# Public perception and acceptance on nuclear energy in China from questionnaire and education

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**Abstract:** China's nuclear industry is recently experiencing rapid development, creating a need for research into public perceptions and acceptance of nuclear power. In this paper, we propose a strategy for investigating public perception and acceptance in China, in a continuous and accurate way, and testing the effectiveness of public education in order to find a proper way to improve the perception and acceptance of nuclear energy in China. Questionnaires are conducted separately both before and after public education activities on nuclear energy held in Beijing. Some conclusions and future continuation of this study are also discussed.
**Keyword:** public perception and acceptance; nuclear energy; questionnaire

## 1 Introduction

Public acceptance plays a vital role for nuclear technologies in such areas as the operation and maintenance of nuclear power plants, as well as the management and disposal of spent fuel and radioactive waste. Although these technologies were at first accepted enthusiastically by the majority of general public, public concerns regarding the safety and sustainability of nuclear energy have been provoked by several severe accidents and scares involving radioactive waste, and as a result nuclear power in many countries and territories has ground to a halt, or even declined. A study found that TMI had a significant impact on public acceptance of nuclear power, increasing opposition to and decreasing support for the construction of new nuclear power plants [1] in the United States. In Japan, public acceptance of nuclear power dropped noticeably after a critical accident at the JCO uranium processing plant [2]. It has also been found that the safety of current nuclear technologies has not led to a concomitant raise of public acceptance of nuclear energy. A common explanation for the existing problems of public acceptance on nuclear energy held by the technical community and the nuclear industry is the issue of perception and education. Many studies have shown that a vast gap exists between the public's perceptions and the real scientific understanding of nuclear risk [3-5]. Some projects seeking public participation have been carried out in order to promote public acceptance of nuclear power [6-9].

On the other hand, the beginning of the 21st century has seen a resurgence of political debate over new nuclear energy generation as one potential aspect of future energy policy, which is considered advantageous due to its possible contribution to climate change mitigation and energy security. Korean commitment to nuclear power has been motivated by a series of considerations [10]: meeting electricity demand, reducing energy security, reducing greenhouse gas emission, et al. A survey showed that higher proportions of the British public are prepared to accept nuclear power if they believe it contributes to climate change mitigation [11].

China has recently been working to develop its nuclear industry to meet increasingly intense energy demand. Since public perception and acceptance seriously influence nuclear energy policies in a country, and nuclear energy is to some extent a newly developing energy resource in China, it is necessary to investigate the state of public perception and acceptance in China, and to try and find effective methods for improving the public's perception and

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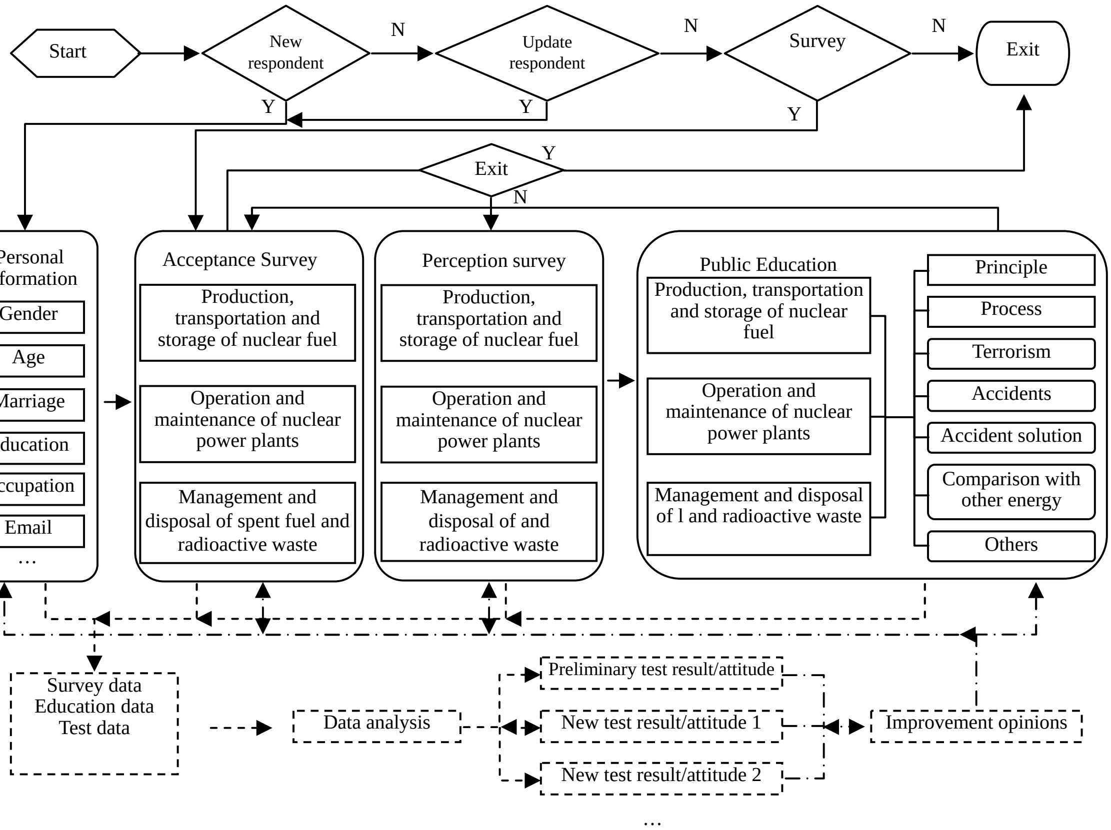


