

# Experimental Research on whether personality label will distort people's behaviors

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## Abstract:

In the last few years, the personality test (MBTI and Eysenck) has been gaining popularity among young people, everyone is accustomed to using a personality test result to summarize themselves, especially when socializing. Both of these tests are interesting, one of them is divided all the personalities into 16 personalities by accurately, and the other is by looking at the three dimensions of extroversion and introversion. But the phenomenon also raises some questions: Can our personalities be changed and limited by the results of the personality test? Therefore, we conducted the following experiments for the question: including questionnaire survey, bar chart and T-test were used for data analysis. However, instead of selecting all the mbti labels in our research completely, we chose to study only a subset of the mbti labels: extroversion and introversion (e and i), in other words, using the Eysenck personality test. In this series of work, the comparison and analysis of the data found similar results to the original suspects—personality labels do change and limit people's behavior and thinking in a subtle way. Therefore, being one of the pioneer studies on the impact of mbti results on people, the unique value of this research lies in helping most people today understand themselves better, and not be held back by the results of some test that everyone is full of infinite possibilities.

**Keywords:** MBTI, Eysenck, personality, introverted, extroverted, change behavior.

## 1. Introduction

The mbti test was developed by Isabel Briggs Myers and Katharine Cook Briggs in the 1940s, and its full name is Myers-Briggs Type Indicator which is well-known in psychology and related fields as a self-report questionnaire. Its development relied on Jung's seminal ideas on psychological types as a framework to describe human personality [1]. In addition, some researchers believe that the mbti test has many limitations in design, suggesting that it should be appropriate to reduce the widespread use of mbti in society [2]. Others argue that mbti results should not be the sole criterion for judging employees in a company because they may limit their ability and self-expression [3]. Nowadays, MBTI is a tool that provides a variety of practical purposes. Credit scores prediction [4], analysis of construction workers' safety behavior [5], validation of artificial intelligence techniques [6][7], or prediction of judging-perceiving behaviors in online social forum [8] are just a few recent examples of such purposes. This is about the background of the development of the mbti

field, and there are many previous studies on this topic can clearly find that some people believe that the mbti test can bring a lot of convenience to people's lives, especially in the work and social aspects. However, many researchers feel that the test has many limitations, especially in terms of personality and self-knowledge. In addition to these, there are many aspects that are not mentioned, such as: do mbti results change people's self-perception, does this stereotype have a negative effect on people, how does mbti labeling change people's behavior and whether mbti labels will distort people's behaviors. To a large extent these research questions are important and interesting, so in our study we will mainly focus on whether mbti labels will distort people's behaviors.

In our study, we conducted two personality questionnaires—Tests for introversion and extroversion—using a Likert scale. Our sample focuses on middle school, high school and college students. We then proceeded to compare the outcomes from these two assessments. For data analysis, we use a t-test for statistical analysis and visualized the results using bar charts for clearer comparison.

## 2. Aims, Rationale, Research Design and Objectives

The purpose of our study was to see if MBTI results change how people act or how they see themselves and deal with things. We wanted to study this because many people use MBTI to describe themselves, but actually these labels can limit their understanding of themselves. For example, if someone is labeled as an introvert, it might stop them from expressing themselves freely or make them a stereotype. This is a quite common phenomenon, especially among young people. We also noticed that young people might not realize that MBTI results can change their behavior and thinking. In schools and businesses, MBTI is often used to judge people, but it's still a controversial topic. Other studies have looked at the advantage and disadvantage of MBTI, but no one has studied how it affects behavior. We think it's important to research this because it can help society and individuals promote a healthy development.

In our study, we used a Likert scale to make two questionnaires about introversion and extroversion. We tested them on two groups of 30 people each, with a 10-hour gap between the groups. We used a t-test to analyze the data and bar charts to compare the average scores of both groups. Our main goal was to find out if MBTI results change people's behavior and then go secondary to see how introverted and extroverted people act differently.

