

Research on the Factors of Gender Stereotype of Senior High School Students

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ABSTRACT

The word of “Gender Stereotype” has always been a heated topic these years. To find out how much it actually exists in our lives and what are its major causes and influences, the paper gathers information by sending out questionnaire to the high-school students in Wuxi. There are total 134 samples(students). The author wants to discover what kind of factors can influence teenagers most, since they are in an essential period of life. Also, the consequences of these influences play an important part for a people’s growth. Teenagers need to make choices of their classes and it may determine their future career. In general public, we tend to think that women are not suitable for the majors like STEM or the jobs like physicists and engineers. Gender stereotypes cast men as more agentic (e.g., competent, ambitious, assertive, and competitive) and women as more communal (e.g., supportive, caring, warm, and emotional) compared to members of the other sex. These associations represent well-established, cross-culturally consistent gender stereotypes (e.g., Williams & Best, 1990). [1] The author found that it is the growth of adolescents that has caused the huge difference in the number of male and female workers in these fields. Statistical analysis will be used to analyze the questionnaire and discuss the results for questions mentioned above.

Keywords: Gender stereotype, STEM, Occupational influence, High-school students

1. INTRODUCTION

Gender discrimination is now a widely discussed topic and people can observe it in nearly every occupation. There is no gain saying that people can be greatly influenced by the society and social trends, as well as gender stereotype. People, especially women, may receive all kinds of information or signals from others that may stop them from their further choices, either occupational ones or the ones related to major. For example, many people may immediately come up with the image of male elites working on high-tech equipment at the mention of the STEM major. Does the society truly get rid of the stereotype? Male and female workers have significant differences in portion in specific occupations. A research was done in 2014 by CodeForge, a website created for programmers to share codes. In the research, the age distribution, gender ratio of programmers and many other information are surveyed. The data used in this survey report are all from the Codeforge.cn website, which analyses voting statistics on the Internet of 1 million programmers across the country. It clearly showed that 80% of the programmers are male and female only account for the

rest 20%. [2] In another survey, male students were more likely to take engineering than female students (21% versus 8%) and enroll in AP computer science A (77% vs 23%) and males were more likely to take AP exams such as calculus BC, physics B&C. Also, Women make up half of the total U.S. college-educated workforce, but only 28% of the science and engineering workforce.[4] All the information mentioned may all be the effects of gender stereotype. The paper focuses mainly on the past and current situation in China about how and why women tend to choose their career.

2. LITERATURE REVIEW

Zhang Dandan and her colleagues did a research in 2012, talking about implicit career stereotypes of junior high school students.[5] In the research, Zhang used the method of ‘Implicit Association Test’(IAT) and ‘Stereotypical Explanation Bias’(SEB) to find out the developmental stage of occupational gender bias; more specifically, if junior high school students have begun to have an implicit gender bias. The research concluded that junior-high students would be influenced by their parents, teachers, and social media. Children will learn

gender stereotypes from their parents through observation. On the contrary, schools will usually reinforce students' gender stereotype due to the fact that the textbooks often permeated with strong traditional gender values, promoting male's contribution. The last influence is that students of that age may start to get in touch with the society so that they will be influenced by social media. Her research thoroughly introduced the situation of stereotype among students of junior aged but did not talk about high school students. She did not use survey or questionnaire since she thinks that this method is not accurate enough due to many outside factors. However, questionnaire can help researchers know better about the real thoughts about people since it can reflect people's thoughts directly. Also, statistical analysis can be used to analyze the data collected by the survey. So, our research mainly focuses on the attitude of high-school students and how they are affected by gender stereotype.

