Relationship Between Personality of People's Favorite Characters and Their Own Personalities

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1. Introduction

Nowadays, watching movies and listening to music are necessary ways for people to relax. People can escape from their busy lives and have their private time by doing these things. Some people can also make friends with people whose taste in music and movies is similar to theirs.

However, there are many disputes about whether there is a relationship between the tastes of these things and the characteristics people have. Some people hold the point that people prefer things that have semblance features. For example, an outgoing person may like to listen to K-POP music and the characters in movies that are brave and positive. On the contrary, other people may think people are more likely to like the things that are complementary to them.

Thus, with this confusion, we are going to study whether there is a relationship between the characters students like in the movie *Pleasant Goat and Big Big Wolf* and students' Myers-Briggs Type Indicator (MBTI) in grade 11 of Beijing National Day School international department. Specifically, our research question is "Is there an association between the Judgment(J)/Perception(P) dimension of BNDS international students and that of their favorite characters?" By conducting a careful study in fine conditions, we have eventually constructed a model of the Chi-square test for independence. The null hypothesis is that there is no association between the preferable characters in *Pleasant Goat and Big Big Wolf* and their MBTI types. The alternative hypothesis would be there is an association between the preferable characters in *Pleasant Goat and Big Big Wolf* and their MBTI type. We expected to find that people tend to prefer characters with the J/P dimension the same as themselves.

2. Background Research

There are very few papers that focus on the animation *Pleasant Goat and Big Big Wolf*. We find three resources that discuss the characteristics of roles in this cartoon.

The first related research is Associations Between Personality Traits and Music Preference. The researchers gave two tests to 175 participants about the characteristics and types of music

they like. Then the researchers found that those scoring low in Neuroticism enjoyed more genres of music. People who scored high and low for Conscientiousness showed no difference in enjoyment. Personality traits are associated with an individual's music preference. Additional factors such as an individual's age, race, cultural background, or other aspects of personality may also be beneficial to take into account due to the data not supporting all hypotheses. The type of MBTI not only affects the type of music people like but also movies.

The second related paper, *System: A Case Study of Webtoon Contents*, found that people with the same MBTI type will select similar emotional words and have similar movie preferences.

In the third paper, the researchers of the paper *Does an Individual's Myers's-Briggs Type Indicator Preference Influence Task-Oriented Technology Use* found that a person's MBTI type influences how they organize email and the informational features they rely on when using a decision support system. The definitions of the MBTI dimensions suggest they could be a factor explaining why individuals take different approaches to use software applications. All three articles suggest that people's preferences are closely associated with their own MBTI dimensions, which is consistent with our hypotheses.

Furthermore, there is a website that analyzes the MBTI types of all the main characters in *Pleasant Goat and Big Big Wolf*. We consider it as a related standard to assess the personality of the roles. A screenshot from this website is shown below in Figure 1.

