

# Adolescents' First Impression Preference Based on Facial Expression

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**Abstract:** *In normal times, people can make relatively accurate first impressions of others through their faces in a very short time. However, this period of adolescence is a special period of rapid human development, and their preferences also fluctuate greatly, so they will have different first impressions of different emotional faces. This experiment selected happy, angry and calm faces from the Chinese Affective Picture System customized by the Chinese Academy of Sciences. A total of 59 adolescents over 16-18 years old rated their faces according to the Big Five personality. The results showed that except conscientiousness, the other four big five personality traits were significantly different among positive, neutral and negative facial emotions, and males scored higher than females in all five personality traits. Also, female faces scored higher than male faces on conscientiousness and openness. By understanding the forming preferences of first impression of adolescents, the group that often contacts with adolescents can improve the way they communicate with adolescents, and also let adolescents learn the correct way to judge others and avoid being influenced by stereotypes and other people's opinions.*

**Keywords:** *Facial expression; First impression; Big Five Personality Traits; Teenagers*

## 1. Introduction

The first impression is the interpersonal effect produced by the first interaction between people. People mainly obtain the impression of each other's gender, age, appearance, expression, posture, figure, dress and other aspects to judge the person's inner accomplishment and personality characteristics [1]. S. Asch, an American social psychologist, believes that the whole impression of things is generally formed around the first impression, so the first impression will have a stronger effect on the whole impression of things than the information obtained later, and it will also last longer [2].

When people meet a person, they will immediately begin to automatically judge the personality traits of that person [3], and this process takes place in a few seconds or even less than one second. Reports show that 75% of college students believe that appearance can be used as a criterion for judging a person's personality traits to some extent, although some psychologists do not support this view [4]. In addition, Passini and Norman [5] had also done a related study. They sat a group of undergraduates together for 15 minutes without giving them any chance to talk. After 15 minutes, the group was asked to evaluate each other's traits. The results showed that the correlation of "extraversion", "conscientiousness" and "openness" exceeded  $R = 0.3$ . This shows that the correct rate of rating strangers on these three traits is twice the error rate. This means that differences in environment and familiarity seem to have little effect on personality trait ratings. Similar findings have been found in recent related experimental studies [6]. On the other hand, there are experimental results prove that a mere glance at a person's face is enough to make some surprisingly accurate judgments, such as the degree of dominance or obedience [7]. Some people can also judge whether the person is homosexual or heterosexual in a very short time [8]. Even in the workplace, a leader's physiognomy also predicts his future success [9].

People's first impression may not be the most accurate, but it is the most distinct and firm. Once formed, it is difficult to change [10]. The formation of the first impression will also show the evaluation tendency of "partial generalization" in the halo effect [11], which leads to the failure to recognize others comprehensively and objectively, or to recognize the advantages or disadvantages of others because of the advantages of the first impression [12]. Whether the first impression left by a person in communication is good or bad is related to how people evaluate him in the future, and it often determines the future interpersonal communication and interpersonal relationship [1]. Mao Xinyuan uses the primacy effect of first impression to verify that it does have an impact on college students' interpersonal

relationships [13]. First impressions have a profound impact on the behavior of adults. Thierry has made further research on how the first impressions of adults affect the behavioral outcomes of children [14], but few studies have explored the impact of first impressions on teenagers.

People can often form the first impression of other people's personality perception according to other people's face or voice clues, and the main factors affecting the formation of the first impression are face factors and voice factors [15]. In the early research literature, facial attractiveness, which is a positive and pleasant emotional experience and the degree to which individuals are motivated to approach, has been studied by a lot of scientists [16]. As one of the variable cues of social perception, face is particularly important for the formation of first impression. Zhang Qing and others explored the social perception of facial expressions through personality traits [17]. Different personality traits lead to different expressions. Engell believes that among the numerous facial expressions of human individuals, the number of positive and negative expressions does not match, and there are more negative expressions, which may cause the perceiver to adapt to negative expressions, while the evaluation of other expressions (such as neutral, happy) faces has a biased impact [18]. Li Yaning and others believe that when the perceiver sees the facial expression of the target, it will cause the corresponding muscle movement of the perceiver to the facial expression. This will arouse the perceiver's own sensory-motor system of emotion, thus causing the corresponding emotional experience, and also affecting a social evaluation of the expresser [19]. Adolescence is a period of rapid development and change in one's life. Teenagers in this period are curious, keen, and active in thinking, but they are easy to be extreme and lack of discrimination for things. What is more, they are easy to be credulous, confused and suspicious, and have great volatility. Therefore, when teenagers are exposed to the facial expressions of strangers, it is worth studying that different facial expressions may lead to different first impression evaluation.

