaire using a Likert scale, with a reliability of 0.727. The revised questionnaire is highly correlated with the original questionnaire, with a Cronbach alpha coefficient of 0.938, see **Appendix A**.

Questionnaire regarding wild animal protection behavior. The three questions in a self-written questionnaire on wild animal protection behavior were: "To what extent do you support this activity?" "What is your intention to participate in the activity?" "What is your intention to participate in such activities in the future?". The rating method was a seven-point scale with a Cronbach alpha coefficient of 0.762.

2.1.3. Design

In this experiment, two levels of a single factor were adopted as an experimental design. The independent variable was the advertising appeal framework, respectively, the emotional advertising appeal framework group and the rational advertising appeal framework group. The dependent variables were teenagers' wild animal protection awareness and behavior.

2.1.4. Materials

Materials were adapted from real news about beluga whales. The rational version presented factual information; the emotional version used a first-person narrative. Both versions described negative living conditions of captive belugas.

Rational Appeal Example: The beluga is a relatively small toothed whale…The complete versions are available in the **Appendix B**.

Emotional Appeal Example: My name is Lisa, and I'm a beluga whale…The complete versions are available in the **Appendix B**.

Another 63 junior middle school students, 27 males and 36 females aged between 13 and 15 years, were selected to conduct an experiment between participants at two levels of a single factor, to judge the emotional valence caused by two versions of advertisement appeal materials. The single sample *t*-test was used for the data, and the score was compared with the theoretical mean. The results showed that the materials of emotional version raised significant negative emotions ($t(30) = -2.93$, $p = 0.006$, $M = 3.35$, $SD = 1.23$), but the material of rational version was not obvious ($t(31) = -0.21$, $p = 0.83$, $M = 3.94$, $SD = 1.67$).

2.1.5. Procedure

After reading the material, the subjects performed the operational inspection immediately (**Figure 1**). Subjects need to finish three choice questions related to the material information. In doing so, check the involvement of subjects. Only the subjects who finished all three questions correctly will have their data used.

2.1.6. Results

Using the advertising appeal framework as the independent variable, wild animal protection awareness and behavior as the dependent variable in the independent samples *t*-test, the results showed that the different advertising appeal framework has no significant influence on wild animal protection awareness and behavior among teenagers; see **Table 1**.

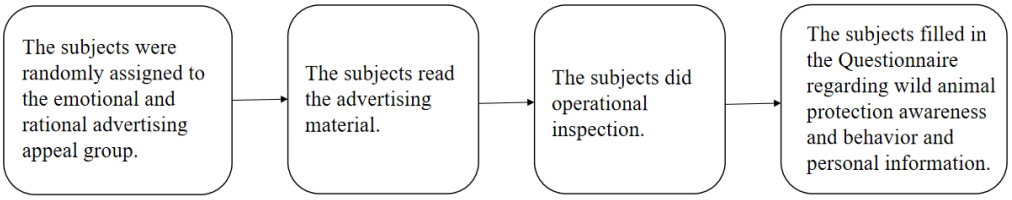

Figure 1. Flow Diagram for Experiment 1.

Table 1. Independent Sample *t*-Test of Advertising Appeal Framework on Wild Animal Protection Awareness and Behavior.

	Emotional ***M* ± *SD***	**Rational** ***M* ± *SD***	***t***	***df***	***p***	***Cohen's d***
Awareness	41.44 ± 4.43	40.97 ± 4.98	0.408	64	0.685	–
Behavior	19.94 ± 2.18	19.37 ± 3.00	0.879	64	0.383	–

2.1.7. Discussion

The results show that there is no significant influence in wild animal protection awareness and behavior between the two advertising appeal frameworks, which differ from the experimental expectations and previous studies of the advertising appeal framework[43–49]. The reasons may be that, firstly, owing to COVID-19 (coronavirus disease 2019), teenagers have a high awareness of wildlife protection and relevant behaviors. The scores of awareness (41.44 and 40.97) and behavior (19.94 and 19.37) were very high, which are nearly the full score (the awareness is 50, the behavior is 21), already reaching ceiling effect. Secondly, the way of words to show may be less attractive to the subject, so the feeling of the materials is not deep. Thirdly, although the emotional valence between the two versions of materials has no significant difference. The emotional intensity of the material may also affect the awareness and behavior on wild animal protection. Therefore, the author conducted additional experiment to determine whether there was a significant difference in emotional intensity between the two materials.

