

The Interface Between Nature and Nurture in Shaping Human Personality

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Abstract

This study looks at different aspects that shape a person's personality. We are primarily concerned with the socioeconomic status and culture of the family. Our study strategy is to integrate questionnaire answers with the Myer-Briggs 16 personality test. Based on their jobs and socioeconomic background, we divided the 122 respondents into five groups. Our conclusion is that both nature and nurture have an impact on personality. The socioeconomic position of a family is closely related to extraversion and introversion. This study provided insight on the significance of findings for domains such as psychology, education, and policy-making, creating a more comprehensive understanding of the elements that contribute to human personality formation.

1. Introduction

Because of the diversity of human personalities, there is a lot of discussion and achievement in categorizing personality types. The Myers-Briggs test (MBTI) (Briggs, 1987) is a widely used personality test that divides personality into 16 categories, while the topic of human personality formation is still being studied. This project is thus based on the existing framework of categorizing personalities (the MBTI 16 personality test) and collecting quantitative and qualitative data to investigate whether nature or nurture plays a more important role in human personality shaping and how they work in this aspect.

The MBTI 16 personality test, the theoretical model of personality types developed by American writers Isabel Briggs Myers and Catherine Cook Briggs, categorizes human personality through attention (extroverted-introverted), cognitive style (sensing-intuition), judgmental style (thinking-feeling), and lifestyle (judgment-perceiving). These eight traits can be combined to create 16 different personality types. Each different personality type has different characteristics, which makes it an easy choice to adopt these profiles.

"Nature is what we think of as pre-wiring and is influenced by genetic inheritance and other biological factors. Nurture is generally taken as the influence of external factors after conception, e.g. the product of exposure, experience, and learning on an individual" (McLeod, 2007, p.1). This is the definition of nature and nurture that will be followed in this research paper. We will categorize the factors in these two aspects that contribute to human development.

In a previous study about twins the Multidimensional Personality Questionnaire was used for 217 monozygotic and 117 dizygotic twins that were reared together in twin pairs and 44 monozygotic and 27 dizygotic twins that were reared apart. It was found that about 50% of measured diverse personalities can be attributed to genetic diversity (Lykken et al., 1988). This study can prove that nature-related factors have a great impact on human personality. Whereas nurture-related influences can also be simply categorized into two groups: family environment and social environment.

In this research, we will focus on exploring the influence of family economic condition (we divided them into three degrees of socioeconomic status: high, middle, or low) and culture on human personality shaping by combining the results of the questionnaire with the Myers Briggs 16 personality test.

In summary, we have described how the MBTI is categorized and mentioned the definitions of nature and nurture. Previous experiments were used to stimulate our thoughts on the topic, leading to our discussion of both aspects of family economic condition and culture in nurture.

2. Background: literature review, and research question

The debate surrounding the relative influence of nature and nurture on human character has long piqued the curiosity of psychologists and social scientists. The age-old question of whether our behaviors, personalities, and attributes are predominantly molded by genetic predisposition (nature) or environmental factors and experiences (nurture) has spurred substantial research and sparked intellectual interest across various disciplines.

Early theories of human development leaned heavily towards the influence of nature, suggesting that our genetic composition predetermined our behavioral tendencies and personalities. According to Bouchard Jr. (1997) who wrote a study regarding the genetic influences on human individual differences, studies of twins reared apart provide compelling evidence that idiosyncratic traits are probably influenced genetically. Search consultants who assist adopted individuals in finding their biological relatives also report numerous instances of concordance for idiosyncratic traits.

However, with the rise of behaviorism in the 20th century, the emphasis shifted towards the impact of the environment and external influences on human development. Previous research papers from the Department of Clinical Neuroscience, Osaka University Graduate School of Medicine, used a structural equation model to examine family environment factors such as number of siblings, birth order,

socioeconomic status (SES), child-rearing patterns, maternal participation, and paternal participation. Their factor analysis discovered three personality traits from 13 behavioral characteristics: extraversion, maturity, and intelligence. Their conclusion is that maturity is associated with a high socioeconomic class, a suitable child-raising style, and paternal involvement in child upbringing.