This study uses experimental method to observe the first impression of teenagers based on facial expressions and to explore the differences of the first impression caused by different facial expressions. It reveals whether the change of facial emotions will lead to inconsistent first impressions formed by teenagers.

## **2. Research methods**

### **2.1 Subjects**

In this study, convenience sampling was used to recruit 59 adolescents over 16 years old, who had the ability to act independently and had never seen the people's faces in the "Chinese Affective Picture System", including 18 males and 41 females. The age range is mainly between 16 and 18 years old. The content of this experiment has been approved by the professor of Wuhan University, and all the subjects have read and signed the informed consent before the experiment.

### **2.2 Materials**

**Emotional face.** A total of 18 emotional faces were selected from the Chinese Affective Picture System compiled by the Institute of Psychology of the Chinese Academy of Sciences, including 6 positive faces (happy), 6 negative faces (angry) and 6 neutral faces (calm), half male and half female, that is, 3 male and 3 female for each emotional face. Face numbers are PF1, PF2, PF3, PM1, PM2, PM3, NF1, NF2, NF3, NM1, NM2, NM3, TF1, TF2, TF3, TM1, TM2, TM3.

**Questionnaire.** In addition to the demographic issues of gender and age, this study uses the Big Five Personality traits [20] as the quantitative criteria for the first impression of adolescents. Five pairs of trait words selected by Wang Yuqing et al. [21] were used: extrovert-introvert (extraversion), easy-going-difficult (agreeableness), responsible-irresponsible (conscientiousness), calm-irritable (neuroticism), intelligent-unintelligent (openness).

### **2.3 Experimental design**

In this study, the independent variable was face emotion (positive, neutral and negative), and the dependent variable was the evaluation of the big five personality traits in the first impression of adolescents.

## 2.4 Experimental procedure

In this study, "SoJump" was used as a platform for carrying the experiment. There were 62 questions in the questionnaire. The first two were demographic questions about gender and age. Then, the instructions told the subjects, "Next, you will see some faces with different expressions. Please rate the characteristics of each person according to your first impression.". Scores of 1 and 7 represent two ends of the same personality trait, such as 1 for introversion and 7 for extroversion in the "introvert-extrovert" trait.

Next, the subjects were shown 18 emotional faces in random order, and judged the Big Five personality traits of the corresponding characters according to their first impression of the faces (Fig. 1).



Figure 1: Examples of experimental materials and questionnaires. Examples of positive, neutral, and negative facial expressions for men and women are shown on the left. The figure on the right shows an example of a questionnaire.

## 3. Results and Analysis

Researchers used RStudio (Version 2022.02.2), jamovi (Version 2.3.13) and JASP (Version 0.16.3) to collate and analyze the data, as well as plot [22-24].

### 3.1 The influence of facial emotion on the formation of first impression

The results of one-way analysis of variance (ANOVA) showed that except conscientiousness (CC), the other four personality traits were significantly different ( $p < 0.001$ ) among positive (P), neutral (T) and negative (N) facial emotions (Table 1).

Table 1: AE for extraversion, BA for agreeableness, CC for conscientiousness, DN for neuroticism, and EO for openness.

	Facial Expression	AE	BA	CC	DN	EO
Average score (Standard Deviation)	N	11.7 (3.43)	10.2 (3.08)	11.9 (3.05)	10.4 (3.36)	11.7 (2.96)
	P	14.8 (3.48)	13.9 (3.17)	12.6 (2.68)	12.9 (2.87)	13.0 (2.89)
	T	10.9 (3.59)	11.2 (3.15)	12.1 (2.85)	12.2 (3.26)	11.9 (2.64)
<i>F</i>		40.62	43.54	2.09	20.54	7.34
<i>p-value</i>		<0.001	<0.001	0.125	<0.001	<0.001

It means that, except conscientiousness, face emotion has a certain impact on the formation of other four personality traits (extraversion AE, agreeableness BA, neuroticism DN, openness EO). Using the

Post-Hoc Test to further analyze the differences among the three emotions, it is found that there are significant differences between the positive emotions of extraversion, agreeableness, openness and the other two, while there are no difference between negative facial expression and neutral facial expression; The negative emotion of neuroticism was significantly different from the other two, while there are no significant differences between the positive facial expression and neutral facial expressions. This result shows that people are more likely to associate positive expressions with extraversion, agreeableness and openness than neutral and negative expressions, but positive and neutral emotions on faces are less associated with neuroticism than negative emotions.