## 3. Methods

Our design was inspired by the popular self report evaluation—or named the Myers-Briggs Type Indicator. We decided to use a combination of questionnaires, Excel, and T-Tests for data collection and analysis. The questionnaire is divided into two sections. The first section focuses on personality assessment using the Eysenck's Personality Questionnaire (EPQ), where participants responded to statements using yes no questions. After this section, we incorporated an intervention where half of the participants were given feedback opposite to their actual personality type (e.g., telling extroverts they are introverts). This manipulation was designed to observe the effect of such feedback on their behavior. The second section includes demographic questions using Myers-Briggs Type Indicator (MBTI), to provide a broader context for the participants' responses. Here, we incorporated a likert scale. After developing the initial design, we carefully crafted the feedback intervention to ensure its psychological impact. Participants were expected to answer the questions honestly, based on their self-perception and the feedback they received. We believe that this design will allow us

to explore how MBTI feedback influences personal and social behavior, with the data being analyzed using T-test for deeper insights. In our design the IV(independent variable), DV(Dependent variable) and the CV(Controlled variable) respectively was: the personality label that the respondents received; the final score that shows the inclination towards extroverted or introverted; the time between the two questionnaires and the questions they received.

## 4. Sample

For our research samples, we used convenience sampling, which means that participants were easier to find and approach. For the first questionnaire, 67 participants completed Eysenck's Personality Questionnaire to determine their introverted and extroverted labels. All results were useful in the first study. After 10 hours, the second questionnaire was sent to all the participants and in the end we collected 64 answers. After the analysis, we found that there were eight answers that did not fit the requirements of the questionnaire. Their answers were obviously seen as outliers, as all the questions they rated were the neutral option. In the end, the effective data we used was a total of 56. Among these 56 participants, the number of each group was unequal. For the E-E group, that is people who are extroverted in origin and we told them they were extroverted in fact, it had 8 participants. The number of people in the E-I group (participants were extroverted in origin but we told them they were introverted) was the same as in the first group. This makes it easier to compare and analyse the data. In the other two groups, the I-E group and the I-I group (participants in both groups were introverted in origin and in the first group we told them they were extroverted, and in the last group we told them they were introverted in fact without deception), the number of participants was the same, 20.

## 5. Procedure

In our study, participants first complete a questionnaire to determine their orientation towards extraversion (E) or introversion (I). This questionnaire is based on the Eysenck's theory of personality. We selected 14 questions related to introversion and extroversion, and created our own questionnaire. Each person sent out about 20 questionnaires, and we received 67 questionnaires in the end. After deleting the answers that were inaccurate (Based on the results, we divided them into four groups: E-E (confirmed extraverts), E-I (fake group with extraverts labeled as introverts), I-I (confirmed introverts), and I-E (fake group with introverts labeled as extraverts).

Next, participants complete a second questionnaire con-

sisting of 12 behavioral questions: 6 based on introverted traits (I-based) and 6 on extraverted traits (E-based). Each question is rated on a Likert scale from 1 (disagree) to 5 (agree). We calculated the sum of the scores for both I-based and E-based questions and analyze the results to compare how the MBTI labeling influences their self-reported behavior.

### 6. Data analysis

After receiving the data for the first questionnaire, we collected the results and defined people of their inclination towards introversion and extroversion by specific questions. We managed this by using a program specifically designed for surveys called WenJuanXing. In this questionnaire, we calculated their introversion and extroversion by measuring the yes no questions. Then, we split the respondents into 2 groups—one in which we inform them of their true inclination and one which we inform them that they belong to the opposite inclination. For example, we would tell a person that is introverted that they were extroverted, and they would fit into the second group. Then, we further divided the 2 groups into four different groups—introverts that believed they were extroverts (I-E) introverts that believed they were introverts (I-I), Extroverts that believed they were Introverts(E-I) and Extroverts that believed they were extroverts(E-E).

After ten hours, we then started the second questionnaire related to behavior in life and how they think people similar to them would react. After receiving all 60 results, we filtered out results that all choose the same choice, and calculated the average of the scores. We also divided the questions into E-based questions, and I based questions since we used the same Likert scale for the 12 questions respectively, but the scores do not lead to the same conclusions. For example, for an I based question—such as Do you think that people with a personality like yours typically enjoy private space or time? -the score one would assume that the respondent is likely more leaning towards extroversion, while for an E based question-Do you think that people with a personality like yours are more likely to go out with friends to chat, shop, and enjoy good food to relax after a week of work? -the score one would assume that the respondent is likely more leaning towards introversion. Therefore, we compared the I-values and E-values of groups E-I, E-E and groups I-E, I-I separately. We analyzed the results by using T-tests and bar charts to show the significance of the difference of the average values. For example, the comparison of the E values of groups I-E and I-I show that group I-E has a higher E value than group I-I, which further suggests that by labeling people as ‘extroverted’, it clearly affects their behavior.