Another example is the study conducted by Hoffman (1991) about the influence of sibling differences in shaping personality, such as ordinal position, the child's age at the time of an event, and gender.

For the ordinal position, firstborn children are treated differently by parents throughout life as opposed to subsequent children (Cushna, 1966; Hilton, 1967; Rothbart, 1971). The firstborn child enters the family at a very different point in the family's development. This child is the greatest disruption to the couple's relationship, and at each stage in the firstborn's life, he or she is dealing with inexperienced parents (Lerner & Spanier, 1978; Miller & Newman, 1978). So it is more likely that the first children will receive more attention from parents and be expected to have higher academic performance.

Besides, the child's age at the time of an event is different among siblings. Divorce is presented as an example because it has been cited by behavioral geneticists as a shared family experience that has been ruled out as an important environmental variable by the absence of sibling similarity across personality traits (Rowe, 1987). Yet, developmental research has indicated that the event is experienced differently depending on the age of the child when the divorce occurs. There are several studies that have explicitly examined the different effects of divorce when it occurs at different stages in the child's life, such as in the research of Kalter and his associates (Kalter & Rembar, 1981), the more recent investigation by Allison and Furstenberg (1989), or the clinical studies of Kelly & Wallerstein (1975; 1979). For the young child, his egocentrism can lead him to interpret the father's departure as a response to him or her, with resulting guilt and a sense of abandonment that lasts beyond the early years. In contrast, the child who is older when the divorce occurs has a more accurate interpretation of the events and the parents' emotions. The school-aged child also has more support outside the family and more opportunities to escape the emotional upset of the custodial parent (Kelly & Wallerstein, 1975). These mean that their interpretation of the event will be different and thus influence their personalities differently.

As regards gender, research with toddlers and preschoolers has shown, for example, that girls are given help more quickly when performing a task and that their bids for dependency - such as clinging to the mother's skirt or seeking body contact as she works in the kitchen - are more often reacted to positively, whereas boys' similar attempts are discouraged (Fagot, 1978; 1985). Thus, males and females do experience objectively different family environments. Much of this difference is due to parents' sex role beliefs and not to the characteristics of the child.

Contemporary research recognizes that both nature and nurture play integral roles in shaping human character. Advances in genetic research have revealed how genes interact with the environment to influence behavior, cognition, and emotional

responses. Current thinking holds that each individual picks and chooses from a range of stimuli and events largely on the basis of his or her genotype and creates a unique set of experiences - that is, people help create their own environments. (Bouchard Jr, 1994). Besides, according to Valles (2012), Dobzhansky and Penrose argue against the bias that the diversity of environments influences human personality by offering a theory of their own. However, this can be admired as a tour de force of casuistry. It is as follows: man chooses his environment; the environment chosen is determined by the genotype of one who chooses; ergo, the environmental effects are not environmental but genetic!

On the other side, Epigenetics, for instance, explores how environmental factors can modify gene expression, leading to lasting effects on an individual's character. The mechanisms allow genes to respond to environmental stimuli. External factors such as early-life experiences, social interactions, and exposure to stress can leave epigenetic marks on genes, impacting their expression. For example, studies have shown that early-life adversity can lead to changes in DNA methylation patterns, affecting stress-response genes, and potentially influencing personality traits such as resilience and emotional regulation. (Anacker, et al., 2014). Furthermore, Epigenetic changes can persist throughout an individual's lifetime. This means that early-life experiences and environmental influences can shape an individual's personality traits and behavioral tendencies in the long term. It helps explain why certain personality traits and behavioral patterns may be stable over time, even though genetic variations alone cannot fully account for them.