2.2. 1B Additional Experiment

Since there was no significant difference in the influence of rational and emotional advertising appeal framework on the awareness and behavior of wild animal protection among teenagers, the author judged that the emotional intensity evoked by experimental materials might have an impact on the subjects, so the additional experiment was conducted to detect the difference in the emotional intensity of the subjects evoked by the two materials.

2.2.1. Participants

The participants comprised 63 junior middle school students (17 males and 46 females) between 13 and 15 years of age.

2.2.2. Measures

The subjects judged the emotional intensity of the material. The question "The emotional degree of material" was shown to the subjects, with 1 being strongly disagree and 7 being strongly agree.

2.2.3. Design

In this experiment, two levels of a single factor were adopted as an experimental design. The advertising appeal is the independent variable and emotional intensity is the dependent variable.

2.2.4. Results

The independent sample *t*-test was used in this study. The results showed that there was no significant difference in the emotional intensity induced between two materials (M_{rational} = 3.99, SD_{rational} = 1.66; $M_{\text{emotional}}$ = 3.35, $SD_{\text{emotional}}$ = 1.23, t = 1.58, p = 0.02).

2.2.5. Discussion

Combined with the additional experimental results, the analysis shows that the framework of the rational and emotional appeals had no significant impact on the awareness and behavior regarding wild animal protection among teenagers. The reason may be that there is no significant difference in emotional value and intensity between the rational and emotional advertising appeal frames, while the rational

advertising appeal frame also led to negative emotions. If the author is manipulating emotional valence, perhaps the awareness and behavior on animal protection would be different. Therefore, study 2 was designed to explore further the influence of different emotional valence on the awareness and behavior related to wild animal protection among teenagers.

3. Experiment 2

The second study explored the interaction between the information presented by the attribute frame and the emotional valence triggered by the picture. In order to explore the effect of the matching degree of the information seen and the emotional valence perceived by the subjects on their wild animal protection awareness and behavior, under the following hypotheses.

Hypothesis 0. *There was no significant difference in the influence of different emotional valence and attribute framework on teenagers' wild animal protection awareness and behavior. Whether positive or negative emotions, the two frameworks have no influence on teenagers' wild animal protection awareness and behavior.*

Hypothesis 1. *Both emotional valence and attribute framework can stimulate teenagers' wild animal protection awareness and behavior. Under the negative framework, negative emotions happen more strongly than positive emotions; and (3) Under positive emotions, positive framework happens more strongly than negative framework.*

3.1. 2A Preliminary Experiments: Experimental Material Determination

3.1.1. The Picture Material

1) Participants

The participants were 43 valid junior middle school students, 16 males and 27 females, aged 13 to 15.

2) Measures

The students rated each picture on a seven-point scale: 1 = triggers positive or negative mood of lowest intensity, 7 = triggers highest positive or negative emotional intensity.

Materials

Twenty positive and twenty negative pictures were selected on various websites, then adjusted to shape the appearance of the same size using a picture editor and inserted into the questionnaire.

3) Procedure

Every subject judges the degree and valence of emotion in all pictures. And then the author ordered all the pictures based on the score.

4) Results

The nine pictures with the highest levels of positive emotions were chosen for the positive material ($ps < 0.001$). The nine pictures with the highest levels of negative emotions were chosen for the negative material ($ps < 0.001$). See **Figure 2**, **Figure 3** and **Appendix C Figures A1** and **A2**.

Figure 2. An Example of Positive Pictures.

Figure 3. An Example of Negative Pictures.

3.1.2. The Text Material

1) Participants

The other participants were 64 junior middle school students, 26 males and 38 females, aged 14 to 16.

2) Measures

The subjects judged the attribute framework of the material. The question "The emotional valence and intensity of material" was shown to the subjects, with 1 being strongly disagree and 7 being strongly agree.

3) Materials

The material adapted the real wildlife situation of a wild animal protection website into versions with positively and negatively framed information. Positive framing materials described the survival rate of wildlife, and negative framing materials described the extinction rate of wildlife. The materials for the positive framework and the negative framework are given in **Appendix D**.