Fig.1 Flow chart of survey and education strategy

acceptance of nuclear energy. Studies of public acceptance are generally analyzed based on risk perception and risk decision-making, and approaches have been proposed to improve these methods [12]. Studies have also been conducted for the purpose of comprehending the state of the public's acceptance of nuclear energy, and to improve that perception [13-14]. These studies showed a common pattern in Chinese public perception and acceptance: a lack of awareness and knowledge about nuclear power, and a tendency to support the development of new nuclear power plants but only if “Not In My Back Yard” (NIMBY).

In this paper, we introduce a survey and education strategy to investigate and improve public perception and acceptance of nuclear energy. A preliminary questionnaire survey on public acceptance and perception of nuclear energy was conducted in Beijing, followed by a face-to-face public education sessions about nuclear energy, which was prepared specially for the target group. The same questionnaire was then later taken again by the same subjects, to investigate how the evolution of respondents’ acceptance toward nuclear energy was affected by the promotional activities intended to improve their perception of nuclear energy. Through these activities, we investigated the current state of public perception and acceptance in China, and were able to test the effectiveness of the face-to-face public education. These results will be useful for determining the most appropriate methods for improving public acceptance of nuclear energy. The subjects were divided into three broad groups: college students majoring in nuclear science, college students whose majors are not related to nuclear science, and off-campus residents from nearby communities. All respondents were also divided by age and educational background for further analysis.

The remainder of this paper is organized as follows. Section 2 describes the survey and education strategy and its basic design concept. Section 3 introduces the questionnaire and the public education given to the respondents participating in this research. Section 4 shows some typical results and provides a simple analysis of them. And finally, section 5 will give some brief conclusions and perspective work of this study.

## 2 Survey and education Strategy

Public perceptions of nuclear energy strongly influence the public's acceptance of nuclear energy. Long-term education may help to improve public perception of nuclear energy. We propose a survey and education strategy for investigating the state of public perception and acceptance, discovering the relationship between public perception and acceptance of nuclear energy, and for finding the most effective and reasonable way to improve public acceptance. Our strategy assumes that both the survey and education activities will be continually ongoing processes. The survey answers and profile data for each respondent will be kept up to date, as will the education materials, which will be improved by the survey results and feedback from the respondents.

The flow chart of this survey and education strategy is shown in Fig.1. A respondent's personal information is first recorded, and the survey is then taken by the respondent. The survey mainly consists of two parts, one on acceptance and one on perception. Particular education is then given to respondents to improve their perception. In addition, survey data and other related information will be analyzed to improve both the survey and the education materials.

## 3 Questionnaire and public education

In this paper, a survey and education strategy is employed for investigating China's public acceptance and perception of nuclear power, and for verifying current related educational materials. The activities conducted for the research described in this paper mainly consist of, as described in section 2, questionnaires, face-to-face education, and educational brochures. The survey and education activities started in February, 2008, and ended in April, 2008.

### 3.1 Questionnaire and investigation sample

3.1.1 Contents of questionnaire

The questionnaire in this paper consists of two parts, the first part being on public acceptance, and the second part being on public perception. Both parts were made in accordance with relevant theories such as risk analysis and public relations. The acceptance survey part mainly uses a five-point Likert-type scoring scale, which allows for respondent attitudes to be measured in numerical point scores. The perception part primarily consists of right/wrong answers. Each question in this part has only one correct answer.

The acceptance half contains 23 questions and the perception half contains 24 questions. The maximum possible score of this questionnaire is 104 points. The maximum score for the acceptance section of the survey is 80 points, and the maximum possible score for the perception section is 24 points. The higher the score, the higher the respondent's level of acceptance or perception. The content of the two sections, acceptance and perception, are shown respectively in Table 1 and Table 2.