### 3.2 The influence of gender on the formation of first impression

#### 3.2.1 Effect of subject's gender

According to the results of the t-test, women scored significantly lower than men on all five traits (extraversion:  $t(352) = -4.17, p < 0.001, \text{Cohen's } d = -0.482$ ; agreeableness :  $t(352) = -2.51, p = 0.006, \text{Cohen's } d = -0.290$ ; Conscientiousness :  $t(352) = -3.99, p < 0.001, \text{Cohen's } d = -0.461$ ; neuroticism (Reverse score):  $t(352) = -2.73, p = 0.003, \text{Cohen's } d = -0.315$ ; open :  $t(352) = -3.80, p < 0.001, \text{Cohen's } d = -0.439$ ;) (Fig. 2). It shows that the gender of the subjects will affect the formation of the first impression. When facing the same expression, gender differences will cause men and women to form different first impressions. For example, when viewing a same face with same emotion, men are more likely than women to think that this is an extrovert, easy-going, responsible, calm and intelligent person.

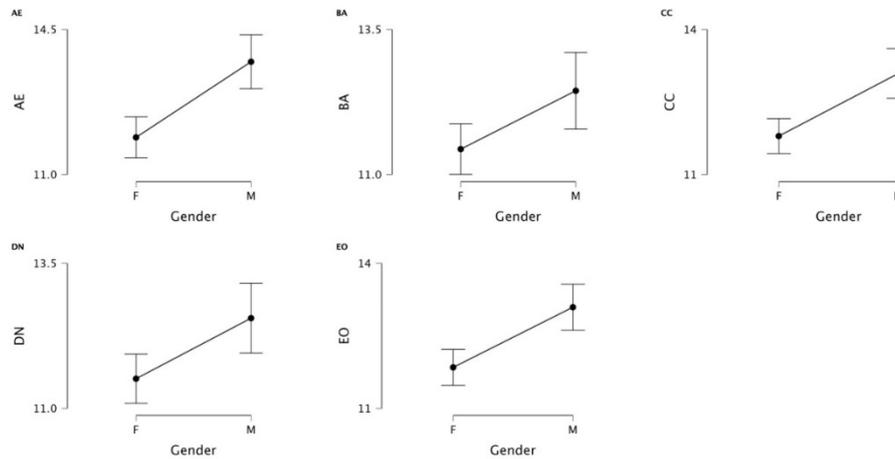


Figure 2: Women's Big Five personality trait scores for all faces were significantly lower than men's.

#### 3.2.2 Effect of facial gender

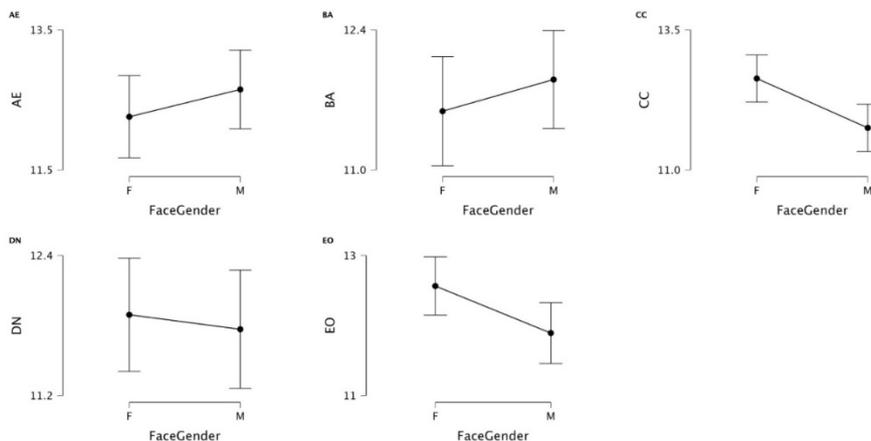


Figure 3: The scores of conscientiousness and openness of female faces were significantly higher than men's.