Another essay researches gender stereotype among young people aged between 15 to 25. The method used in that essay is also a questionnaire. Its fundamental hypothesis is that females have more stereotypes associated with them and these stereotypes do affect people emotionally. The function of the questionnaire is to find out whether a particular gender is more affected by gender stereotype and whether gender stereotype affects people emotionally. The questionnaire has a total of 30 samples of people and most (73.3%) of them are at age 16. The result of this research is that most young people do not follow gender stereotype and think it is wrong. 67% of the participants think a specific gender, namely female, are more associated with gender stereotype. This result is convincing in some way but there is a lack of samples for the questionnaire. A small group of 30 people cannot reflect most people's ideas. As the result, the paper may have no wide applicability.[6]

Limited research on academic gender stereotypes in children and adolescents shows that from an early age, individuals classify mathematics and science as "boys" subjects, and language arts and spelling as "girls" subjects". Scientists are just beginning to explore the relationship between gender stereotype and future career choice, and some of them find that influence is huge and powerful. Erin Pahlke and Priscilla Goble talked about this in their book. Consistent with the hypothesis that high endorsement of these stereotypically masculine ideals is negatively related to achievement, US middle-school boys with average levels of achievement tend to endorse traditional masculine stereotypes at a higher rate than boys classified as 'gifted' (Shepard et al., 2011). Similarly, extremely masculine gender-typed US boys are less engaged in school and have lower achievement than their less extreme male peers (Ueno and McWilliams, 2010). Endorsing stereotypes about masculinity – and behaving in those

stereotypically-masculine ways – appears to be related to lower academic performance. When individuals realized that their own culture has negative stereotype among the groups they are in, most of them will be concerned about not obeying those stereotypes, which may cause individuals to behave badly. For example, if students are informed that boys are particularly good at learning on a certain course, girls may, consequently, behave worse than boys do. However, if the students are not informed in advance that course is more suitable for boys, boys and girls perform generally the same. This may explain some of adolescent girls' dampened interest in science, technology, engineering, and math (STEM) fields and boys' dampened interest in traditionally-feminine fields. [6]

3. METHODOLOGY

To collect data, a questionnaire was sent to ask students in high school about gender stereotype they have encountered through certain questions. The participants who fill in the questionnaire will be limited to high-school students in Wuxi, from the freshmen to senior students. For the first five questions, the students will be asked about general questions that are related to individuals' personal information. To be more specific, students will need to inform us about their gender, age, the kind of school they study in (international or common ones), their parents' educational background, and the grade. Except for the question for age, all other four are single-choice questions so that the information can be collected easily. Since there are three groups of students that will answer the questionnaire, the following questions are separated into three different branches. Each branch involves different questions.

For the first-year students, they will answer the questions such as what subjects they are currently interested in and what subjects they want to choose in the second year of high school. They will also need to choose why they make such choices. In addition to compulsory classes in China (Math, English, Chinese), the students will choose from Physics, Geography, Chemistry, Biology, History, and Politics to show their current interests and the subjects they want to choose next year. They will also need to state their reasons for the inclinations:

1. Is it simply due to self-interest?
2. Is it that you are confident about yourself?
3. Are you influenced by the stereotype like "this course should be easy for girls to learn?"

For the second-year students, they will need to tell what courses they have chosen and what they actually want to choose, whether these two matches or not. If they do not match, the students need to give specific reasons. Is it because:

1. The decrease in self-interest?
2. You find that you are not suitable for that course?
3. There are not many students of the same gender as you choose that course.

For the senior ones, the questionnaire asks questions such as:

1. Are they still interested in their chosen subjects?
2. Will they choose a related major in the university?

After these branches, the students of all grades answer the same questions. They need to think about whether parents' opinions affect their choices of subjects/major. Students need to answer if their parents are giving advices based on their kids' gender. Also, the students will grade about how obedient they are to their parents and how their suggestions match the student's original intention. The questionnaire also takes account of students' teachers influences. Students need to think about whether their teachers' suggestions will have an impact on their choices. Similarly, if students think that they are influenced, they will choose if those suggestions are given based on genders. Also, students shall tell if the teacher is their homeroom teacher. This piece of information is rather important since the homeroom teacher should be the teacher who knows and cares most about the students. Students grade about how obedient they are to their teachers and how teachers' suggestions match their original intension. All the grading numbers range from 1 to 5: 1 = not obedient at all and 5 = extremely obedient. Likewise, 1= not match at all and 5 = completely match.