4) Results

The single sample *t*-test was used for the data, and the test value was 4 (theoretical mean). The results showed that the positive framework material induced significant positive emotions ($t(32) = 2.68$, $p = 0.011$, $M = 4.61$, $SD = 1.30$), and the negative framework material induced significant negative emotions ($t(30) = –3.86$, $p = 0.001$, $M = 3.13$, $SD = 1.26$). There were significant differences in emotional valence between the two framework materials ($t(62) = 4.62$, $p < 0.001$).

3.2. 2B Formal Experiments

3.2.1. Participants

The 157 valid students were selected from a senior high school in Beijing, China, 82 males and 75 females, aged 14 to 16. They were randomly divided into four groups.

3.2.2. Measures

The wild animal protection awareness and behavior questionnaire used in this study is the same as that in Experiment 1.

3.2.3. Design

2 (emotional valence: positive vs. negative) × 2 (framework: positive vs. negative) experimental design was adopted. The independent variables were emotional valence and framework, and the emotional valence was positive and negative, respectively. The dependent variables were wild animal protection awareness and behavior.

3.2.4. Materials

All pictures and information framework used in this experiment were selected from Experiment 2A.

3.2.5. Procedure

After viewing pictures and reading material, the subjects performed the operational inspection immediately (**Figure 4**). Subjects need to finish three choice questions related to the material information. In doing so, check the involvement of subjects. Only the subjects who finished all three questions correctly will have their data used.

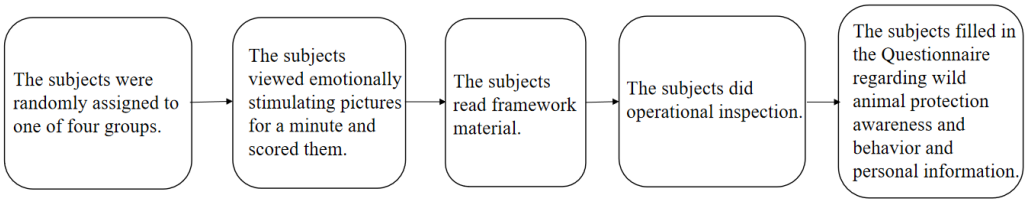

Figure 4. Flow Diagram for Experiment 2.

3.2.6. Results

The effects of emotional valence and framework on animal protection awareness and behavior have been shown in **Table 2**. There were main effects and interaction effects of emotional valence and framework on awareness and behavior of wild animal protection among teenagers. For teenagers' wild animal protection awareness and behavior, under the negative framework, negative emotions happen more strongly than positive emotions ($p_{\text{awareness}} < 0.001$; $p_{\text{behavior}} < 0.005$). Under positive emotions, positive framework happens more strongly than negative framework ($p < 0.001$). See **Figures 5** and **6**.

3.2.7. Discussion

The influence of negative emotion under negative framework. The results showed that, under the negative framework, negative emotions happen more strongly than positive emotions of awareness and behavior on wild animal protection. On the one hand, the positive or negative frameworks operate as positive or negative primes and activate either positive or negative associations, leading to biased evaluations [50,51]. When the participants were in a negative framework, the pessimistic estimation of the living environment of the protected animals led to an increase in protection awareness and behaviors. It is found that individuals faced a negative emotional

message framework are more likely to be persuaded by a bad state, which indicates that the good matching of individual emotional valence and the emotional framework of the message has a strong persuasion effect[52]. On the other hand, according to the ELM, some scholars believe that, under negative emotions, decision-makers will fine-process existing cognitive resources in order to get rid of the current negative emotions, so they are more susceptible to the influence of an information framework[53,54]. Therefore, under the influence of negative framework information, individuals are more likely to break away from the negative emotion and then raise awareness and behavior of wild animal protection.

Table 2. The Influence of Framework and Emotional Valence on Teenagers' Wild Animal Protection Awareness and Behavior.