3.1.2 Investigation sample

In this paper, respondents mainly included college students majoring in nuclear science and students whose majors are not related to nuclear science, such as journalism and communication, material science, etc. There were also many off-campus respondents with different vocations and diverse backgrounds.

The sample pool for this survey consisted of around 250 subjects. Of those, around 209 people provided valid responses. Table 3 shows the respondents broken down by age, gender and educational background.

### 3.2 Public education

The education activities consisted of face-to-face communication and explanation, as well as an educational pamphlet which introduces the basics of nuclear knowledge. The face-to-face education was conducted in one-to-one sessions, held by college students majoring in nuclear science and teachers working in nuclear fields at Tsinghua University. The education brochure was mainly composed of graphs and pictures, with some text explanations when necessary.

The content of the educational materials mainly consisted of the following three aspects:

- Operation and maintenance of Nuclear Power Plants
- Production, transport and storage of nuclear fuel
- Management and disposal of radioactive waste

# 4 Results and brief analysis

The questionnaire was initially taken by all respondents before they underwent the education sessions, after which some of the subjects were then asked to complete the questionnaire a second time one week after the public education. This section will describe the results of the survey and offer some brief conclusions.

**Table 1 Questionnaire for public acceptance on nuclear power**

| NO | Question | Option item for answer | | Score |
|---|---|---|---|---|
| 1 | What do you think about the energy situation in China, without including nuclear energy? | A. | Very good | 1 |
| | | B. | Good | 2 |
| | | C. | Fair | 3 |
| | | D. | Bad | 4 |
| | | E. | Very bad | 5 |
| 2 | What do you think about local electricity production, without including nuclear power? | A. | Very sufficient | 1 |
| | | B. | Sufficient | 2 |
| | | C. | Fair | 3 |
| | | D. | Short | 4 |
| | | E. | Very short | 5 |
| 3 | What is your opinion of nuclear power? | A. | Very favorable | 5 |
| | | B. | Favorable | 4 |
| | | C. | Fair | 3 |
| | | D. | Averse | 2 |
| | | E. | Very averse | 1 |
| 4 | When you see the word “Nuclear”, what do you imagine? | A. | Electricity | 5 |
| | | B. | Atomic bomb | 1 |
| | | C. | Terrorism | 2 |
| | | D. | Space exploration | 4 |
| | | E. | Radioactivity | 3 |
| 5 | The most dangerous type of power plant is: | A. | Thermal power plant using coal | 2 |
| | | B. | Hydroelectric plant | 3 |
| | | C. | Nuclear power plant | 1 |
| | | D. | Wind power plant | 4 |
| 6 | How concerned are you about the development of nuclear power? | A. | Very high | 3 |
| | | B. | Middle | 2 |
| | | C. | Very low | 1 |
| 7 | What do you think about the communication regarding nuclear power between the public and the government? | A. | Very good | 5 |
| | | B. | Good | 4 |
| | | C. | Fair | 3 |
| | | D. | Bad | 2 |
| | | E. | Very bad | 1 |
| 8 | The country whose nuclear power is most developed is: | A. | U.S.A | 0 |
| | | B. | Japan | 0 |
| | | C. | China | 0 |
| | | D. | Germany | 0 |
| | | E. | Russia | 0 |
| 9 | Should the public be taught about nuclear power? | A. | Certainly need | 4 |
| | | B. | Need | 3 |
| | | C. | Fair | 2 |
| | | D. | No need | 1 |
| 10 | Would you agree to the construction of a nuclear power plant 2-5 kilometer far away from your home? | A. | Yes | 2 |
| | | B. | No | 0 |
| | | C. | I have no idea about this question | 1 |
| 11 | What is the minimum safe distance between your home and a nuclear power plant? | A. | 5 kilometers | 5 |
| | | B. | 10 kilometers | 4 |
| | | C. | 20 kilometers | 3 |
| | | D. | 100 kilometers | 2 |
| | | E. | 500 kilometers | 1 |