On the other hand, when Face Gender was used as an independent variable, the scores of conscientiousness and openness of female faces were significantly higher than those of male faces. This indicates that in the case of having the same emotion, women are more likely to be perceived as more

conscientious and open than men(See Fig.3).

#### 4. Discussion

This study used the method of experimental questionnaire to study the first impression of adolescents based on facial expressions, and found the influence of different facial emotions on the formation of adolescents' first impression, as well as the role of the gender of facial images and adolescents' own gender.

First of all, the study revealed that, in addition to conscientiousness, facial emotion has a certain impact on the formation of the other four personality traits (extraversion AE, agreeableness BA, neuroticism DN, openness EO). This means that when people see a stranger, whether the stranger's expression is calm, happy or angry will affect people's first impression of the person, which is mainly reflected in the agreeableness, extraversion, neuroticism and openness of the Big Five personality, but does not affect the judgment of conscientiousness. This means that our judgments of the conscientiousness of strangers are not easily influenced by their facial expressions, and the results of this paper are consistent with the results of social perception of adolescents' happy expressions [25]. The results of this study suggest that young people's facial expressions have no effect on perceived conscientiousness. Conscientiousness includes positive characteristics such as competence, self-discipline, prudence and responsibility [26], so it needs to be supported by previous behaviors, such as work efficiency and time management. Without specific background information, it is difficult for people to evaluate the conscientiousness of faces [25]. In this experiment, adolescents' ability of inferring whether a person has the traits of agreeableness, extraversion, neuroticism and openness from facial emotions is in line with Face-based Trait Inference. Face-based Trait Inference holds that people can judge personality traits such as extraversion, dominance, enthusiasm and ability by the faces of strangers [27]. Facial expressions that studied in this experiment provides clues for face-based trait inference, and different expressions will be associated with different traits. People would expect happy faces to be more extroverted and approachable, while angry faces are more aggressive [27-28]. The results of this study are also consistent with this conclusion: positive emotional faces are more likely to affect extraversion, openness and agreeableness, while negative emotional faces are more likely to affect neuroticism.

Secondly, the study found that the gender of the subjects will affect the formation of the first impression. For example, in this experiment, men and women were exposed to the same face, and men were more likely to think that this was an extrovert, easy-going, open, calm (neurotic dimension) and conscientious person. This is because most men mature later than women when they are in adolescence. According to the *China News of Traditional Chinese Medicine*, men will mature later than women, and most of them will not really mature until they are 27 years old. Surveys in Britain also prove that women are generally psychologically mature by the age of 24. As a result, teenage men are more likely to be childish than teenage women. Studies have also shown that young children tend to overestimate the trustworthiness of others [29], which means they tend to think positively about strangers. Therefore, the late maturity of adolescent men is one of the reasons why they form different first impressions from adolescent women. Moreover, other experiments have shown that men's evaluation of self-facial attractiveness is closer to the average, while women's evaluation of self-facial attractiveness is lower than the average [30]. This result is similar to the results of our experiment, which means that women and men will have similar differences in evaluating other people's faces. However, because the number of men selected in this experiment is only 18, which is different from the number of women, there will still be the problem that the experimental conclusion is not accurate enough.

In addition, the study also found that when Face Gender was used as an independent variable, the scores of conscientiousness and openness of female faces were significantly higher than those of male faces. It shows that people are more likely to perceive women as more conscientious and open than men in the same emotional situation. In China, most of the caregivers of children are women, and there are also more female teachers than male teachers in kindergartens or primary schools. A survey shows that female teachers account for 52.93% of all primary and secondary school teachers, and even 79.39% of primary school teachers in cities [31]. Therefore, adolescents have more opportunities to contact with women in their lives (especially in childhood) [32]. As a result, an open and responsible image of women is gradually formed in the adolescent brain, which leads to the fact that the teenagers have a more responsible and open impression on unfamiliar female faces that they see for the first time than male's. The greatest role of individuals in the process of creating impressions of others is classification thinking, that is, to divide perceived objects into various categories to facilitate dealing with different objects [33]. This explains the stereotype. Studies on the formation of emotional stereotypes among college students