### 7. Results

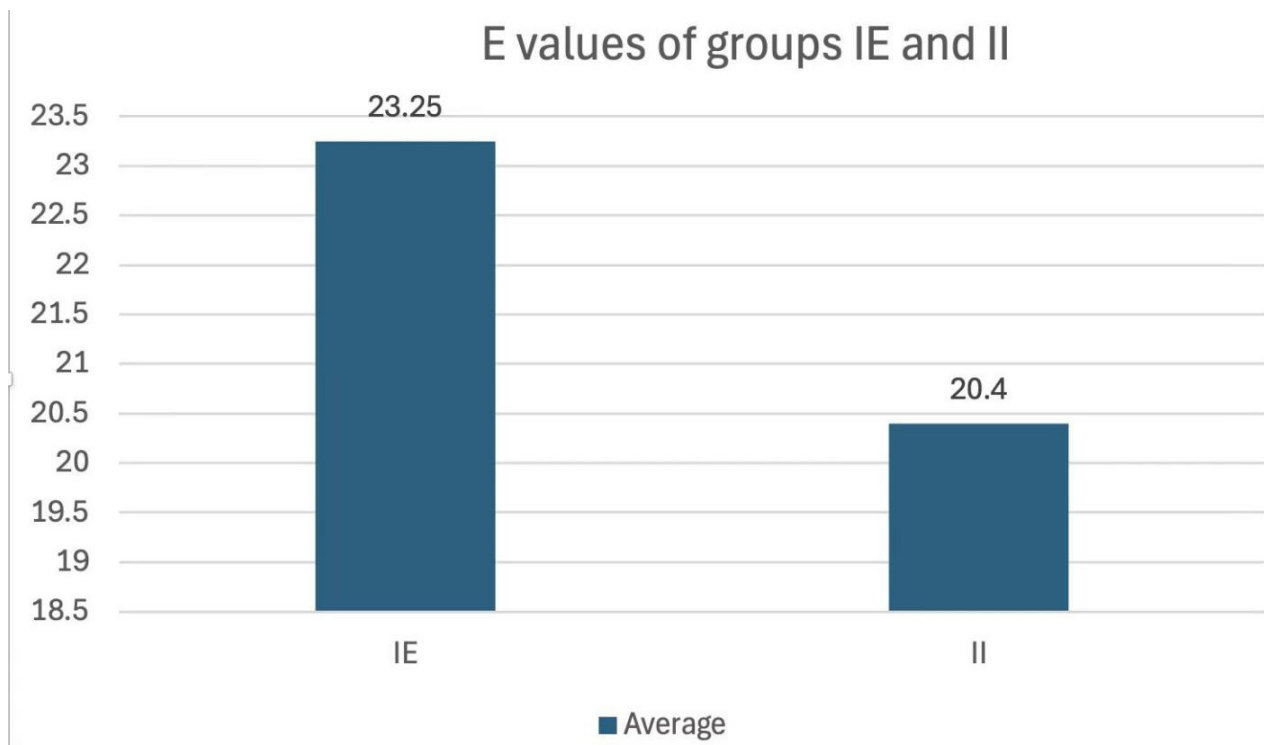
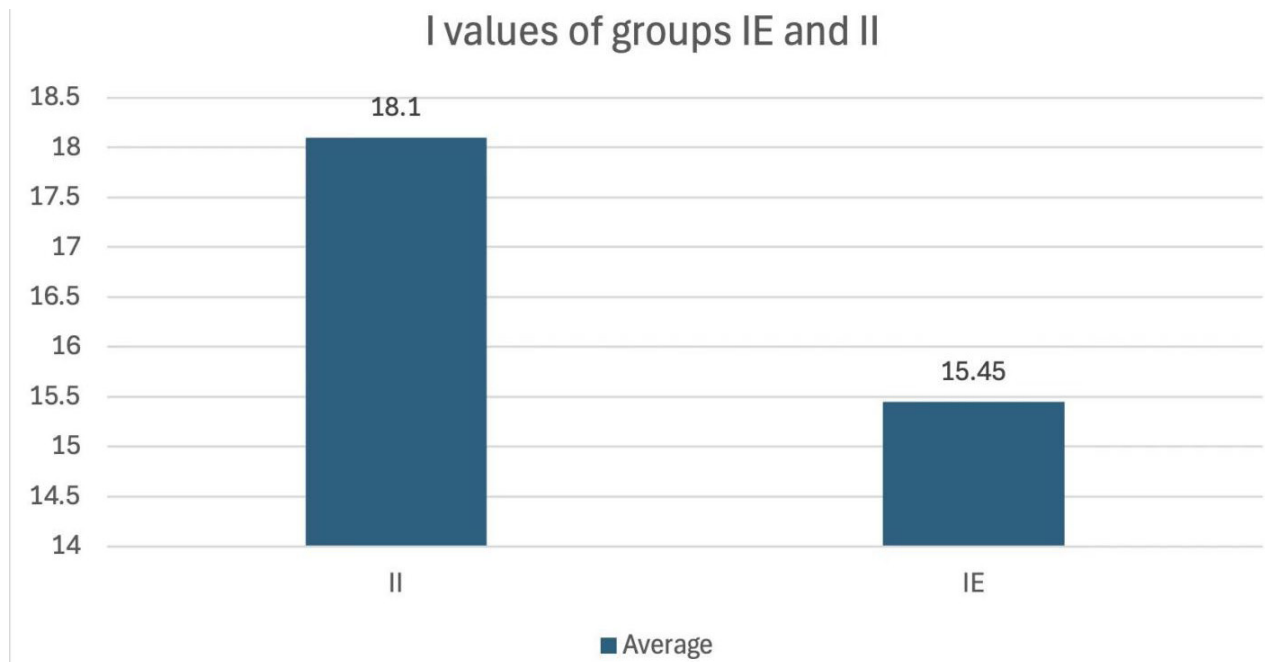