| | | | | |
|---|---|---|---|---|
| | | F. | 1000 kilometers | 0 |
| | | G. | More than all above | 0 |
| 12 | Which of these potential concerns regarding nuclear power bothers you the most? | A. | Radioactivity leak due to accident | 0 |
| | | B. | Influence on environment and nearby residences during normal operation | 0 |
| | | C. | Terrorist attack on nuclear power plant | 0 |
| 13 | If an accident occurs at a nuclear power plant which results in the plant becoming unusable, and brings about danger of a radiation leak to the surrounding area, what would your stance on future support be? | A. | Support | 3 |
| | | B. | Oppose | 1 |
| | | C. | None of above | 2 |
| 14 | After you learned of the Three Mile Island failure, you : | A. | Feel threatened by the danger of nuclear meltdown | 1 |
| | | B. | Began to oppose the construction of nuclear power plant | 2 |
| | | C. | Began to feel concerned about nuclear power | 3 |
| | | D. | Were not influenced by it | 4 |
| 15 | What do you think about the mining of uranium ore versus other metal ore deposits? | A. | The mining of uranium ore is safer | 5 |
| | | B. | The mining of uranium ore is safer than the majority of others | 4 |
| | | C. | Equally dangerous | 3 |
| | | D. | The mining of uranium ore is more dangerous than the majority of others | 2 |
| | | E. | The mining of uranium ore is more dangerous | 1 |
| 16 | Your greatest concern regarding the localization and construction of nuclear power plants is: | A. | Rationality of localization | 0 |
| | | B. | Quality of building construction | 0 |
| | | C. | Design of safety measures | 0 |
| | | D. | Purchase and setup of equipment | 0 |
| 17 | What is the minimum safe distance between your home and the mining of uranium ore? | A. | 5km | 5 |
| | | B. | 10km | 4 |
| | | C. | 20km | 3 |
| | | D. | 100km | 2 |
| | | E. | 500km | 1 |
| | | F. | 1000km | 0 |
| | | G. | More than all above | 0 |
| 18 | What is the minimum safe distance between your home and a high-level radioactive waste disposal site? | A. | 5km | 5 |
| | | B. | 10km | 4 |
| | | C. | 20km | 3 |
| | | D. | 100km | 2 |
| | | E. | 500km | 1 |
| | | F. | 1000km | 0 |
| | | G. | More than all above | 0 |
| 19 | How do you feel about the storage of high-level radioactive waste stores under the ice cap in Antarctica? | A. | Very favorable | 5 |
| | | B. | Favorable | 4 |
| | | C. | Fair | 3 |
| | | D. | Averse | 2 |
| | | E. | Very averse | 1 |
| 20 | How do you feel about the disposal of high-level radioactive waste in China? | A. | Very good | 5 |
| | | B. | Good | 4 |
| | | C. | Fair | 3 |
| | | D. | Bad | 2 |
| | | E. | Very bad | 1 |
| 21 | In the future, the use of atomic bomb is: | A. | Inevitable | 1 |
| | | B. | Impossible | 2 |
| 22 | The North Korean and Iranian nuclear issues should be solved: | A. | By war. | 1 |
| | | B. | By Multilateral Negotiation | 2 |
| | | C. | By international restrictions | 3 |
| 23 | The advantages of nuclear power include: (free response) | | | |

**Table 2 Questionnaire for public perception on nuclear power**

| NO | Question | Option item for answer | |
|---|---|---|---|
| 1 | Nuclear energy is: | A. | Renewable energy |
| | | B. | Non-renewable energy |
| | | C. | I have no idea about this question |
| 2 | At present, nuclear power occupies around what percent (%) of the world's electricity production? | A. | 1% |
| | | B. | 9% |
| | | C. | 16% |
| | | D. | 20% |
| | | E. | I have no idea about this question |
| 3 | At present, nuclear power occupies around what percent (%) of Chinese electricity production? | A. | 1% |
| | | B. | 2% |
| | | C. | 5% |
| | | D. | 10% |
| | | E. | I have no idea about this question |
| 4 | What kind of nuclear reaction drives current nuclear power plants? | A. | Nuclear fission |
| | | B. | Nuclear fusion |
| | | C. | I have no idea about this question |
| 5 | Which place is not the site of a nuclear power plant? | A. | Qin shan at Jiangsu Province |
| | | B. | Daya Bay at Guangdong Province |
| | | C. | Sanmeng at Zhejiang Province |
| | | D. | Lanzhou at Gansu Province |
| | | E. | I have no idea about this question |
| 6 | At present, what is the main kind of fuel used by nuclear power plants? | A. | U |
| | | B. | Pu |
| | | C. | Pt |
| | | D. | Au |
| | | E. | None of above |
| 7 | The most popular type of reactor is a: | A. | Pressurized Water Reactor (PWR) |
| | | B. | Boiling Water Reactor (BWR) |
| | | C. | CANada Deuterium Uranium (CANDU) |
| | | D. | Fast Breeder Reactor (FBR) |
| | | E. | None of above |
| 8 | Which kind of reactor can use natural Uranium as fuel? | A. | Pressurized Water Reactor (PWR) |
| | | B. | Boiling Water Reactor (BWR) |
| | | C. | CANada Deuterium Uranium (CANDU) |
| | | D. | Fast Breeder Reactor (FBR) |
| | | E. | None of above |
| 9 | Which nuclear power plants use a CANada Deuterium Uranium (CANDU) reactor? | A. | Daya Bay at Guangdong Province |
| | | B. | Qin shan II at Jiangsu Province |
| | | C. | Qin shan III at Jiangsu Province |
| | | D. | Sanmeng at Zhejiang Province |
| | | E. | I have no idea about this question |
| 10 | At present, why can nuclear fusion not be used for power generation? | A. | No suitable nuclear fuel exists |
| | | B. | Reaction rate is two quick |
| | | C. | High pressure and temperature cannot be achieved and held |
| | | D. | Force of repulsion between nucleons |
| | | E. | I have no idea about this question |
| 11 | The coolant used in nuclear power plants mainly consists of what substance? | A. | Light water ($H_2O$) |
| | | B. | Heavy water ($D_2O$) |
| | | C. | Graphite |
| | | D. | Natrium |
| | | E. | I have no idea about this question |
| 12 | Fuel in a Pressurized Water Reactor is replaced every how often? | A. | 1 months |
| | | B. | 3 months |
| | | C. | 6 months |
| | | D. | 12 months |
| | | E. | I have no idea about this question |