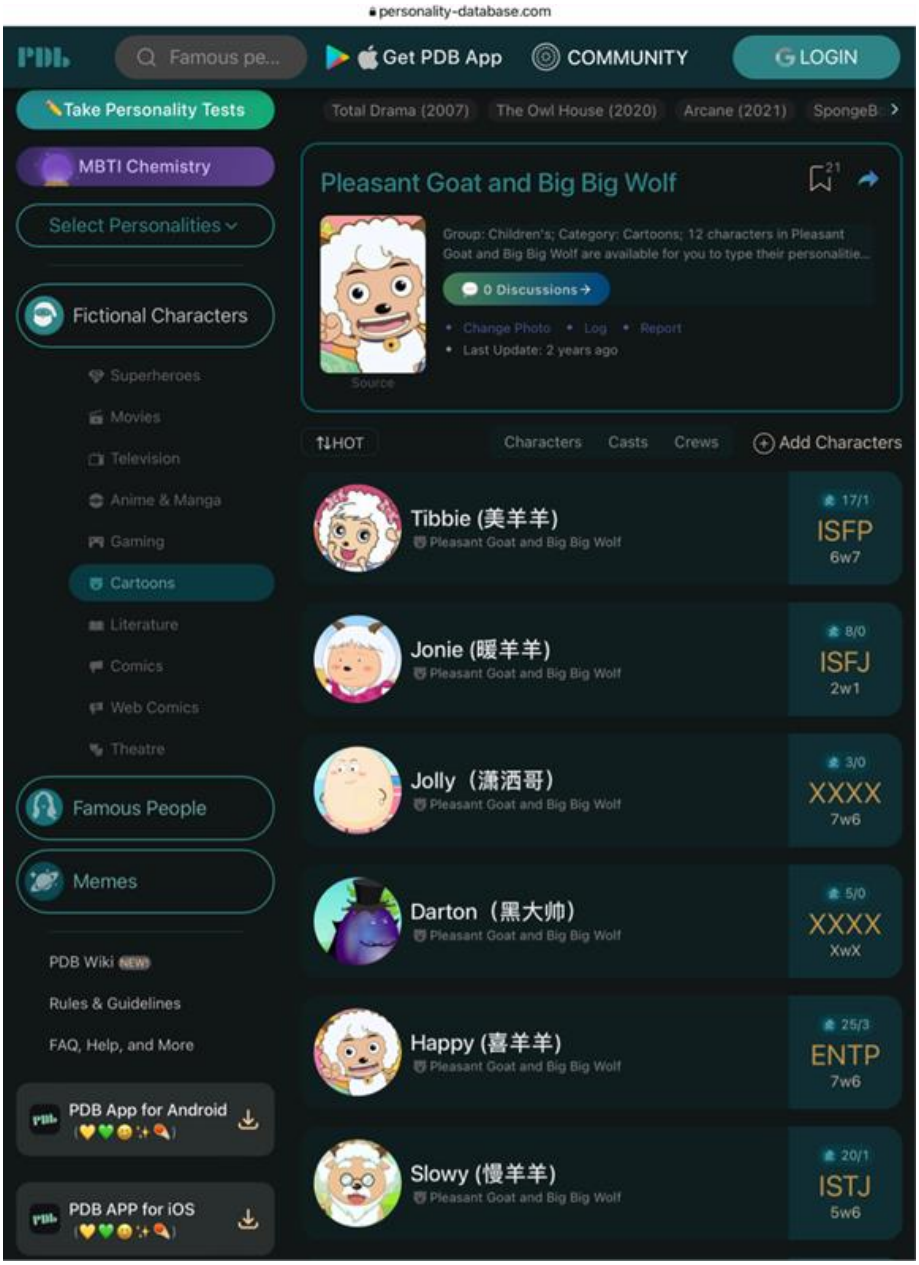

Figure 1: the screenshot from the website that votes MBTI types of main characters in *Pleasant Goat and Big Big Wolf*

3. Methods and Procedures

Data collection:

We collected our raw data by distributing questionnaires. The questionnaires contain the following questions: "If you have to choose, do you prefer Wolnie or Wolffy?" "If you have to choose, do you prefer Tibbie or Jonie?" "What is your MBTI type?"

We used a simple random sampling method and randomly selected 45 students (with replacement) to respond at first. However, 5 sets of data we collected can not be used (3 of them have not watched the anime and 2 of them have not done the MBTI test before). To

reduce bias, we improved our questionnaire by adding eight simple questions to roughly infer the MBTI type of the respondent. We randomly selected 25 students (with replacement) to fill in the new questionnaire. We combined the data of valid responses from the old questionnaire and all the data from the new questionnaire. Then we classified the data into two categories: responds with a J dimension stronger than P and responds with a stronger P dimension. The collected data are shown in the two-way tables Table 1 and Table 2.

Judgment/Perception dimension of self	Actual Counts of Favorite Characters with Their Judgment/Perception Dimension		
	Wolnie (J)	Wolfie (P)	total
Judgment (J)	11	13	24
Perception (P)	10	30	40
total	21	43	64

Table 1: Data collected: Actual Counts of Favorite Character (between Wolnie and Wolffy) by J/P Dimension of Self

Judgment/Perception dimension of self	Actual Counts of Favorite Characters with Their Judgment/Perception Dimension		
	Jonie (J)	Tibbie (P)	total
Judgment (J)	17	7	24
Perception (P)	20	20	40
total	37	27	64

Table 2: Data collected: Actual Counts of Favorite Character (between Jonie and Tibbie) by J/P Dimension of Self

Inference:

We chose the BNDS G11 students in the international department as our population, so our random sampling among all G11 AP students is representative of the population. We used a random number generator to select 70 numbers with replacement and selected the corresponding students, so each sample is independent of the other. The expected counts are listed in Table 3 and Table 4. All expected counts ≥ 5, so we can say that the sampling distribution is normal. Thus, all conditions are met. Since the proportion of respondents who prefer the characters with a stronger J dimension is greater for respondents with a stronger J dimension than for respondents with a stronger P dimension, we could infer that there's a

tendency for people to prefer characters who have the same J/P dimension with themselves.