4. METHODOLOGY AND ANALYSIS

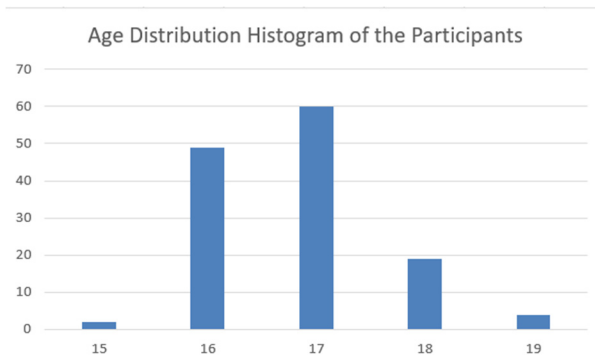


Figure 1. Distribution of the Participants' Age

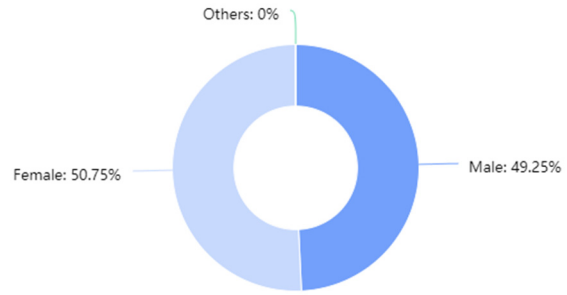


Figure2. Distribution of the Participants' Gender

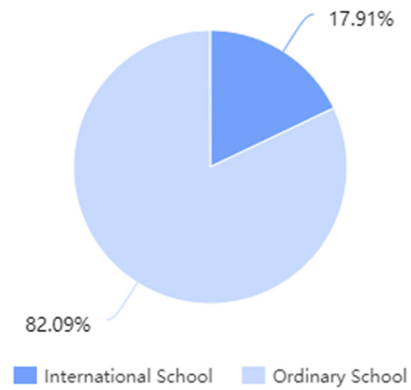


Figure 3. Distribution for the Participants' School

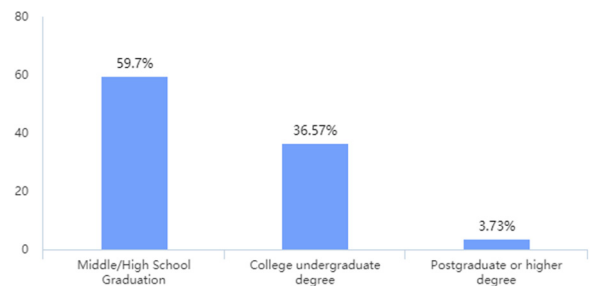


Figure 4 Participants' Parents' educational level

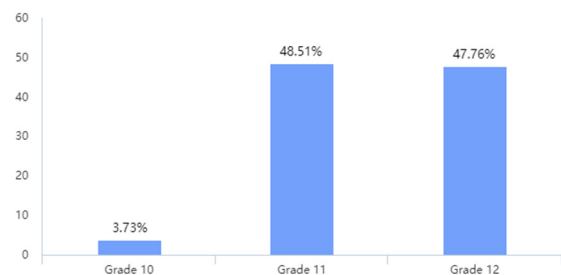


Figure5.Grade Distribution of the Participants

4.1 Design Questionnaire for Self-recognition

Tenth grade:

For tenth-grade students, they will need to answer two multiple questions. The first one asks about what subjects they are currently interested in. The percentage

of multiple-choice questions = the number of times the option is selected ÷ the number of valid answer sheets. The meaning is the proportion of the number of people who choose this option among all the people filled in. Therefore, the percentage of multiple-choice questions may add up to more than 100%. For example, 10 people filled out a multiple-choice question, 6 people chose A, 5 people chose B, and 3 people chose C. Then the proportion of A is 60%, B is 50%, and C is 30%. The three percentages add up to 140%. In this specific situation, there are a total of 5 tenth grade students and all of them are female students. By calculating their choices, we get 80% of them interested in Biology, 40% interested in History, 40% interested in Physics, and 40% interested in Geography. Chemistry and Politics are 0%. Moreover, their current subject of interest perfectly fits the subject they want to choose in the eleventh grade. The reason why they want to choose the course is mostly concentrated on personal interests and self-confidence (they believe they can perform well in that class.)