| | | |
|---|---|---|
| 13 | Most natural uranium is: | A. U-234<br>B. U-235<br>C. U-238<br>D. I have no idea about this question |
| 14 | The enrichment level of uranium in a normal Pressurized Water Reactor is: | A. 2%<br>B. 3%<br>C. 8%<br>D. 10%<br>E. I have no idea about this question |
| 15 | What f material is used by Gaseous Diffusion Plant for the enrichment of Uranium? | A. $U_3O_8$<br>B. U<br>C. $UF_6$<br>D. $UO_2$<br>E. I have no idea about this question |
| 16 | Radioactive liquid waste from nuclear power plants should be: | A. Discharged after treatment<br>B. Chemical disposal<br>C. Solidified and isolated from Biosphere after treatment<br>D. I have no idea about this question |
| 17 | Medium or low level radioactive solid waste should be stored in: | A. Wooden cases<br>B. Plastic casks<br>C. Steel drums<br>D. Anything is OK<br>E. I have no idea about this question |
| 18 | The list of active medium and low-level radioactive waste disposal sites in China does <u>not</u> include which of the following? | A. Northwest disposal site<br>B. Northeast disposal site<br>C. Beilong disposal site in Guangdong Province<br>D. I have no idea about this question |
| 19 | High-level Radioactive Waste will be permanently disposed of using which method? | A. Underwater in a spent fuel pool<br>B. Steel cylinders at an outdoor storage yard<br>C. Air storage<br>D. Underground repository<br>E. I have no idea about this question |
| 20 | Natural radioactivity include: | A. Cosmic rays<br>B. Radioactivity from grounds and building<br>C. Radioactivity from the body<br>D. Radioactivity from medical examination<br>E. I have no idea about this question |
| 21 | When a nuclear accident happens, the nearby resident should <u>not:</u> | A. Close doors and windows and watch TV.<br>B. Go to a confined building and wear masks<br>C. Eat Iodine according to instrument<br>D. Go to open ground<br>E. None of above |
| 22 | What is the enrichment level of nuclear material in an atomic bomb? | A. 10%<br>B. 20%<br>C. 50%<br>D. 80%<br>E. 90%<br>F. I have no idea about this question |
| 23 | Atomic bombs act through: | A. Nuclear fission<br>B. Nuclear fusion<br>C. I have no idea about this question |
| 24 | The only actual usage of an atomic bomb weapon so far has been where? | A. Berlin in Germany<br>B. Paris in France<br>C. Hiroshima and Nagasaki in Japan<br>D. Moscow in U.S.S.R.<br>E. None of above |

**Table 3 Composition of investigation sample**

| Dividing item | Groups | Percentage of sample |
|---|---|---|
| Age | Under 18 | 2.9% |
| | 18~29 | 48.3% |
| | 30~39 | 20.1% |
| | 40~49 | 2.9% |
| Education level | Primary school | 1.9% |
| | Junior high school | 7.2% |
| | Senior high school and technical secondary school | 17.9% |
| | Junior college | 9.7% |
| | Undergraduate | 54.6% |
| | Master | 8.2% |
| Sex | Male | 62.9% |
| | Female | 37.1% |