Judgment/Perception dimension of self	Actual Counts of Favorite Characters with Their Judgment/Perception Dimension	
	Wolnie (J)	Wolffy (P)
Judgment (J)	7.875	16.125
Perception (P)	13.125	26.875

Table 3: Expected Counts of Favorite Character (between Wolnie and Wolffy) by J/P Dimension of Self

Judgment/Perception dimension of self	Expected Counts of Favorite Characters with Their Judgment/Perception Dimension	
	Jonie (J)	Tibbie (P)
Judgment (J)	13.875	10.125
Perception (P)	23.125	16.875

Table 4: Expected Counts of Favorite Character (between Jonie and Tibbie) by J/P Dimension of Self

Hypothesis test:

Since we aim to test for the association between two categorical variables, we conducted a Chi-square test for independence with α=0.1 to determine whether there is an association between people's personalities and their favorite character's personality. The process is shown below:

Null hypothesis: There is no association between people's own J/P dimension and their favorite character's J/P dimension

Alternative hypothesis: There is an association between people's own J/P dimension and their favorite character's J/P dimension

All conditions are met, as discussed in the inference section, so a Chi-square test for independence could be conducted.

Test statistic:

O=observed frequency, E=expected frequency, χ^2=Chi-square statistic

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

In the calculations below, superscript *1* indicates the data from the first group (preference between Wolnie and Wolffy), and superscript *2* indicates the data from the first group

(preference between Jonie and Tibbie).

Applying the data to Chi-square statistic according to Table 1 and Table 2:

$$\chi^2{}_1 = \frac{(11-7.875)^2}{7.875} + \frac{(13-16.125)^2}{16.125} + \frac{(10-13.125)^2}{13.125} + \frac{(30-26.875)^2}{26.875} = 2.953$$

$$\chi^2{}_2 = \frac{(17-13.875)^2}{13.875} + \frac{(7-10.125)^2}{10.125} + \frac{(20-23.125)^2}{23.125} + \frac{(20-16.875)^2}{16.875} = 2.669$$

Calculation and P-value

Applying the degree of freedom $df = (2-1)(2-1) = 1$, the calculator shows the Chi-square statistic and p-value of our data:

For the first group:

$$df_1 = 1$$

$$\chi^2{}_1 = 2.953$$

$$p - value_1 = 0.0857$$

This means that assuming there's no association between people's J/P dimension and their favorite character's J/P dimension(H_0), there is a 0.0857 probability of getting a χ^2 of 2.953 or more, purely by chance.

0.023 probability of getting a sample mean of 97.9 °F or less, purely by

chance.

For the second group:

$$df_2 = 1$$

$$\chi^2{}_2 = 2.669$$

$$p - value_2 = 0.1023$$

This means that assuming there's no association between people's J/P dimension and their favorite character's J/P dimension(H_0), there is a 0.1023 probability of getting a χ^2 of 2.669 or more, purely by chance.

4. Results

The J/P dimension of a character represents the character's personality.

According to our data collected in the first group, for respondents with a J dimension stronger, the ratio of the number of people that prefer Wolnie(J) to that of Wolffy(P) is 11:13 = 0.846. For respondents with a P dimension stronger, the ratio is 10:30 = 0.333. The second group has

a ratio of 17:7 = 2.429 and 20:20 = 1. From this, we could find that for both groups, the character with a stronger J dimension is more preferred by people with a stronger J dimension, and the character with a stronger P dimension is more preferred by people with a stronger P dimension.

To check if the inference above is statistically significant, in the Chi-square test for independence, if the resulting *p-value* ≤ α, the null hypothesis would be rejected and we could decide that the alternative hypothesis is true. If *p-value* > α, we fail to reject the null hypothesis.

If we use 0.05 for α, we could get the following results. In our scenario, for the first group, *p-value* = 0.0857 > α, and for the second group, *p-value* = 0.1023 > α, so we fail to reject the null hypothesis, meaning that there is no sufficient evidence to say that there is an association between the J/P dimension of a person and that of their preferred characters.

If we use 0.1 for α, we could get a different result for the first group. For the first group, *p-value* = 0.0857 < α, so we could reject the null hypothesis and decide that the alternative hypothesis is true. This means we have evidence to say that there is an association between the J/P dimension of a person and that of their preferred characters. However, since 0.1 is a large value for α in normal hypothesis tests, this result has relatively low credibility.