Although it only has limited samples to observe, the result is different from what is originally expected. Supposedly, the most popular subjects among girls should be Politics and History since they are example subjects which girls ought to study. However, it is surprising that 40% of the girls are interested in Physics, a subject generally considered to be a subject that boys should study, and its percentage is the same as that of History. No big differences are shown indicates that at the beginning of high-school, students were not greatly influenced by stereotype and merely choose their subjects following their wills. However, the questionnaire does not have much samples for boys so that part of the information is much too limited.

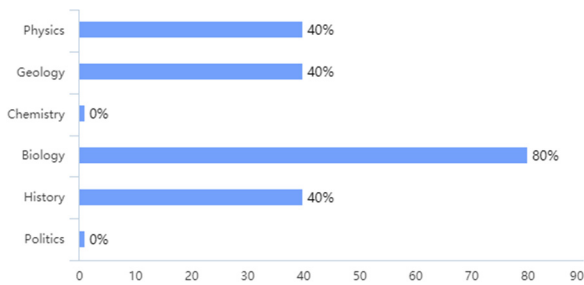


Figure 6. Subjects students interested in at 10th Grade

Eleventh grade:

There is a total of 5 eleventh -grade students. Their answers directly reflect whether the subject they are interested in matches the actual choice. As a whole, the graph tells the fact that huge a gap (>10%) appears in subjects like History, Chemistry, and Geography. Generally speaking, 9% of the total members completely think that their original interests does not match with their final choices. Among them, 5 are girls

and 1 is a boy. Specifically, though there are 5 girls who have a mismatch in choosing classes, the fluctuation of the choice for girls is not big but that of the boys is quite obvious. The graph clearly states this point. The particular reason for the mismatch of the girls, and so is for the only boy, is that they think the courses are too hard for them to keep study, which accounts for 66.67% of the reasons. In order to have a satisfying grade, it is normal for them to change subjects.

No matter gender, there are more people choosing Geography instead of Chemistry. Also, there are less people choosing History. These differences are mainly caused by male students since there are originally 33.33% of them are interested in History and only 14.81% eventually choose the subject. History is commonly considered a literal subject, which means more girls are likely to choose it, so that may be the main reason for boys to change their minds. From this, we can conclude boys are also the victims to gender stereotype and people should not ignore this.

When choosing the subject of Geography and Chemistry, the choice of girls fluctuates greatly: Geography: from 55.26% to 76.32% and Chemistry: from 39.47% to 21.05%. Most of the girls do not choose Chemistry for that this subject may be too hard to study and is not related to their future career. In conclusion, students in the eleventh grade are slightly influenced by gender stereotype in specific subjects.

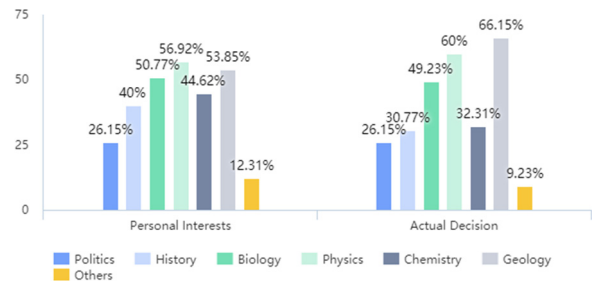


Figure 7. Course Selection of the 11th Grade

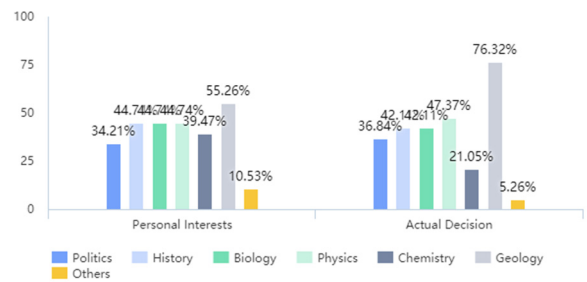


Figure 8 Course Selection of the 11th Grade (Female)