Figure 1: The E-values of groups I-E and I-I

In this bar chart, both these two groups are introverted in their original result. One group of participants we told them they were introverted (I-I group) without any deception. The other group participants we told them they were

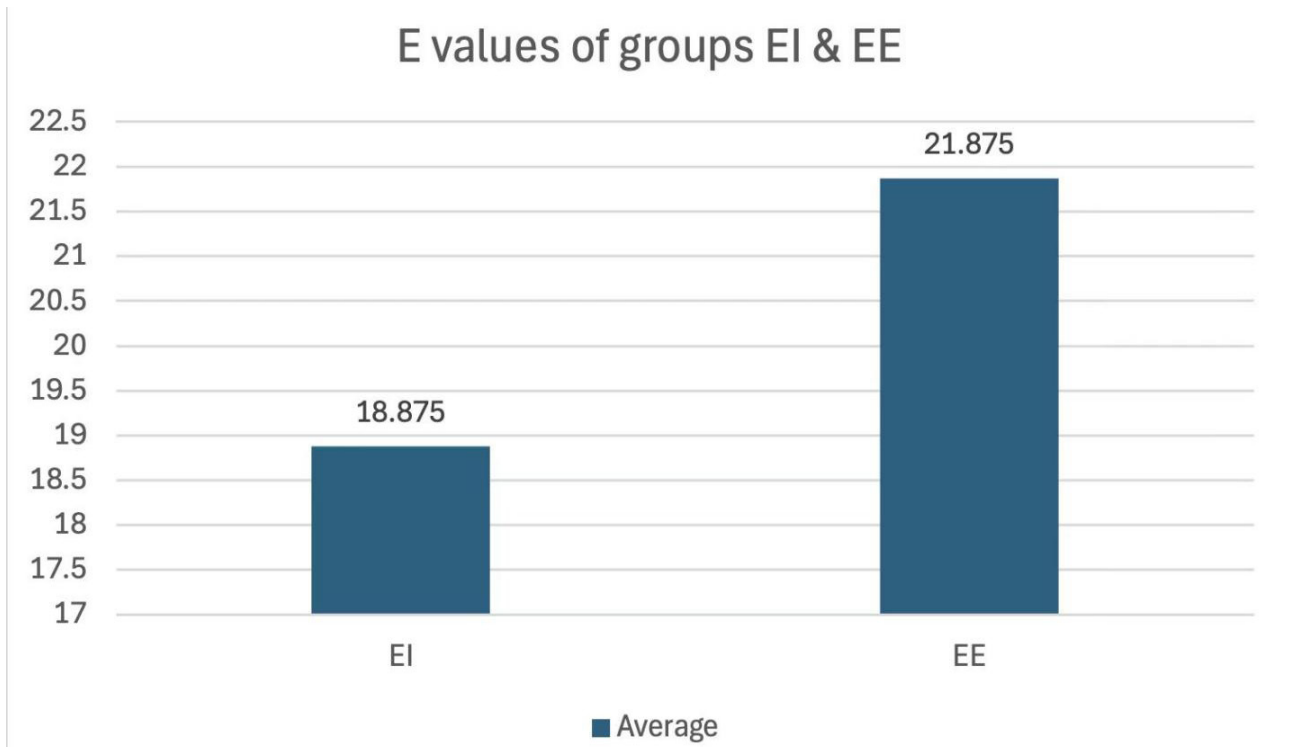
extroverted ( I-E group) with deception. We can see that the I-E group has a higher E-value than the I-I group because the mean E-value of the I-E group is 23.25 which is higher than that of the I-I group - 20.4.



