

The Relationship between Developmental Factors and the Big Five Personality Traits

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Introduction

Since the introduction of the Big Five personality traits theory, it has been a staple classification of personality traits in personality psychology. The Big Five personality traits theory consists of five dimensions: openness to experiences, conscientiousness, neuroticism, extraversion, and agreeableness.

Openness to experiences indicates how open-minded a person is. This index includes attributes such as curiosity, active imagination, artistic sensitivity, and high intrapersonal intelligence. Individuals with high openness to experiences are more likely to have progressive views, have more interests, and enjoy debates on abstract concepts. Individuals who are low in openness will have a higher chance of being more conservative, following more routines in life, and prefer consistency.

Conscientiousness refers to a person's ability to exercise self-discipline to achieve their goals. A conscientious person is organized, hardworking, dependable, and pays more attention to detail. High conscientiousness may also lead to compulsive neatness or a workaholic lifestyle. Individuals who score low in conscientiousness are not necessarily less achievement driven but are less willing to work on the first steps in achieving those goals.

Neuroticism is the trait of the general tendency to experience adverse affects such as anger, anxiety, sadness, jealousy, embarrassment, self-criticism, and guilt. A person high in neuroticism would often focus more on stressors in ordinary situations and self-criticize than others who score lower in neuroticism. While neuroticism is regularly viewed as a more disadvantageous trait than the other dimensions, high neuroticism also has its benefits, such as a higher chance of self-improvement, higher self-awareness, and lower risk-taking.

Extraversion refers to the sociability of an individual. A person higher in extraversion is more talkative, energetic, assertive, and dependent than their lower-scoring counterparts. Individuals who score lower are more reserved and independent, and less impulsive.

Agreeableness is the ability to be sympathetic to others and place others' needs before your own and indicates traits such as empathy, trust, and kindness. Individuals high in agreeableness find gratification in helping others and are viewed as more easy-going, while people who show low agreeableness are more assertive, sceptical of others, and more competitive than cooperative.

Understanding the Big Five personality theory is greatly important because it measures characteristics that can predict things such as financial success, motivation, and health. Studies conducted on workers found that men and women who scored above average in agreeableness earned 18% and 5% less than men and women with a below-average scores in agreeableness, respectively (Judge & Livingston, 2012). Conscientiousness levels of workers were significantly related to job performance (Tett, 1998). Studies have found that students' conscientiousness levels were greatly responsible for the relationship between their motivation to excel in college and their grade point average (Komarraju & Karau, 2005). Studies on the individual well-being of Japanese people showed that current smokers were higher in extraversion and lower in conscientiousness than never smokers (Abe, Oshio, Kawamoto, & Ito, 2019). Neuroticism has been shown to predict the individual's longevity and quality of life and the likelihood of suffering from mental and physical disorders (Lahey, 2009).

Despite the vast amount of studies on the effect of Big Five personality traits on every aspect of our lives, our understanding of personality development is still minimal. This is where the proposed research fits in. It was recently discovered that hereditary and environmental factors significantly influence a person's Big Five personality traits, with an estimated heritability of 30 to 60% (Zwir et al., 2018). While hereditary factors are not likely changeable, environmental factors can be. By better understanding personality development, it could benefit many other fields in psychology, gaining insight on difficult questions such as how events in childhood can impact motivation and morality or how parental care can further support children with behaviour disorders. However, before coming to causal conclusions, correlational studies need to be conducted to identify the behaviour of development and personality. In this paper, I conducted exploratory research on high school students from schools following the American education system to reach a greater understanding of the relationship between developmental factors and the Big Five personality traits.

Methods

The given study is exploratory research that draws from data collected through self-reported surveys. The survey uses multiple-choice, interval scale, and open-ended questions to help identify correlations between development and personality but also acknowledge factors that influence the data, such as heredity and age, and their correlation with personality. After the data was collected from the survey, participants were grouped by similar developmental variables, and the mean percentages of the participants' Big Five personality traits were taken and compared with the rest of the participants' responses and scores.

The survey was distributed online through email and social media. Students from High schools with an American education system, such as Hong Kong International School, were randomly picked for the survey. Then, the chosen participants got directly sent emails. The rest of the participants came from social media, specifically Instagram, where the survey link was posted with instructions and a quick summary of the contents. My Instagram account was only followed by students from high schools based on the American education system. All responses were anonymous, and participants were informed of that before taking the survey.

Experimental Design

The survey was separated into three sections; the first section asked demographic questions, the second section was a Big Five personality traits test, and the third section contained questions about the participant's childhood, environment, and development.

For the first section, many standard demographic questions were included, such as ones on age and sex. Demographic questions on age and sex were included to see how biological factors influence personality when combined with certain developmental factors such as the quality of parental care or the number of childhood friends.

The second section used John, Donahue, and Kentle's (1999) Big Five Inventory (BFI) to measure the participant's Big Five personality traits. The BFI comprised 44 statements that related to the Big Five personality traits. After each statement, a scale ranging from one to five was given to the participant. The scale denoted the participants' opinions on how true each statement applied to them, with one being strongly disagree, two being disagree, three being neutral, four being agree, and five being strongly agree. The numbers collected from the statements were then added with other statements that revolved around the same Big Five personality trait, with some questions being reverse-scored to get the participant's Big Five personality index.