Furthermore, different physical appearances can elicit different parental behavior (Langlois, 1986). Parental behavior is affected also by the child's temperament, and thus a child's genetics and previous experiences may evoke different parental treatment (Crockenberg, 1986; Lerner & Galambos, 1986; Thompson, 1986). For example, early predispositions in the child set off parent reactions that, in turn, affect the child, and even minor differences can be augmented by this interactive process.

Overall, the insights resulting from this literature are:

1. Nature may impact the environment in which individuals encounter, which in turn influences nurture.
2. Nurture has the ability to stimulate genetic predisposition, resulting in long-term repercussions on people's personalities.

The present research aims to investigate the complex interplay between nature and nurture in the formation of human character. It attempts to give a thorough knowledge of the complicated interaction between genetic predispositions and environmental effects by reviewing empirical investigations, psychological trials, and longitudinal research to determine which portion plays a key role in creating personality. Since nature cannot be readily modified, we shall concentrate our research on nurture. Based on prior studies in this sector, we discovered that there is little empirical data demonstrating the influence of educational background or culture on personality shaping. Furthermore, because the majority of studies were conducted many years ago, the validity of the findings must be questioned. As a result, we present a fresh perspective on how socioeconomic status influences one's personality.

Our research endeavors to shed light on the implications of findings for fields like psychology, education, and policy-making, fostering a deeper appreciation of the nuanced factors that contribute to human personality formation. Through this exploration, this research seeks to contribute to a more holistic understanding of the multifaceted dynamics that shape the essence of human personality.

3. Method: research design, data collection, and data analysis

The project comprises a survey using a questionnaire to understand how people think their personalities are influenced. The questionnaire is used to collect numerical and detailed data. Two methods of collecting questionnaires were used: online and offline. In general, 122 people completed the questionnaire. These 122 participants were selected by convenient sampling techniques, including Chinese CSAP summer school students, WeChat contacts, and people on the streets of Cambridge in the summer of 2023. Participants are aged from 14 to 60 and have seven different nationalities (Chinese, Romanian, Irish, Canadian, Vietnamese, and Italian). Therefore, the sample of the project is relatively generalizable. We used mixed methods to analyze numerical and detailed data. Pie charts are used to collect and analyze quantitative data, while qualitative data is analyzed by thematic analysis. Compared to writing, pie charts visualize information and show clear percentages. However, there might be similarities between people who walk on the streets of Cambridge (they are mostly educated and studying in high school or university) and students of CSAP (most of them plan to go to university in England after 1 or 2 years, all of them study in an international school, and they are all Chinese). Therefore, these participants represent people who live in Cambridge and students who study A-level courses in international schools in China. Moreover, though the age range of the sample is large, 72 out of 122 participants were aged 14–18, which accounts for 59.02%. A large portion of the participants are teenagers and, therefore, the result of the survey can't be generalized to people beyond teenagers. In addition, gender bias is another problem that affects the generalization of survey results.

The number of female participants (75) is significantly higher than the number of male participants (43), so the result may mainly represent female opinions of personality. In conclusion, with the time and location constraints, we tried our best to maximize generalization, but there are still some problems that are hard to avoid (e.g. limited sample size).

4. Results: data analysis and findings

Pie charts are used to analyze the data collected from the questionnaire, especially numerical data.

Fig 1.1: Occupations of respondents

Fig 1.2: Socioeconomic status of respondents

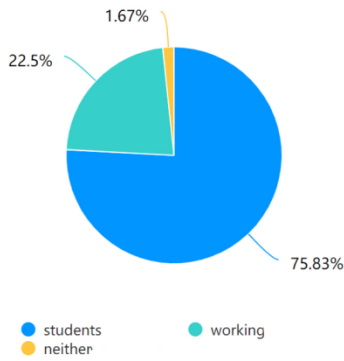


Figure 1.1

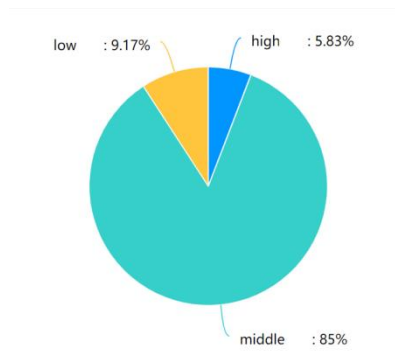


Figure 1.2

From Figure 1.1, it can be seen that most of our respondents are students while only 22.5% are employees. Despite that, a proportion of 1.67% are neither students nor workers. Figure 1.2 suggests that 85% of respondents among these 122 live within a middle socioeconomic status whilst 9.17% are low-earners and 5.83% are considered rich.