	Positive Framework (N = 91)		**Negative Framework (N = 66)**		**Emotion**		**Frame**		**Emotion × Frame**	
	Positive Emotion (N = 44)	**Negative Emotion (N = 47)**	**Positive Emotion (N = 31)**	**Negative Emotion (N = 35)**						
	M* ± *SD	***M* ± *SD***	***M* ± *SD***	***M* ± *SD***	***F***	η^2	***F***	η^2	***F***	η^2
Awareness	40.56 ± 3.76	40.85 ± 4.94	20.45 ± 8.05	42.76 ± 1.90	217.50*	0.58	141.12*	0.47	206.49*	0.56
Behavior	17.42 ± 2.31	18.15 ± 3.68	9.23 ± 2.97	17.33 ± 1.49	105.62*	0.40	109.73*	0.41	73.47*	0.31

Note: * $p < 0.05$.

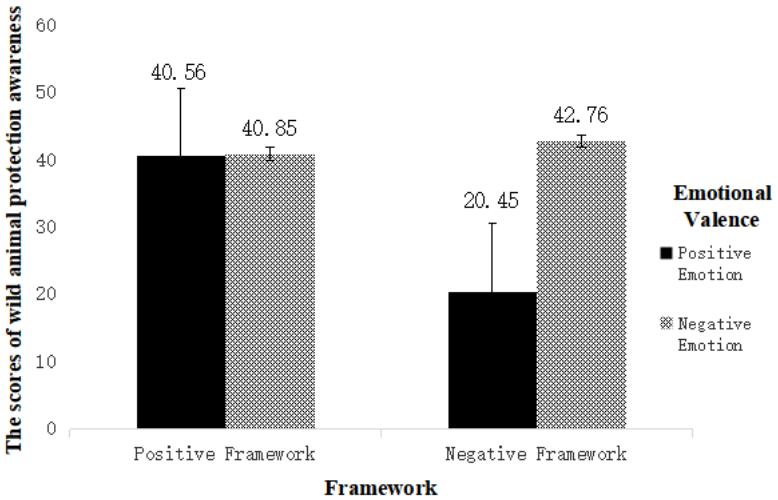

Figure 5. Analysis of the Interaction Between Framework and Emotional Valence on Influencing Wild Animal Protection Awareness.

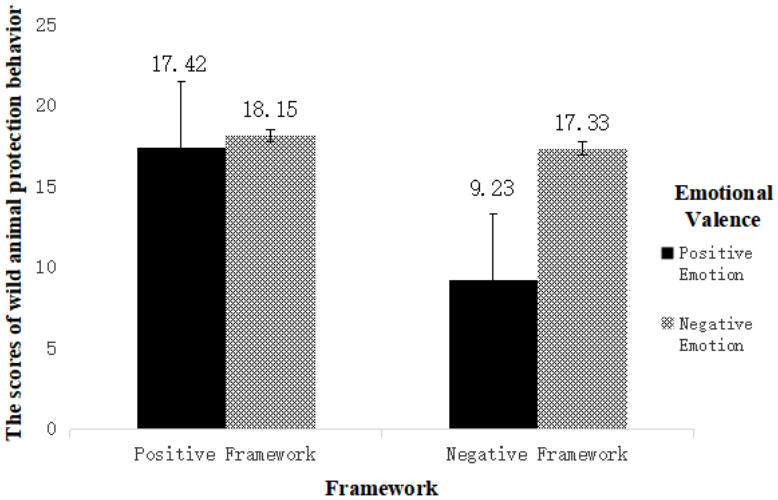

Figure 6. Analysis of the Interaction Between Framework and Emotional Valence on Influencing Wild Animal Protection Behavior.

On the contrary, under the positive framework, emotions did not affect the teenagers' wild animal protection awareness and behaviors. The reasons may be, firstly, that one study has shown that a positive framework produces more persuasion for happy and angry participants [55]. In this experiment, positive pictures triggered strong emotions of happiness and negative pictures triggered strong emotions of anger, both of which had a strong persuasive effect on individuals under a positive framework. Secondly, the view of ELM shows that, when faced with positive information, decision-makers engage in less autonomous and sophisticated analysis [56,57]. Therefore, in a positive framework, the participants did not think carefully about what they were facing and rarely made changes, so they were affected by the framework impossibly. Thirdly, participants under the influence of the positive framework experienced more optimistic emotions, which led to their optimistic estimation of the current living environment of wild animals, so they did not change their behavior greatly. Finally, studies of the framework indicate that individuals are risk-averse for a decision framework with gains but risk-seeking for a decision framework with losses [58]. When the information presented to individuals is positive, which is equivalent to a gain framework, they are more willing to practice risk aversion; that is, they have little desire to take part in wild animal protection activities. When the information presented to the participants is negative, which is equivalent to a loss framework, they are more willing to take risks; that is, they are willing to take part in activities to protect animals.