The third section asked questions about the participant's childhood, environment, and development. Each question was another variable; for every participant showcasing the variable, their Big Five personality traits percentage was averaged out with the other participants with the same variable. For example, multiple participants with two siblings were grouped to find their mean score in each Big Five personality trait. The

correlation between personality and specific aspects of development could be found with many variables. The variables were grouped with other questions that related to the same variable. By having multiple variables, a single participant's childhood could be broken down and categorized, which allowed for precise differentiation when comparing different aspects of participants' childhoods and their relation to their personalities. Each variable's sample size also increased and gave more accurate data. The questions in this section all related to one of these six categories: parental care, peer relationships, familial relationships, parental mindset, social identity, and relationship with pets.

Google Forms was the chosen platform for the survey due to the flexibility, functionality, and distribution benefits of an online survey. Google Forms also includes functions that condense all responses into an organized table, making data analysis more efficient.

Participants

In order to reduce the number of unaccounted variables, the targeted demographic was high school students from schools following the American education system. Students from grade 9 to grade 12 were considered high schoolers, so age was not a restriction. Demographic variables such as sex, gender, ethnicity, affiliated religion and culture, and age were variables that could be accounted for, so none of those demographic features were restrictions and were instead recorded in the first section of the survey. Since the targeted demographic was students, questions on level of education and income were not asked.

Data Analysis

After collecting the scores and responses from the surveys, the data was compiled into a Google Sheets table. There, the data was not organized enough to be used, and the open-ended question responses were not converted in a way where different responses with the same meaning would be grouped, so the data needed to be revised.

First, participants' Big Five personality traits score was converted into a percentage of 100 because some traits had more questions than others, so it would be difficult to compare the data without a singular measure. The percentage shows how much of the trait the participant show; for example, if someone scores 91 in extraversion, it means they are very extroverted, while someone who scores 24 in agreeableness is primarily disagreeable.

Second, all the open-ended question responses were converted into quantitative data suitable for a table and for the data to be clear and straightforward enough to group participants by their responses; for example, participants' relationships with their siblings and parents were placed on a scale from one to four, one being distant, two being casual, three being close, and four being very close.

Finally, the data was suitable for the second part of the analysis, exploring the correlations between developmental variables and the Big Five personality traits. As explained earlier, the participants would be grouped by a specific variable, and the mean of each Big Five personality trait of that group would be collected into a new graph.

Results

The study showed many takeaways from the data collected, but only the most relevant results will be discussed. For reference, a table is provided below with the data. Some variables were omitted from the table for accuracy due to the low sample size for that variable.

Table 1. Graph of the correlation table. The first column depicts the developmental factor category. The first row shows which Big Five personality trait is being measured. All values are rounded to the nearest tenth place.

	Extraversion	Agreeableness	Conscientious	Neuroticism	Openness to Experience
Overall	62.1	74.6	66.7	60.1	67.9
Male	51.7	73.3	67.8	53.	61.8
Female	65.6	73.7	66.5	64.4	68.1
16-18 year old	62.8	75.7	67.6	59.2	69.
14-15 year old	57.5	67.8	61.1	65.6	61.
Single Child	61.7	68.9	66.7	64.4	72.7
With Siblings	62.2	73.2	66.7	58.9	66.7
Youngest	75.4	77.	67.	66.7	69.7
Oldest	46.3	72.2	66.7	61.1	64.
4 Relationship with Siblings	58.8	78.5	62.6	59.3	68.3
3 Relationship with Siblings	66.1	76.	70.6	56.5	66.7
2 Relationship with Siblings	55.6	67.5	63.6	67.5	60.5
Married & Together	59.3	72.2	65.3	61.	64.5
Married but Separate	67.5	82.2	76.7	76.7	76.
Divorced	55.	73.	70.4	52.6	68.
3-4 Relationship with Mom	61.3	73.7	68.4	57.9	65.5
1-2 Relationship with Mom	55.	71.1	62.22	71.42	70.
Authoritative Mom	59.2	76.4	68.5	60.9	65.8
Authoritarian Mom	71.9	71.7	73.3	52.8	70.
Permissive Mom	51.	56.9	53.8	65.3	65.6
3-4 Relationship with Dad	64.6	76.5	70.	53.8	66.1
1-2 Relationship with Dad	56.9	70.9	65.3	65.2	66.6
Distant Dad	58.9	78.1	71.4	58.7	57.1
Authoritative Dad	62.9	72.5	68.9	55.6	67.7
Authoritarian Dad	52.3	73.	69.4	65.	66.7
Uninvolved Dad	58.8	68.9	62.6	61.5	63.7
Moved 1 Time	69.6	71.	70.5	58.4	62.3

Moved 2 Times	55.	74.	73.	54.4	72.
Moved 3-5 Times	57.9	76.7	64.1	71.1	75.7
Stayed for 4-5 years	55.6	78.9	71.7	64.4	80.
Stayed for more than 6 years	66.1	71.6	71.4	52.8	64.4
Had Pets	60.1	69.6	66.7	60.5	69.6
No Pets	59.8	80.	68.2	60.9	60.3
Nonconforming Sexuality	60.	64.9	69.3	62.2	66.
Nonconforming Gender Identity	62.1	73.9	68.3	61.8	68.4

Firstly, the overall percentage of all participants' extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience were 62.1%, 74.6%, 66.7%, 60.1%, and 67.9%, respectively.