Figure 1.3: Whether respondents have ever done a personality test.

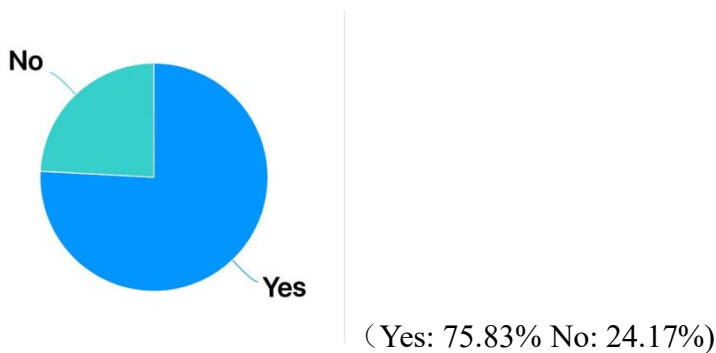


Figure 1.3

A quarter of the 122 respondents had never done any personality test, such as the MBTI test or MMPI test.

Figure 1.4: Whether nature or nurture influence human personality shaping

Figure 1.5: Whether nature or nurture plays a more important role

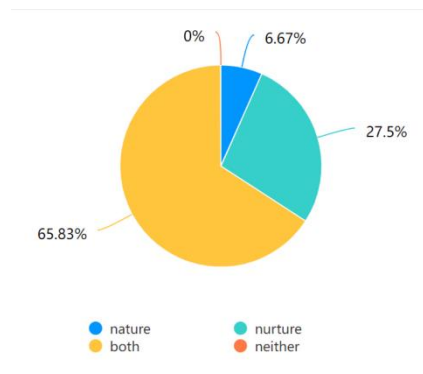


Figure 1.4

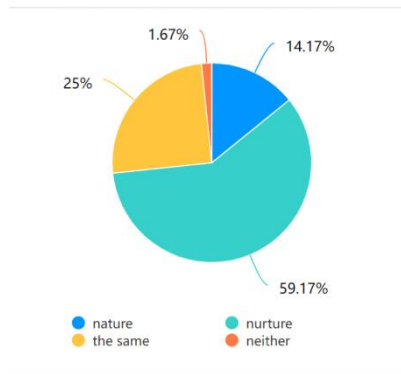


Figure 1.5

To summarize the responses, we categorized the 122 respondents into five different types based on their occupations and socioeconomic status. A larger portion of students (27/91) than employees (6/27) think that personality is shaped due to nurture factors. 60 out of 91 students share the consensus that both nature and nurture factors shape personality traits with 18 being employees (out of 27). 11 students live at a relatively lower level in society, and they stressed the perspectives of school and family, 9 of whom think that both nature and nurture determine one's personality, while the rest emphasize nurture. Researchers suggest this is due to their living patterns, as adolescents spend most of their time with their parents and at school. Their responses reflect negative emotions in daily life. For instance, three of them describe school life as "disgusting" and "boring". On the other hand, students in the middle class agree mostly (50/76) with the opinion that both nature and nurture factors shape personality traits, and 22 of them believe nurture is the factor. In contrast, 25 employers out of 27 are middle-class; they focus more on factors such as their working environment and their children than on their educational background, as young teenagers did. The feedback tends to show an overwhelmingly large portion of working respondents (18/27) agreeing with the opinion that both nature and nurture shape our personality traits. Students, like those of lower status, give much consideration to parents and schools, especially the atmosphere of their original families. They think parents provide them with personality traits formed in genes, and their social circle helps change behaviors and cognitions. However, working people think more thoroughly; they form concepts of personality both from themselves and from their children. One respondent believed that "children are born with a blank slate, and parents paint on it like painters." Others find it difficult to adapt to the confrontational nature of work. It's a challenge to balance work and life. In their daily lives, they change their roles between family and work. Thus, they do different tasks under various conditions. Personality traits are shaped and then changed from time to time. Additionally, the next generation will be affected when respondents act in the role of parents; their cognition and behaviors can be changed. For example, a shy child can become confident by practicing or being influenced by their father. There are much fewer respondents in the upper class. A quarter of student respondents (1/4) believe mutual factors of nature and nurture shape personality, while the rest (3/4) believe it is nurture that results in personality shaping. Despite typical factors of family and friends, they proposed the idea of past experiences changing personality patterns. They form new understandings of the world when witnessing various kinds of events and when solving oncoming problems. There might be a torturous experience teaching them to be stronger. To mention the only working respondent in high school, he emphasized his belief in traditional Chinese culture - the five elements. The five elements - gold, wood, water, fire, and soil - are said to be formed when a new baby is born. This respondent regards nature and nurture as two necessities at the same time. Nature is responsible for shaping basic characteristics, and nurture is responsible for balancing one's strengths and weaknesses.