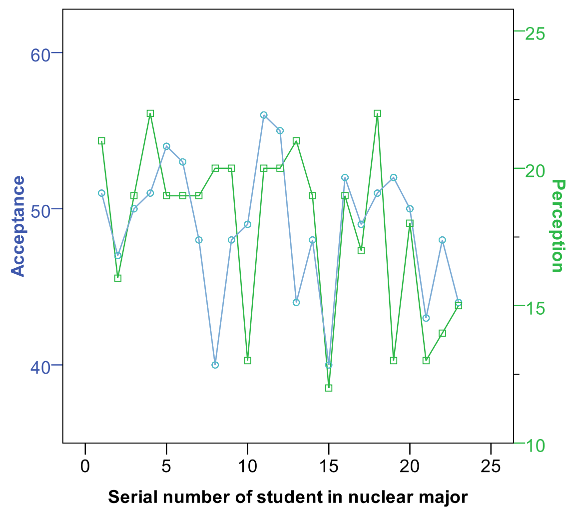


Fig.2 Acceptance and perception scores of students majoring in nuclear science

## 4.1 Survey results before public education

Figure 2 shows the acceptance and perception scores of students majoring in nuclear science. In this figure, the x-axis indicates the serial numbers of students majoring in nuclear science. The curve labeled with with circles represents the acceptance score of the respondents, which is indicated on the left ordinate (y-axis). The curve labeled with squares represents the perception score of the respondents, which is indicated on the right ordinate (y-axis). The average acceptance score of this investigation sample is 48.8 points, out of a maximum score of 80 points. The average perception score of this investigation sample is 17.87 points, out of a maximum possible score of 24 points. For the students majoring in nuclear science, the Pearson correlation coefficient between their acceptance score and perception score is 0.39.

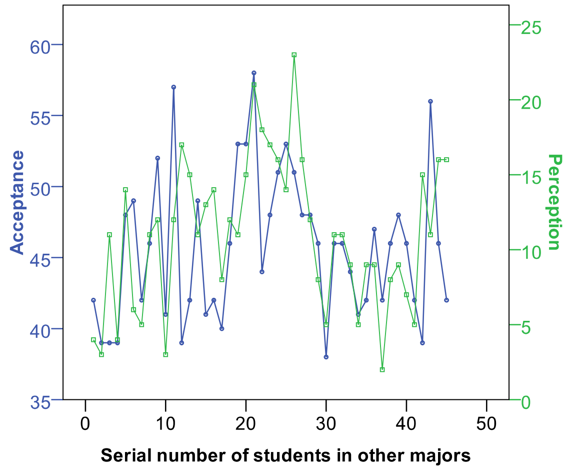


Fig.3 Acceptance and perception scores of students whose majors are not related to nuclear science

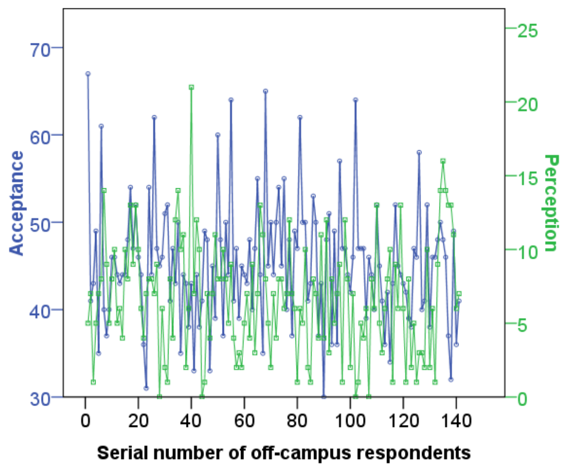


Fig.4 Acceptance and perception of off-campus respondents

Figure 3 shows the acceptance and perception score of students not majoring in nuclear science. In this figure, the x-axis represents the serial numbers of the students whose majors are not related to nuclear science. The curve labeled with circles represents the acceptance score of the respondents, which is indicated on the left ordinate (y-axis). The curve labeled with squares represents the perception score of the respondents, which is indicated on the right ordinate. The average acceptance score of this sample is 46.71 points, out of a maximum possible score of 80 points. The average perception score of this investigation sample is 10.98 points, out of a maximum possible score of

24 points. For students whose majors are related to nuclear science, the Pearson correlation coefficient between the acceptance score and perception score is 0.443.