Secondly, the results of the demographic variables aligned with our current understanding of the Big Five personality traits. Female and male responses were almost identical in agreeableness and conscientiousness, but in the other traits, females scored 13.9% higher than males in extraversion, 11.4% higher in neuroticism, and 6.3% higher in openness to experiences. Students 16 to 18 years old scored higher in all traits except neuroticism compared to students 14 to 15 years old. Participants who were the youngest sibling in their family scored similarly to participants who were the oldest sibling in the family except in extraversion, with the youngest siblings scoring 29.1% higher in extraversion, which was the highest score in any of the variables.

Thirdly, familial relationships and parenting styles significantly correlated with the Big Five personality traits. As mentioned in the data analysis section, participants' relationships with their siblings and parents were placed on a scale from one to four, one being distant, two being casual, three being close, and four being very close. The quality of the relationship participants have with their siblings was directly correlated with their scores in agreeableness and openness to experience. However, the quality of the relationship participants had with their parents was directly correlated with all five personality traits, except neuroticism, which was negatively correlated. Participants with married but separated parents had the highest scores in agreeableness, neuroticism, conscientiousness, and openness to experiences compared to any other developmental variable. Participants with authoritarian moms were 6.9% higher in conscientiousness when compared to participants with non-authoritarian moms. However, participants with authoritarian dads did not score much higher in conscientiousness when compared to participants with non-authoritarian dads but scored 9.5% higher in neuroticism.

Finally, the number of times the participant has moved significantly affected their Big Five personality traits. Participants who have moved three to five times in their childhood scored 8.9% lower in conscientiousness and 16.7% higher in neuroticism than participants who have moved two times in their childhood. Participants who stayed four to five years at each home before moving scored 11.6% higher in neuroticism and 15.6% higher in openness to experience than individuals who stayed for more than six years before moving.

Discussion

The data for differences between male and female personality traits is similar to our current knowledge of personality differences between sexes. Women tend to score higher in extraversion, agreeableness, and neuroticism (Weisberg, Deyoung, & Hirsh, 2011). Genetic factors could cause personality differences, but based on the findings in other areas of personality traits, the personality differences are primarily based on the societal

difficulties of being a woman. The female participants scored higher in neuroticism, and the other variables that scored higher in neuroticism are always related to hardships such as moving four or five times in childhood and having a worse relationship with their parents. Again, this is not something new; we know that women tend to have higher neuroticism than men, which makes them more vulnerable to physical and mental disorders, as mentioned above. What is new is that female students in high school already tend to face more negative effects in daily life, which can hinder their academic achievement and quality of life.

The difference between 16 to 18 years old and 14 to 15 years old in personality could be attributed to biological factors and increased experience. Extraversion, agreeableness, conscientiousness, and openness to experiences could be traits that grow throughout puberty and the development of the human body.

From prior research, it is understood that familial relationships and parenting styles are critical to a child's development, but there was not as much of a link between parenting and relationships with personality. This developmental variable, familial relationships, is the only variable that sees significant changes in all five categories, further proving the importance of good parent-child relationships and a good relationship between the parents.

In the study, the number of times the participant moved houses and the duration at each home were important variables. Although no causation claims can be taken from the study, this is essential data that can help understand the effects of changing environments during development and how personality is shaped. Exposure to new environments could increase individuals' openness to experience and neuroticism because of the increased stress levels in childhood.

Limitations

Though the format and design of the survey were able to acquire a wide range of relevant and usable data, there were limitations to the study.

Firstly, the research is only exploratory; no definitive causation can be derived from the data. Most of the discussion is speculation and comparisons to the results of current studies in personality psychology.

Secondly, the data was only collected from a sample size of 36 high schoolers, causing outliers to significantly influence the data and making it difficult to come to any conclusions based on the data.

Thirdly, many factors impact an individual's personality, and while some are accounted for or measured to a certain degree, the influence of the heredity of the participant could not be evaluated in the survey.

Finally, the survey and the BFI are both constructed to collect self-reported data, which cannot prevent participants' inaccurate or dishonest responses.

Conclusion

Although this study was only exploratory research, it has provided insight into the research question: how are developmental factors correlated with the Big Five personality traits? The study found that the current studies on developmental psychology also apply to high school students following the American curriculum, showing that personality differences occur at a very young age. Developmental factors of an individual can be used to predict their Big Five personality traits, specifically through factors such as the individual's relationship quality with their family members and the number of times they have moved during childhood. Hopefully, this data can help everyone better understand how early experiences shape our personality and how to better care for our children and lead to future causal research on developmental factors' impact on the Big Five personality traits.

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