When discussing the factors shaping personality, there is the possibility of nature overwhelming nurture or the opposite, as well as sharing a balance of nature and nurture. In the student group (91 respondents), 13 (2 from low status and 11 from the middle class) believe nature plays a more important role, while 56 (6 from low status, 46 from the middle class, and 4 from the higher classes) think nurture does. Among the rest, 20 (3 from the middle class and 17 from a higher status) think the two factors have the same importance in shaping human personality traits. To emphasize, two respondents from the middle class regarded personality shaping as a result of neither nature nor nurture factors. "I believe how you respond to personality tests is perhaps more revelatory than the tests themselves, which doesn't make them obsolete in any way." They think the personality tests are subjective and traditional; different types of personality tests lead to different answers due to the differences brought by each criterion. Of those who have already entered job markets, 3 shared the opinion that nature plays a more important role, 14 emphasize nurture (all 17 are from the middle class), and 10 (8 from the middle class and both of the high class respondents) think they share an equal effect on shaping human personality.

5. Conclusions and future research

According to the responses from participants, most people agree that nature and nurture work together to shape human personalities. For students with low socioeconomic family status, personalities are seen as more influenced by nurture. For students with middle or high socioeconomic family status, nature and nurture play similar roles in shaping personalities. As for adults, there isn't a significant difference in socioeconomic status. Their opinions on factors shaping personalities are diverse, which include nature, nurture, and mixed nature and nurture. However, it should be stressed that socioeconomic status is a relatively subjective factor. In order to follow the ethical guideline of confidentiality, we did not ask for respondent information on salaries and did not provide standardized criteria for them to judge, so they evaluated their socioeconomic status based on their beliefs on the economic environment of society. Therefore, In the MBTI 16 personality test, socioeconomic status is related to extrovert and introvert personalities; students with low socioeconomic status are more likely to be I (introvert), while the rest of the students don't have an obvious bias towards a specific personality. In addition, occupation is also one component of shaping personalities. Compared to students, most working adults are T (thinking). We suppose this situation is related to working experience, which is not studied extensively in this survey. This leaves the topic of how working shapes the personality of thinking (opposite to feeling) open for study in further research. We aimed to investigate whether educational systems (international or local) can influence personality shaping. However, because of the limitation of the sample (only 36 out of 122 participants studied in the local educational system), we could only make limited progress.