Figure 4 shows the acceptance and perception scores of off-campus respondents. In this figure, the x-axis represents the serial numbers of the students whose majors are not related to nuclear science. The curve labeled with circles represents the acceptance score of the respondents, which is indicated on the left ordinate (y-axis). The curve labeled with squares represents the perception score of the respondents, which is indicated on the right ordinate. The average acceptance score of this investigation sample is 45.29 points, out of a maximum possible score of 80 points. The average perception score of this investigation sample is 6.74 points, out of a maximum possible score of 24 points. For the off-campus respondents, the Pearson correlation coefficient between the acceptance score and the perception score is 0.002.

Based on the data obtained from the initial survey, we can see that the average score of college students is higher than that of off-campus respondents, and of college students, those majoring in nuclear science had the highest score of all cohorts, in both acceptance and perception scores. For the college students, regardless of major, the perception score has a high correlation coefficient with the acceptance score, which means they have high levels of both perception and acceptance. For the off-campus respondents, the perception score has no obvious correlation coefficient with acceptance score.

The survey data was also analyzed in terms of the respondents' age and education background. Respondents were divided into five age groups and seven education level groups, based on the maximum level of education they have completed. Age group 1 represents those under 18 years of age, 2 represents those 18~29, group 3 is 30~39, group 4 is 40~49, and group 5 is those over 50 years old. For level of education, group 1 is those respondents who have completed primary school, group 2 is junior high school, group 3 is senior high school or technical secondary school, group 4 is junior college, group 5 is 4 year university graduates, group 6 are those with a master's degree, and group 7 represents those with doctor level education.

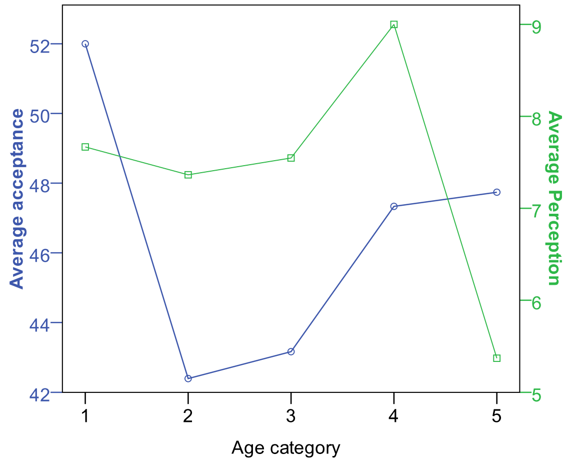


Fig.5 Average acceptance and perception score by age group

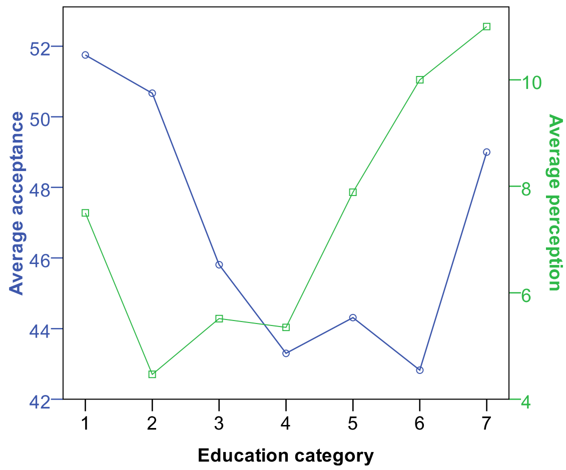


Fig.6 Average acceptance and perception by educational background group

Figure 5 shows the acceptance and perception score of the various age groups. In this figure, the x-axis indicates the serial numbers of the various age groups. The curve labeled with circles represents the acceptance score of the respondents, which is indicated on the left ordinate (y-axis). The curve labeled with squares represents the perception score of the respondents, which is indicated on the right ordinate. From the survey results, we can see that the average acceptance score for respondents aged 18 to 29 is the lowest, while respondents under 18 years old have the highest acceptance scores. Respondents aged 40~49 have the highest perception scores, but their acceptance score is relatively low.

Figure 6 shows the acceptance and perception scores of the various education level groups. In this figure, the x-axis represents the serial numbers of the various education level groups. The curve labeled with circles represents the acceptance score of the respondents, which is indicated on the left ordinate (y-axis). The line curve labeled with squares represents the perception score of the respondents, which is indicated on the right ordinate. Respondents whose highest level of education is primary school had higher acceptance scores than the other groups, which indicates that a higher level of education does not lead to a higher acceptance score.

### 4.2 Results of survey held after public education

Following the public education activities on nuclear energy, the acceptance and perception scores of the respondents was compared with their scores from before the education activity. The comparison results are shown in Fig.7 and Fig. 8.