have shown that adolescents are more likely to associate women with words related to positive emotions [34]. In terms of social factors, previous studies have found that because of the difference social status of men and women, women are often in a lower social status and usually play the role of "nurturing", so they are often asked to treat others with positive emotions such as friendliness and affinity [35]. Therefore, this creates a stereotype of women as open and conscientious. In terms of facial configuration, women's faces are more similar to children's faces due to the lack of male hormones in women than in men [36]. Studies have shown that the perceptual sign of fear and happiness always overlap with the perceptual sign of women [35]. In previous studies, "baby face" was often perceived as extrovert and friendly, because people always associate baby face with the image of a baby [27]. This suggests that women's faces are more likely to be associated with faces with positive emotions, resulting in a first impression similar to that of baby faces.

There are some limitations in this study. For example, the number of men and women found in this experiment is different, so there will be some errors. Moreover, this questionnaire survey also uses convenient sampling data, and most of the questionnaires are distributed in friends or acquaintances, so the results can not represent the entire youth group. Therefore, future experiments should look for more subjects and ensure that the average ratio of men to women is the same or similar. Moreover, there are only three facial expressions which are pleasure, anger and calmness were studied in this experiment, but there could be more positive and negative expressions. For example, positive expressions include surprise, and negative expressions include sadness. Therefore, future research can also explore the influence of more expressions on the first impression formed by young people. In this study, the Big Five Personality Traits was used to define the first impression, but there are more personality traits when describing a person. According to a research, children between the ages of five and six are more likely to trust unfamiliar faces. However, "trust" is not within the scope of the Big Five personality, so the impact of different expressions on personality traits other than the Big Five personality remains to be explored. Young people's judgment of the stranger's behavior through the stranger's face can also be one of the future research directions. This study was to let teenagers look at faces and use adjectives to score, which was abstract and lack of practical enlightenment in real life. However, adding behavioral indicators, such as "how much you are willing to cooperate with this person" and "do you think this person is often late for work", will have a positive guiding effect on adolescents. Generally, the facial expressions that people see in real life are dynamic, but this study is only a static facial emotion. If we can explore the dynamic expression, it will better reflect the situation in real life. Different ages have different ways of forming first impressions, and sometimes even when facing the same person, they will produce different first impressions. Experiments have shown that a face that an adult feels lack of trust is seen as trusting by a child. This also indicates that a person's growth will change the formation of the first impression. Therefore, the formation of a person's first impression can be compared longitudinally (child-adolescent-adult) in the future. This experiment does not limit the time teenagers spend observing faces, but according to relevant researches, people can make relatively accurate judgments about a person's characteristics in a few seconds or even a second. Therefore, the impact of long and short observation time on the consistency and accuracy of first impression evaluation remains to be studied.

In terms of application, adolescence is a special and important period of growth, and by observing the impact of facial emotions on the formation of adolescents' first impression, there are two positive practical effects. Firstly, for people who often come into contact with adolescents, such as teachers, they can further understand the cognitive process of adolescents by understanding the importance of facial expressions to adolescents. Therefore, teachers can create more effective teaching methods for teenagers, such as adding appropriate facial-expression management in class. Secondly, for teenagers themselves, they can avoid the formation of some stereotypes by understanding how their first impressions are formed at this stage. In this experiment, for example, the stereotype of women is involved: they are friendly and extrovert. However, after understanding the formation mechanism of first impression, adolescents will learn to use divergent thinking to judge others, which is conducive to adolescents' interpersonal relationships. Moreover, due to the rapid development of the Internet nowadays, teenagers cannot avoid contact with negative information on the Internet. If the importance of first impression is recognized, adolescents will correctly perceive different groups of people and reduce the influence of other people's opinions on their own judgments.

## 5. Conclusion

Different facial expressions have a certain influence on the personality traits of extraversion, agreeableness, neuroticism and openness, but have no effect on the personality traits of conscientiousness.

Gender differences can affect the formation of first impressions. When facing different facial expressions, men were more likely than women to describe the person as outgoing, pleasant, open, calm and conscientious.

Female faces are more likely to be perceived as conscientious and open than male faces.

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