**Figure 2: The I-values of groups I-E and I-I**

In this bar chart, these two groups are also introverted in their original result. One group of participants we told they were introverted (I-I group) without any deception. The other group participants we told them they were ex-

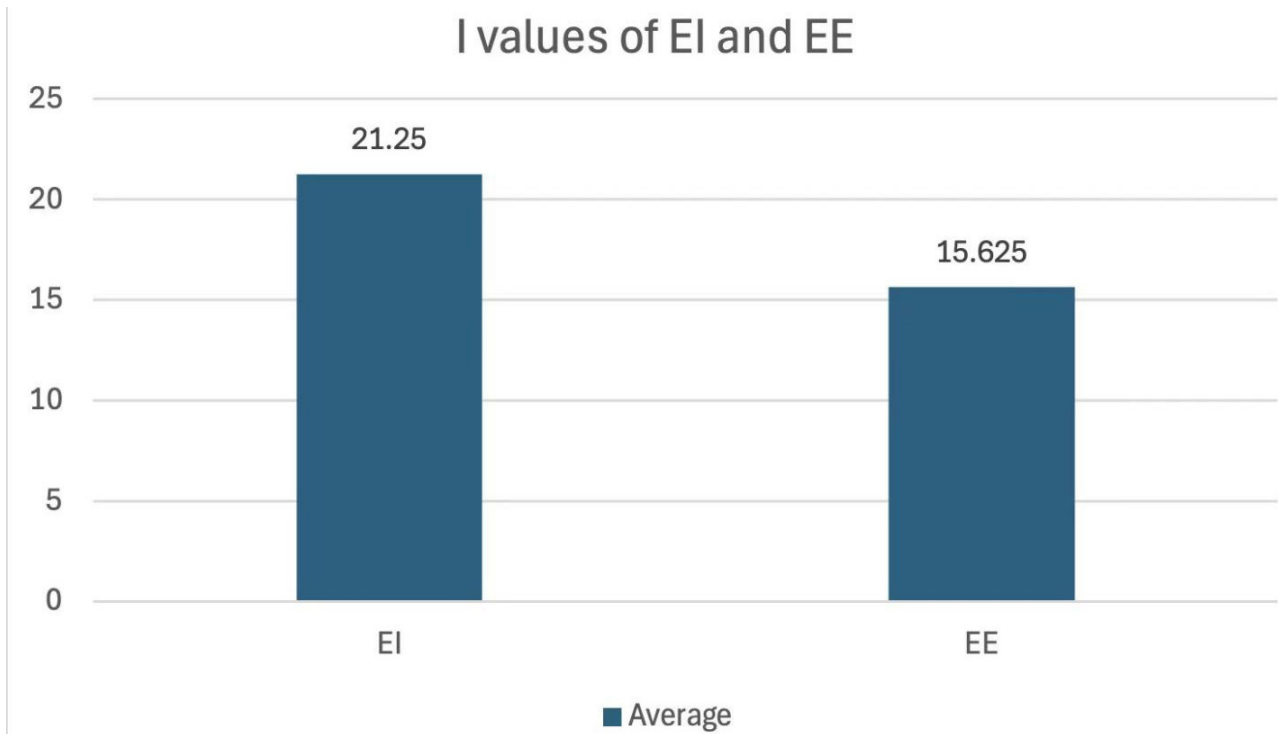
troverted ( I-E group) with deception. We can see that the I-E group has a higher I-score than the I-I group because the mean I-score of the I-I group is 18.1 which is higher than that of the I-E group - 15.45.



**Figure 3: The E-value of groups E-I and E-E**

In this bar chart, these two groups are also extroverted in their original result. One group of participants we told them they were actually extroverted (E-E group) without any deception. The other group of participants we told them they were introverted ( E-I group) with deception.