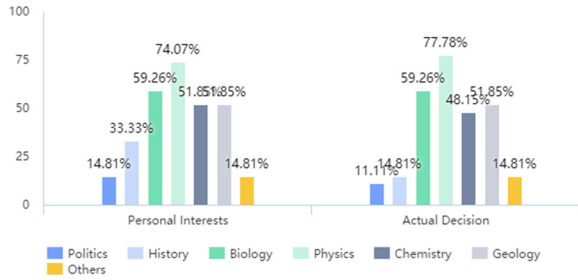


Figure 9 Course Selection of the 11th Grade (Male)

Twelfth Grade:

In China, students normally will not change their selected courses after the eleventh grade. Therefore, they are asked two questions:

1. Are you truly interested in your current courses after two years of studying?
2. Will you choose related majors for college in the future?

There are 64 students from the twelfth grade. Among them, 39 are boys and 25 are girls. In total, 85.94% (55) students say “yes” to the first question and 14.06% (9) say “no”; 84.38(54) say “yes” to the second question and 15.63% (10) say “no”. From the graph we can tell that there is not much difference in boys or girls. For over 80% of the boys and girls indicate that they will choose a course-related major.

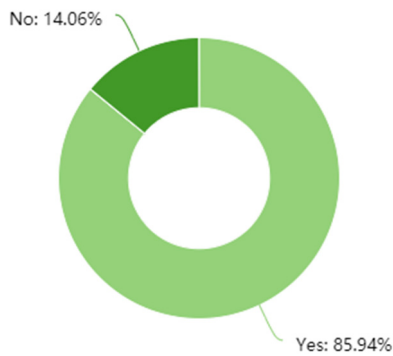


Figure 10 Whether the participants of 12th Grade are interested in their chosen courses

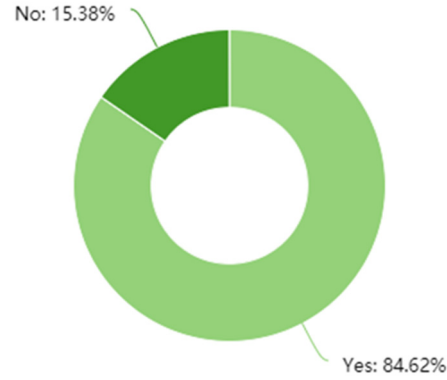


Figure 11 Whether the participants of 12th Grade are interested in their chosen courses (Male)

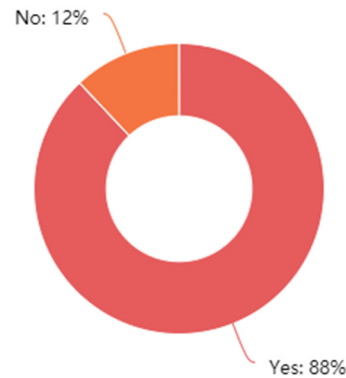


Figure 12 Whether the participants of 12th Grade are interested in their chosen courses (Female)

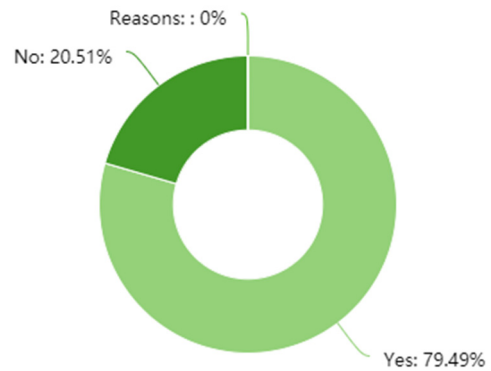


Figure 13 Whether the participants of 12th Grade will choose a course-related major (Male)