The influence of positive framework under positive emotion. The results of this study also show that, under positive emotions, positive framework happens more strongly than negative framework of awareness and behavior on wild animal protection. For one thing, under positive emotions, people feel comfortable because they do not need to activate more cognitive resources. A previous study has shown that individuals are more optimistic when they are in a good mood and more pessimistic when they are in a bad mood [59]. For another, according to Regulatory Fit Theory, individuals are more likely to be persuaded to take action when their emotions match the frame information. At the same time, when individuals are in positive emotions, they are not prone to cognitive dissonance in the face of a positive information frame. Therefore, individuals in a positive framework tend to show more wild animal protection.

In contrast, under negative emotions, frameworks did not affect the teenagers' wild animal protection awareness and behaviors. This differs from previous results in which there was a significant interactive effect between negative emotion and framework [60]. In the first place, one study found that when an individual is in a negative emotional state, the negative information framework will stimulate more donating behavior and a better psychological experience [61,62]. In the second place, according to ELM, individuals with high involvement are not easily persuaded by any framework [63]. Individuals who are in the midst of an epidemic receive a lot of information related to wild animal protection and are more involved in the issue. Thus, subjects who were induced to experience negative emotions were not affected by the framework information.

Avoiding Cognitive Dissonance. The results showed that the combination of a negative framework and positive emotion made the teenagers have the least awareness and behavior related to wild animal protection. The reason may be that the participants developed cognitive dissonance [19]. After reading about the extinction of wild animals, the participants were unable to associate it with scenes of wild animals living happily, leading to cognitive dissonance. Moreover, owing to information mismatch, individuals will consume more cognitive resources and are more susceptible to the influence of the information framework [13,14]: negative framing reduced the persuasive power of the participants. Therefore, they cared less about wild animal protection and were not willing to participate in wild animal protection activities.

4. General Discussion

4.1. Suggestions

The results showed that both "the negative emotion under the negative framework" and "the positive framework under the positive emotion" could significantly influence the wild animal protection awareness and behavior among teenagers. Therefore, designing publicity for wildlife protection, the propaganda department, environmental groups and social scientists should pay attention to the degree of matching of teenagers' emotions with the situation, so as to carry out the publicity work according to the situation. For

example, in the context of the current epidemic situation, people's attitude towards the living environment of wild animals is in a negative state. When promoting wild animal protection, negative information such as the number of endangered species of wild animals and their poor living environment can be added to promote the protection of wildlife.

4.2. Limitations and Future Directions

The limitations of this study are as follows. Firstly, different emotions have different effects on the framework and awareness of wild animal protection. Studies have shown that the emotions of disgust and fear significantly and negatively influence human willingness to protect animals[58]. The ranking of emotional experience has some value in enhancing persuasion; for example, hope is a key mediator between gain-framed messages and desired climate change policy attitudes and advocacy[59]. Research shows that fear increases risk-averse choices, while anger reduces risk-averse choices[60]. Therefore, subsequent experiments should explore which specific emotions have a more significant impact on the information framework for wild animal protection. Secondly, compared with neutral emotion initiation, a positive emotion will produce related potential changes[61], and when people make decisions, they will use different brain networks[62]. Therefore, future studies can explore what kind of specific emotion can make subjects produce more protective behaviors. Thirdly, in this study, text and pictures were used to induce emotions in the subjects. In subsequent experiments, audio, video and other more attractive methods could be adopted to induce emotions, which might have more obvious effects. Finally, the research materials in this paper are mainly related to wild animals, and the protection of domestic animals should also receive our attention. Research has shown that people who commit intimate partner violence are more likely to abuse their companion animals[62]. There are also popular poems about animals that have been widely cited by lawmakers advocating animal welfare laws, such as Martin's 1822 Act, which protects livestock[63]. Therefore, in the following research on wild animal protection, the similarities and differences between domestic and wildlife protection measures can be further discussed.