We can see that the E-E group has a higher E-value than the E-I group because the mean E-value of the E-E group is 21.875 which is higher than that of the E-I group - 18.875.



**Figure 4: The I-value of groups E-I and E-E**

In this bar chart, these two groups are also extroverted in their original result. One group of participants we told they were actually extroverted (E-E group) without any deception. The other group of participants we told them

they were introverted ( E-I group) with deception. We can find that the E-I group has a higher I value than the E-E group because the mean I value of the E-I group is 21.25 which is higher than that of the E-E group — 15.625.

	IE	II	EE	EI
Mean E value	23.25	20.24	21.875	18.875
Mean I value	15.45	18.1	15.625	21.25

**Figure 5: The Mean E and I values among these four groups**

Figure 5 shows the comparisons of E and I scores in the different groups. It is interesting to find that the E-value in the I-E group is greater than that in the E-E group, which shows that people who were introverted in origin and told themselves they were extroverted have a higher E-value than those extroverted people without any deception. The

same trend was found in the I scores of the I-I group and the E-I group.

After the data analysis of bar chart, we analyse these data with t-test to see the level of statistical significance. (Figure 6) We used two-tailed test to see the p-value of this data.

	T-statistic	df	P-value	
			One-tailed	Two-tailed
I-E & I-I (I)	-2.38	36.97	0.011399	0.022798
I-E & I-I (E)	1.91	32.64	0.0324645	0.064929
E-E & E-I (I)	2.38	13.14	0.0167545	0.033509
E-E & E-I (E)	-0.75	8.76	0.237364	0.474728

Figure 5: The T-test of four personality groups

**Figure 6: The T-test of four personality groups**



As we can see in the table, we can see all the t-test values for the four groups. The first group is I-E and I-I group for I value test. The t-value of this is -2.38 and the two-tailed p-value is 0.011399 which is less than 5%. This rejects the null hypothesis which means that the result was significant. For the second group is I-E and I-I group for E value test. The t-value of this is 1.91 and the two-tailed p-value is 0.064929 which is less than 10%. This result also rejects the null hypothesis which means that the result in this group was significant. The third group is the E-E and E-I group for I-value test. The t-statistic value in this group is 2.38 and the two-tailed p-value is 0.033509 which is less than 5%. This result rejects the null hypothesis which proves that the result was significant in this group. However, the result was different in the fourth group which is the E-E and E-I group for the E value test because the two-tailed p-value is 0.474728 which is much greater than 5%. This shows that the data of this group cannot reject the null hypothesis, which means that the result in this group is not significant.

### 8. Discussion

From the research, we found that labeling extroverts as introverts affects their self-reported introverted characteristics. This is due to the fact that after we told them they are introverted, there are many participants replied that they were introverted persons in deed but in fact, they are extroverts according to the first questionnaire result. Meanwhile, in the data we have collected and analyzed, we found that in E-I group, their scores of "introverted" questions was much higher than the scores in E-E group. The second conclusion is labeling introverts as extroverts affects their self-reported extroverted characteristics. The inference was similar to the former one, that is people show more extroverted characteristics when they finish the second questionnaire which makes the extroverted scored higher. And this research also showed that the extroverted persons are harder to change their behaviors to be more introverted, though they were told they were introverted people. This may because for some extroverted person, their personality is like that which means they prefer to go outside and make friends. This occasion may make them be more enjoyable and do not want to change anymore. Another interesting finding is that people may be more easily influenced by the 'introvert' or 'extrovert' labels, especially for those people who were told the reverse introvert and extrovert labels with their original one, because the mean E-score in the I-E group is higher than that in the E-E group. This shows that people's traits can be more easily distorted.