5. Problems in the Project and Suggestions for Future

Problems in the project

a. There are several problems and small biases we met during the whole process. We try to solve most of them, but some are still unpredictable.

b. The biggest difficulty is that after collecting the data from 45 random samples, which is our initial planning sample size, we found that seven people didn't want to respond to the questionnaire. This bias was quite large in the sample size. We tried to find these seven people privately and beg them to fill out the questionnaire. However, only two people responded to us, which meant the bias is still large. Thus, we decided to extend our sample size from 40 to 70 after getting the data of those 40 samples Although some of these extended 30 samples may still don't want to answer, we still wanted to try—whether this time the unresponded number becomes lower. Fortunately, there are only two people didn't respond to the questionnaire. Thus, we reduced the bias successfully.

c. It is really hard to find the MBTI types of characters in *Pleasant Goat and Big Big Wolf*.

After searching a large number of resources, we eventually found a website that specializes in analyzing the MBTI types of characters in popular cartoons and films.

d. Considering that some students may didn't know their MBTI types, we gave the students who filled out "don't know my MBTI type" in the previous question eight extra representative questions of the MBTI test to get their MBTI types directly through our questionnaire. However, there is a small bias in this process, since the number of questions on MBTI type is too small, which may lead to the inaccurate result. We wanted to increase these questions, but we were worried that people may feel impatient if there are too many numbers and they may don't want to respond to the questions seriously.

e. The last small problem is that people may not be able to remember the details about *Pleasant Goat and Big Big Wolf* since most of us watched this cartoon ten years ago. For this reason, people may remember their favorite character.

Suggestions for Future

According to this time's experience, we found that it's really important to reduce the nonresponse bias, which frequently appears in the study, especially when we have to hand out questionnaires randomly.

To reduce the effect of nonresponse bias, we figured out several methods which can be used next time facing this common problem:

a. Increase response rates: We can increase the overall participation rate in your survey or study. This may involve offering incentives or making it easier for people to respond.

b. Adjust analysis: Having the information about the characteristics of non-respondents, we can adjust our statistical analysis to account for potential differences between respondents and nonrespondents.

c. Try to identify patterns: If nonresponse is concentrated among certain groups (such as those with lower levels of education or income), you can specifically target those groups to try to increase participation rates.

6. Conclusion and Discussion

Comparing the p-value = 0.086 obtained from the "P"-"J" group to $\alpha = 0.1$, the "Wonie-Wolffy" group shows there is an association between the J/P dimension of the respondent and the J/P dimension of the favorite characters. However, the other "P"-"J" group, "Jonie-Tibbie"

(*p-value* = 0.102) does not show this association.

Data in this group may be affected by two aspects other than the J/P dimension. Firstly, recently there appeared a lot of negative comments on the internet, about Tibbie always treating Happy and Sparky unfairly. This may influence how the respondent feels about Tibbie. Since the J/P dimension relates closely to people's personalities and moral ideas, there could be a possibility that people with stronger P dimensions tend to be more sensitive to characters' friendliness and moral level, so a greater proportion of them would be influenced by these negative comments. This could result in fewer respondents with a stronger P dimension picking Tibbie, causing a weaker association and a bigger p-value presented in the second group.

Secondly, the popularities of the two characters are not even. Tibbie is far more popular than Jonie as Tibbie shows up for longer periods in an episode than Jonie. However, the popularity of Wonie and Wolffy is more even. To illustrate, for instance, assume there're 60% of people with a stronger P dimension who prefer Tibbie and 40% of people with a stronger J dimension who prefer Tibbie if the two characters have the same popularity. An incline of popularity might cause half of the people who would have picked Jonie to pick Tibbie, so there would be in total 80% of people with a stronger P dimension to pick Tibbie and 70% of people with a stronger J dimension to pick Tibbie. Under this circumstance, the association might appear to be weaker and the p-value might be bigger in the second group.

Thirdly, Wonie is female, while Wolffy is male. We did not consider the influence of gender, but this factor may also affect people's responses. The ratio of female respondents to male respondents is greater in our sample which has a stronger J dimension than in our sample which has a stronger P dimension. Because there may be a chance that people tend to prefer the characters who have the same gender as theirs, there may be more respondents with the J dimension picking Wolnie because of her gender, so there appears to be a stronger association observed and p-value might be bigger in the first group.

Characters tend to draw likes from BNDS international students who have the same J/P dimension. However, due to the small sample size, we are unable to study whether students tend to like the character with the same MBTI type as them, thus the choice of the more preferred character may be affected by other dimensions in the MBTI classification (e.g. "P" type characters may tend to have more likes form "T" students compared to "F" students).

7. References

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