5. Conclusions

The unity of framework and emotion has the most significant influence on the consciousness and behavior of wild animal protection. It is mainly reflected in the following aspects that under positive emotion, the positive frame has a significantly higher influence on wild animal protection awareness and behavior than the negative frame; In the negative frame, the negative emotion has a significantly higher impact on the awareness and behavior of wild animal protection than the positive emotion. This shows that when publicizing wild animal protection, we can pay attention to the unity of content and emotion to achieve better publicity effects.

Author Contributions

Conceptualization, W.Z., J.Y. and P.Z.; methodology, W.Z.; formal analysis, W.Z.; investigation, W.Z.; data curation, W.Z.; writing—original draft preparation, W.Z.; writing—review and editing, W.Z., J.Y. and P.Z. All authors have read and agreed to the published version of the manuscript.

Funding

This work was supported by the "Research Projects Foundation Oriented Towards Characteristic Disciplines of BUU" (2017), China, grant number [KYDE40201705].

Institutional Review Board Statement

Not applicable.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

All data in this article is available.

Acknowledgments

We thank International Science Editing (http://www.internationalscienceediting.com) for editing this manuscript.

Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

Appendix A. Animal Protection Awareness Questionnaire (Partial Questions)

Each question in this questionnaire has five alternative answers (strongly disagree, disagree, unsure, agree, strongly agree). Please circle your choice.

1) We are approaching the limit of the number of people the earth can support
2) Plants and animals have as much right as humans to exist.
3) Despite our special abilities humans are still subject to the laws of nature.

Appendix B

- Emotional Advertising Appeal Framework

1. Please read the following carefully and answer the questions.

My name is Lisa, and I'm a beluga whale, a relatively small toothed whale, and I have about 40,000 to 80,000 friends. When I was born, my skin was brown and gray, but as an adult, it turned bright white. When I grow up, I will grow to about five and a half meters, and we beluga whales are the only whales that can move their necks and their heads up and down and left and right. We live in the Arctic Ocean and adjacent waters, foraging in shallow coastal waters in the summer and near the ice edge in the winter.

We are known for our loud, clear yell and because we like to "sing" we are also known as "Canary in the Sea". We often "sing" and can be heard on the sea, from boats, or on the shore. In a small village near the North Pole of Russia, a team of certified specialists takes up their job every year, spending six months or so domesticating us in the wild for amusement in the aquarium.

The 12-year-old beluga whale in the picture is my friend Petrovich, who moved to the aquarium last fall for the rest of his life and soon became accustomed to being hand-fed. But of the hundreds of friends who move to the aquarium each year, not all beluga whales adapt to their new life, with about half fending off hunger or feeling stressed until they die. Friends who live in the aquarium usually have to train for performances. The bad water, the touch of visitors, and the chemicals in the aquarium can all cause our skin to become infected. Constant training and an unnatural environment can cause us to secrete too much stomach acid due to stress, resulting in a perforated stomach, making captive beluga whales live far less than a third as long as their friends in the wild.

Currently, to protect belugas, humans have created new marine reserves, reduced pelagic fishing, rescued endangered whales (such as those stranded), and protected their food and environment, leaving them a peaceful and harmonious place to live and breed. A marine conservation group is calling for a "no beluga show, no petting, no kissing, no beluga back to nature" campaign, which requires supporters to sign their names on a public account. 1. To what extent do you support the activity? 2. What is your intention to participate in the activity? 3. What is your intention to participate in such activities in the future?

1 = very unwillingly; 2 = unwillingly; 3 = Somewhat unwillingly; 4 = neither unwillingly nor willingly; 5 = somewhat willingly; 6 = willingly; 7 = very willingly

- Rational Advertising Appeal Framework

1. Please read the following carefully and answer the questions.

The beluga is a relatively small toothed whale with a brown–gray skin at birth and a bright white skin at adulthood. There are between 40,000 and 80,000 beluga whales in the world. The adult beluga whale is about 5.5 meters long. It is the only whale that can move its neck and head up and down. Belugas are confined to the Arctic Ocean and adjacent

waters, foraging in shallow coastal waters in the summer and near the edge of the ice in the winter.