For the evaluation of our research, there are many

strengths. Firstly, our sampling method was convenient sampling which can make participants to be easier and more convenient to get. Secondly, we used equal number of introverted and extroverted questions which makes the balanced questionnaire. And all these questions randomly allocate in the second questionnaire. In this way, participants may not be influenced by the order of these questions. The third merit is that our study data can be quantitative. The second questionnaire, we used Likert scale to measure their level of introverted and extroverted so that we can see the quantitative data clearly and infer the conclusion easily. Meanwhile, there are many disadvantages. First, the generalizability of this study is low because all participants were Chinese, which means the result maybe cannot generalize to other countries. The time lag is quite long in which is 10 hours between the first questionnaire given out and the second questionnaire hand out to participants. This may make lots of confounding variables. During the 10 hours, there may be some things which will influenced the results of the experiment. For example, participants may test their MBTI on a professional website again which means their answers for the second questionnaire may just base on the their the newest test result instead of the result that we gave to them according to the first questionnaire. Thirdly, the individual differences among participants were inevitable. Maybe some participants may have special experiences on some introverted or extroverted occasions which makes their choices are harder to change. For example, some people may suffer early traumatic experiences which made them have a defense mechanism. [9] The last one is demand characteristics. Some participants may guess out the real aim behind the research because they may infer the role of the first questionnaire and the connection between both questionnaires. out the real aim behind the research because they may infer the role of the first questionnaire and the connection between both questionnaires.

### 9. Policy

The results of the research can also demonstrates the stereotype of the MBTI labels, especially for introverted and extroverted labels on participants' choices and minds, which can persuade more people just to be themselves and do not be limited by the personalities labels.

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## Appendix

### Questionnaire1:

1. Do you often seek out thrilling activities?  
yes or no
2. Do you often need an empathetic friend to lift your spirits?  
yes or no
3. Do you often do things and speak quickly without taking the time to think?  
yes or no
4. Would you do anything for the sake of a challenge?  
yes or no
4. Can you fully enjoy yourself at a lively party?  
yes or no
5. Do others think you are lively?  
yes or no
6. Do you mostly stay quiet when you are with others?  
yes or no
7. Do you enjoy talking to people so much that you never want to miss an opportunity to chat with strangers?  
yes or no
8. If you can't meet many people most of the time, do you feel unhappy?  
yes or no
9. Can you easily inject energy into a dull party?  
yes or no

10. Do you always talk to others about things you don't understand?  
yes or no

11. Do you like recommending yourself to others?  
yes or no

13. Are you always the first to introduce yourself at social gatherings?  
yes or no

### Questionnaire2:

Do you think that people with a personality like yours would be more inclined to relax by going out with friends for chatting, shopping, and enjoying food after a week of work?

Strongly disagree(1) disagree(2) Neither agree nor disagree (3) agree(4) strongly agree (5)

Do you think that people with a personality like yours participate in social activities mainly to enjoy interacting with others?

Strongly disagree(1) disagree(2) Neither agree nor disagree (3) agree(4) strongly agree (5)

Do you think that people with a personality like yours would usually avoid communicating by phone?

Strongly disagree(1) disagree(2) Neither agree nor disagree (3) agree(4) strongly agree (5)

Do you think that people with a personality like yours would usually avoid traveling alone to unfamiliar cities?

Strongly disagree(1) disagree(2) Neither agree nor disagree (3) agree(4) strongly agree (5)

Do you think that people with a personality like yours would feel very comfortable if a friend invited them to hang out offline every day?

Strongly disagree(1) disagree(2) Neither agree nor disagree (3) agree(4) strongly agree (5)

Do you think that people with a personality like yours often actively share interesting videos with others on short video platforms (e.g., TikTok)?

Strongly disagree(1) disagree(2) Neither agree nor disagree (3) agree(4) strongly agree (5)

Do you think that people with a personality like yours would usually enjoy their private space or time?

Strongly disagree(1) disagree(2) Neither agree nor disagree (3) agree(4) strongly agree (5)

Do you think that people with a personality like yours often use places like cafés or concert halls as places to relax?

Strongly disagree(1) disagree(2) Neither agree nor disagree (3) agree(4) strongly agree (5)

Do you think that people with a personality like yours would often avoid participating in team-based activities? Strongly disagree(1) disagree(2) Neither agree nor disagree (3) agree(4) strongly agree (5)

Do you think that people with a personality like yours, on their first day as a new student or new employee, would be more inclined to actively engage with others and learn about their



surroundings?

Strongly disagree(1) disagree(2) Neither agree nor disagree (3)  
agree(4) strongly agree (5)

Do you think that people with a personality like yours, when  
traveling alone and discovering a particularly beautiful scene,  
would randomly ask a stranger to take a picture for them?

Strongly disagree(1) disagree(2) Neither agree nor disagree (3)

agree(4) strongly agree (5)

Do you think that people with a personality like yours would  
often feel exhausted?

Strongly disagree(1) disagree(2) Neither agree nor disagree (3)  
agree(4) strongly agree (5)