5.1 Limitations of MBTI

1. Self-cognitive aspect

People often fail to achieve a full understanding of themselves. In our imagination, we may ignore the effects that different situations may have on the way we think. For example, if we try to visualize how we would react in anger when taking a test, but we are in a calm state of mind at the time of taking the test, the way we think in this state can be easily substituted for the angry state. In fact, many people think in a completely different way in an angry state. This can lead to inaccurate results, which is a limitation of the MBTI 16 personality tests.

2. Different evaluation criteria

Due to the popularity of the MBTI theory, tests based on this theory are becoming more common. Some tests give the statements for the participants to judge as right or wrong, while others have the participants rate the statement in terms of degree. Some tests have as few as fifty questions, while others have more than a hundred. These show that each set of questions is judged differently and that we cannot ensure that all people have the same access to the test, so this may also lead to biased results.

3. About the MBTI itself

The MBTI categorizes people's personalities into two parts using four dimensions, and this categorization can lead to some problems. The numerical results obtained by each individual for the same personality type can be very different. Some people are sixty percent introverted, while others are ninety percent, which means that the personalities they display will not be exactly the same.

6. Author contributions

Name	Role	Responsibility
Xiao Yuxuan	Leader	Online researching Analysis of the MBTI test Project design
Wei Chenxu	Data collector	Questionnaire design Results conclusion
Tao Shuya	Speech maker	Data analysis
Cheng Yixuan	Resource investigator	Background research and editing

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Appendix: The Questionnaire

The Influence of Nature and Nurture on Human Personality Shaping

Hi guys! Thank you for completing this questionnaire, that means a lot for us. The research aims to investigate the interface between nature and nurture in shaping human personalities, so the questionnaire is mainly about personalities. Before starting it, here are several caveats you should notice. First of all, this questionnaire can only be seen by researchers, so don't worry about leakage of privacy. It is OK if you want to delete your data after finishing it, please contact me at evelynweichenxu@gmail.com. Moreover, the questionnaire mentioned sex and age, it's acceptable if you don't want to give out that information, so just skip it. For the last point, if you have any questions about the questionnaire or the research, contact me at evelynweichenxu@gmail.com. Thanks for your patience. The information below could be useful for you to complete the questionnaire, so please read it carefully.

Personality: The term personality refers to the set of traits and patterns of thought, behavior, and feelings that make you you.

Nature: genetic factors and nurture.

1. Family- socioeconomic status/parents/brothers or sisters
2. School- peer/teacher pressure
3. Society- social experience(eg.relationship with colleague)
4. Internet- cyber behavior (such as violence)

1. What's your nationality?

2. Sex

female

male

3. Age

4. What's your social character?

students

working

neither

5. What is it?

[Rely on question four, option three](#)

6. What's your family socioeconomic status?

high

middle

low

7. What's your educational background? Are you studying in an international or local educational system (for students)?

8. How well do you know personality tests?

- very familiar
- familiar
- heard it before
- don't know at all

9. Have you ever done personality tests before (MMPI/MBTI/ etc)?

- Yes
- No

10. If Yes, what's your result in personality tests (MMPI/MBTI/The 9 Enneagram) Types?

[Referring to question nine, option one](#)

11. Do you think personality shaping is influenced by nature or nurture?

- nature
- nurture
- both
- neither

12. Why?

13. How do nature and nurture influence your personality shaping; can you give me an example?

14. Do you think nature or nurture play a more important role in shaping your personality?

- nature
- nurture
- the same
- neither

15. Rate your satisfaction in school/working life (1 means not satisfied at all;10 means fully satisfied)

16. Give reasons for your rating.

17. Anything else you want to tell us about personality or personality tests? E.g. What do you think about personality tests?/Do they help?/Do you think they are logical and reasonable or not?

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Research Guidelines

This study followed the research guidelines of the Arts and Humanities, Cambridge Summer Academic Program 2023.

Informed Consent Statement

Not Applicable.

Data Availability

Please contact the corresponding author(s) for all reasonable requests for access to the data.

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Conflicts of Interest

The authors declare no conflict of interest.

Intellectual Property

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