Beluga whales are known for their loud, clear calls. Because they like to "sing", they are also known as the "canary in the sea". They often "sing" and can be heard even on the surface of the sea, from boats, or on shore. In a small village near the North Pole of Russia, a team of certified specialists takes up their jobs each year, usually spending about six months domesticating wild beluga whales for the amusement of humans in an aquarium.

A 12-year-old beluga whale named Petrovich was captured last fall. He soon became accustomed to captivity and artificial feeding, and will soon be sent to an aquarium in Moscow for the rest of his life. Not all of the hundreds of beluga whales captured each year in the wild are well adapted to life after capture, with about half dying from hunger strikes or stress. Belugas kept in captivity at the aquarium are often forced to train for performances. Poor water quality, visitors' stroking, and chemicals can all lead to skin infections. Owing to constant training and an unnatural environment, beluga whales can produce too much stomach acid due to stress, resulting in a perforated stomach, which means their life expectancy in the ocean is less than a third of that in the wild.

Currently, to protect belugas, humans have created new marine reserves, reduced pelagic fishing, rescued endangered whales (such as those stranded), and protected their food and environment, leaving them a peaceful and harmonious place to live and breed. A Marine conservation group is calling for a "no beluga show, no petting, no kissing, no beluga back to nature" campaign, which requires supporters to sign their names on a public account. 1. To what extent do you support the activity? 2. What is your intention to participate in the activity? 3. What is your intention to participate in such activities in the future?

1 = very unwillingly; 2 = unwillingly; 3 = somewhat unwillingly; 4 = neither unwillingly nor willingly; 5 = somewhat willingly; 6 = willingly; 7 = very willingly

Appendix C

Figure A1. *Cont.*

Figure A1. The Positive Pictures.