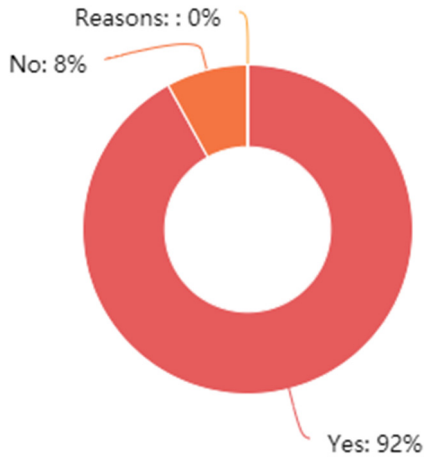


Figure 14 Whether the participants of 12th Grade will choose a course-related major (Female)

4.2 Design Questionnaire to See Influence of Parents and Teachers.

Parents' influence:

The questionnaire also looks deep into the influential factors bring by parents and teachers. Students will first answer whether their parents' ideas or suggestions will affect their choice of courses or major. 45.52% (61) of the total students do think that they will be influenced by their parents' words while 54.48% (73) of the students state the opposite. For the 61 students who say "yes" to the first question, they will need to answer further questions. 57.38% of the 61 students takes both their father and mother's advices. 29.51% (18) of the students feel that their father's advice is more dominant. What is more, 55.74% (34) of the 61 thinks that their parents are or used to prefer the students to choose a certain subject or used to prefer the students to choose a certain subject based on their gender. Among the 34 students, 20 are girls and 14 are boys. The ratio of the number of girls who felt this kind of bias to the number who did not feel is 10:7. The same ratio for boys is 13:14. Since the students are also required to write down what kind of major/courses they are suggested to study, an inclination of major/courses caused by gender is shown. The ideal majors recommended by the boys' parents are highly concentrated in Computer Science, Finance, and Stem (for example: electrical engineering). On the contrary, the recommended majors for girls turn out to concentrate in Media, Law and Psychology. (A major that is listed more than twice is considered recommended.) Next, students rate their own obedience and the compatibility of parental suggestions with their initial thoughts. Grade from 1 to 5: 94.12% of the students rate 3 or higher (Maximum 5) to their obedience and 23.53% indicate that they are totally obedient. The graphs are shown below.

It is obvious that many students' parents still have the stereotype of "Males should study more scientifically and females should study more literal." They bring this kind of stereotype onto next generation. On the other hand, most students still take their parents' words into consideration, even though they are choosing a major they do not like.

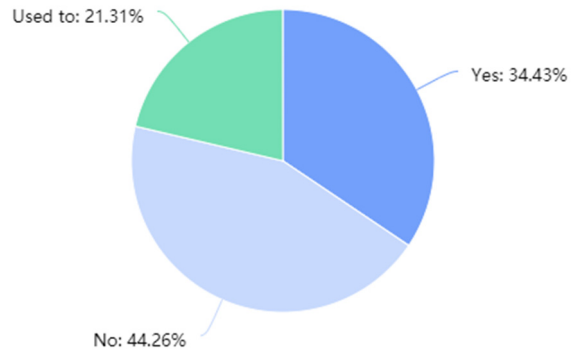


Figure 15 Do your parents prefer you to choose a certain major/subject?

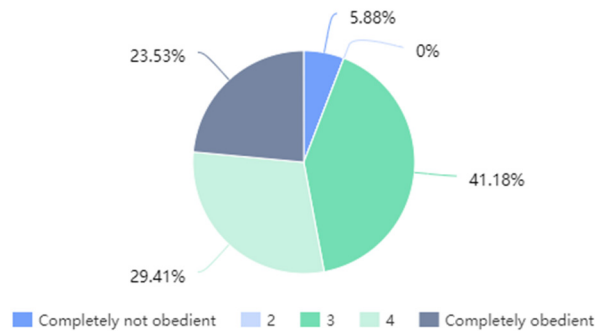


Figure 16 Whether the participants are obedient to their parents' suggestion.