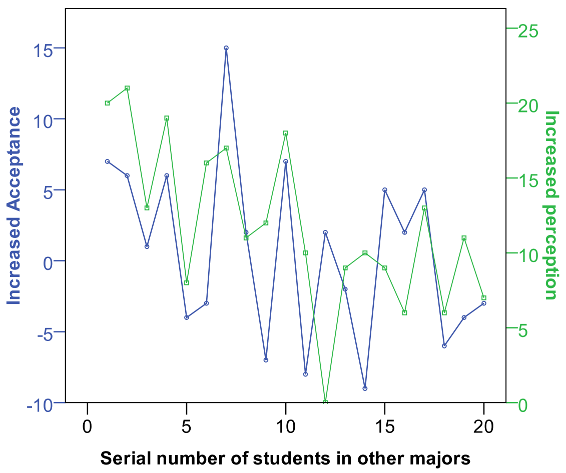


Fig.7 Change of acceptance and perception of students whose majors are not related to nuclear science, after education

In Fig. 7, the x-axis represents the serial numbers of students whose majors are not related to nuclear science. The curve labeled with circles represents the increased acceptance score of the respondents, which is indicated on the left ordinate (y-axis). The curve labeled with with squares represents the increased perception score of the respondents, which is indicated on the right ordinate. The curve labeled with circle represents the increased acceptance score of the respondents, which uses the left ordinate. The curve labeled with squares represents the increased perception score of the respondents, which uses the right ordinate. For the college students, the perception score gets some improvement increased following the education sessions. In fact, the average perception score of the college students majoring in nuclear science increased to 21.85 points, and the average acceptance score of the college students whose majors are not related to nuclear science was 45.55 points. The Pearson correlation coefficient between the increased acceptance score and increased perception score is 0.505. This result indicates that the change of perception clearly influences the change of acceptance. However, there is also a side effect of the improved perception resulting in lower acceptance.

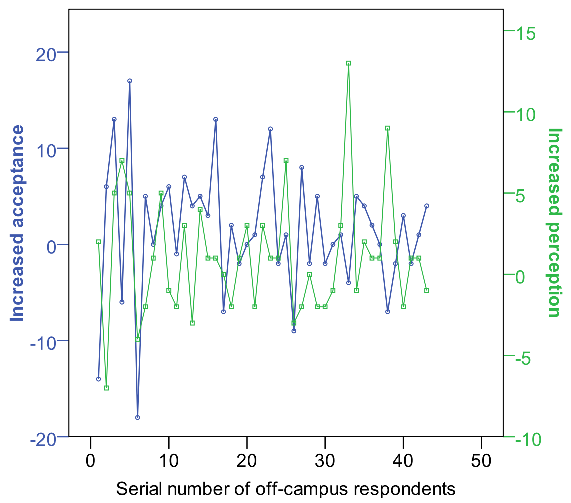


Fig.8 Change of acceptance and perception of off-campus respondents after education

In Fig. 8, the x-axis represents the serial number of off-campus respondents. The curve labeled with circles represents the increased acceptance score of the respondents, which uses the left ordinate. The curve labeled with squares represents the increased perception score of the respondents, which uses the right ordinate. For the off-campus respondents, the perception score gets some improvement after the public education. In fact, the average perception score of the off-campus respondents increases to 8.79 points, and the average acceptance score of the off-campus respondents is 45.89 points. The Pearson correlation coefficient between increased acceptance score and increased perception score is 0.008. This result indicates that the change of perception of the off-campus respondents does not influence the change of acceptance even though the perception is noticeably improved.

## 5 Conclusions and perspectives

In this paper, a basic survey and education strategy for public acceptance and perception on nuclear energy was introduced. It was then applied in the form of a preliminary questionnaire and public education.

(1) Public perception of nuclear energy in Beijing is of a relatively low level due to a lack of introduction of nuclear energy having been given to public.

(2) Most people support the current policy on nuclear energy in China, which encourages the development of nuclear energy, but most people still give a negative answer regarding a desire to have a nuclear power plant built near their living area.

(3) Public perception can be markedly improved through education, but public acceptance does not improve accordingly, which indicates the promotion of public acceptance will be a long-term process.

These conclusions call for the following further research:

(1) In order to deepen the research in this paper, the survey should be held more widely in China, and more respondents should be involved.

(2) The survey questionnaire and education materials should be revised based on the analysis of their effectiveness, as well as respondents' feedback .

(3) More than face-to-face communication and education brochure, a web-based survey and education strategy should be developed for Internet respondents, and relevant analysis programs should be developed and coupled with the survey and education strategy. This will make it much more effective and convenient to continue this research.

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