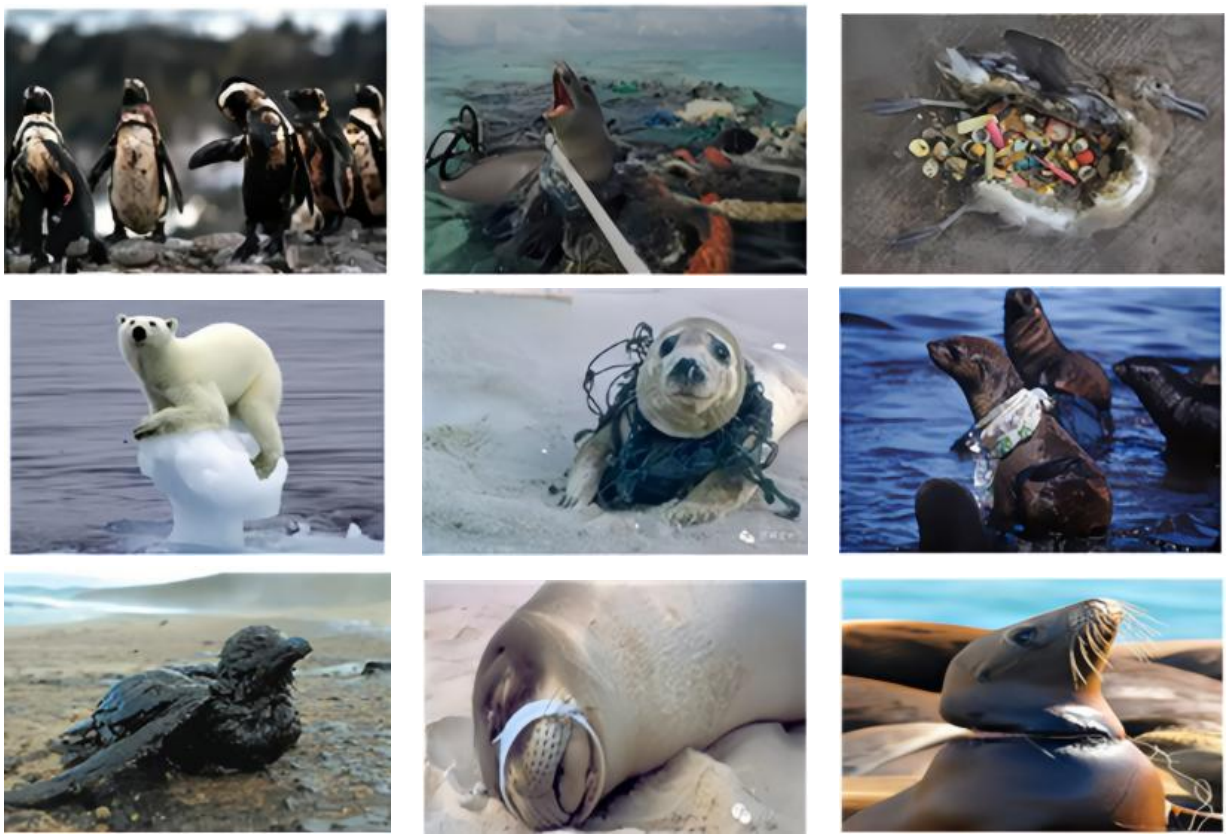

Figure A2. The Negative Pictures.

Appendix D

- Positive Framework

1. Please read the following carefully and answer the questions.

The earth where we live is very different from the environment in the past. Life has constantly transformed the earth's surface in the process of evolution. The diversity of the earth's environment is the result of continuous evolution after numerous disasters.

Some scientists believe that the reproduction of species has always been part of the process of life. Around the world, a large proportion of animal species are preserved, including 3/4 of mammals, 4/5 of reptiles, 3/4 of amphibians, 8/9 of birds and 2/3 of fish. The above information is only known to humankind today; we do not know how many unknown species are still alive.

At present, in order to protect wild animals, human beings have taken measures to strengthen the management of animal hunting and killing, prohibit excessive hunting and stealing, create a habitat for wild animals, solve the problem of food shortage, and rescue and breed wild animals. A wildlife protection group is calling for a campaign to "refuse

wildlife shows, refuse to keep wild animals in captivity, and let wild animals return to nature". People who support the campaign need to sign their names on a public account.

The following questions are required for students to answer, all of them are single choice, please circle your options, thank you for your cooperation!

1. There are ( ) kinds of mammal that are living.

A. 2/3 B. 2/4 C. 3/4 D. 3/5

2. There are ( ) species of reptiles that are living.

A. 1/2 B. 2/3 C. 3/4 D. 4/5

3. There are ( ) species of fish that are living.

A. 2/3 B. 1/4 C. 3/4 D. 3/5

4. To what extent do you support the campaign?

very unwillingly 1 2 3 4 5 6 7 very willingly

5. What is your intention to participate in the activity?

very unwillingly 1 2 3 4 5 6 7 very willingly

6. What is your intention to participate in such activities in the future?

very unwillingly 1 2 3 4 5 6 7 very willingly

- Negative Framework

1. Please read the following text carefully and answer the questions.

The earth where we live is very different from the environment in the past. Life has constantly transformed the earth's surface in the process of evolution. The diversity of the earth's environment is the result of continuous evolution after numerous disasters.

Some scientists believe that extinctions have always been part of the process. Animal species are disappearing at a rapid rate around the world, including 1/4 mammals, 1/5 reptiles, 1/4 amphibians, 1/9 birds and 1/5 fish species facing extinction. That's just what we know today, and we don't know how many unknown species are disappearing.

At present, in order to protect wild animals, human beings have taken measures to strengthen the management of animal hunting and killing, prohibit excessive hunting and stealing, create a habitat for wild animals, solve the problem of food shortage, and rescue and breed wild animals. A wildlife protection group is calling for a campaign to "refuse wildlife shows, refuse to keep wild animals in captivity, and let wild animals return to nature". People who support the campaign need to sign their names on a public account. The following questions are required for students to answer, all of them are single choice, please circle your options, thank you for your cooperation!

1. There are ( ) kinds of mammal that are endangered.

A.1/3 B.1/4 C.1/5 D.1/6

2. There are ( ) species of reptiles that are endangered.

A.1/3 B.1/4 C.1/5 D.1/6

3. There are ( ) species of fish that are endangered.

A.1/2 B1/3 C.2/3 D.1/4

4. To what extent do you support the campaign?

very unwillingly 1 2 3 4 5 6 7 very willingly

5. What is your intention to participate in the activity?

very unwillingly 1 2 3 4 5 6 7 very willingly

6.What is your intention to participate in such activities in the future?

very unwillingly 1 2 3 4 5 6 7 very willingly

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