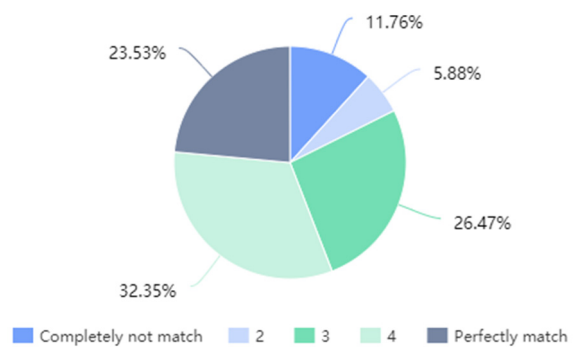


Figure 17 Whether parents' suggestions match the participants' original thoughts.

Teachers' influences:

Other than parents, teachers are also a great influential factor in students' way of study. 46.27% (62) of the students claim that their choice will be influenced by the teachers' suggestions and 53.73% (72) claim not.

38.71% (24) of the students think that their teacher is giving advice to them or other students specifically based on gender while the rest (61.29%) do not have the similar feeling. Among the 24 students, 13 of them are girls and 11 are boys. It is noticeable that 83.33% students say the teacher who gave them advice is their homeroom teacher. For boys, the most commonly suggested subjects are even more concentrated in Physics, Engineering, and STEM. For girls, the most recommended subjects are History, Media, but some teachers just directly point out the girl should study more “easy and literal” subjects. Next, students rate their own obedience and the compatibility of their teachers’ suggestions with their initial thoughts. Grade from 1 to 5: 92.31% of the students rate 3 or higher (Maximum 5) to their obedience and 7.69% indicate that they are totally obedient.

The influence of the teachers may not be so big but their advice is usually more direct and sharper than parents’ advice. As a result, many students will take their advice as well. Other than that, teachers tend to have their own consideration. There is no doubt that teachers give their best suggestion to students to help them have a better future. However, outside factors like school’s fame and personal stereotype make some teachers give different opinions according to their gender.



Figure 18 Whether Teachers’ opinion affect participants

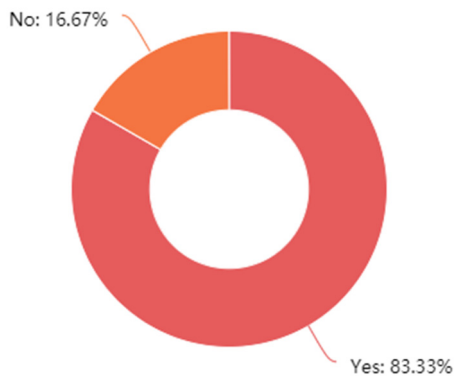


Figure 19 Whether the teacher is participants’ homeroom teacher

5. CONCLUSION

A total of 134 valid samples were collected. Among them, 68 are girls and 66 are boys. If converting the number into percentages then 50.75% are girls and boys take up 49.25% of the participants. According to the information, the average age for the participants is 16.81. 82.09% (110) of the students study at common high-schools and 17.91% (24) are in international schools. Most of their parents have a middle or high school degree (59.7%); for the rest: 36.57% have a college degree and 3.73% have a graduate degree and above. Among all the participants, we have 3.73% (5) students that are from the second year of high-school, 48.51% (65) are from the first year and 47.76% (64) are from the senior. That is all the basic information of the participants involved. It is crucial to determine the range of sample. Since there are mostly three grades in high school in China, the questionnaire first separates the three grades and then have different branches towards different grades.

Through the research, the author finds that students themselves commonly do not possess a strong gender stereotype in study. However, their parents and teacher usually have quite a strong sense of stereotype. Parents will suggest their children to learn something that is usually fit for boys/girls, sometimes even regardless of children’s personal interests. Teachers also have gender stereotype in some extent. They tend to know more about students’ personal situation so that their suggestions are more closely matched with students’ original idea. Most of the participants are quite obedient to both parents and teachers. Consequently, more students will be influenced gradually due to the impact of parents and teachers.

There remains a question about how to solve the problem. For the first thing is the reinforce the importance of gender education. The school can organize activities that help parents learn more about their own children. Also, activities should weaken stereotypes to a certain extent. The society should promote more anti-stereotyped characters, especially real-life cases, to get the public be aware of this issue.

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