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Assessing the Impact of the “Two-child Policy” in China: The Effects of the Second Child on the Growth of Teenagers

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Abstract: Purpose: China’s new universal two-child policy has brought a baby boom of the second child in 2016. With the changing family structures, elder children in adolescence may have more and more emotional and even psychological problems such as “two-child syndrome”. This paper aims to explore the “influence factors and mechanism of the second child on the growth of teenagers” and has great practical significance to promote the physical and mental health of teenagers and the harmony of two-child families. **Design/methodology/approach:** By means of literature analysis, in-depth interview, questionnaire survey and statistical analysis, the elder children aged 12 to 18 in the two-child family were taken as the main body of the survey, and an empirical research based on NLP understanding hierarchy theory was carried out. **Major Findings:** (1) The most significant influence on the growth of teenagers is the attitude of parents, and then the gender of the first child. (2) Parents’ favouritism towards the second child would lead to decline in the first child’s academic performance. (3) The higher the family income, the less the influence on the first child’s life. (4) When the age difference is large, the first child and the second child are not easy to have conflicts. **Practical implications:** Parents should try to treat any children equally. Parents should pay attention to the sibling relationship of their two children with small age gap. Parents who have two children with a large age gap should properly guide the elder child to help take care of the younger brother or sister. **Originality/value:** This study contributes to the growing literature focusing on the influence factors and mechanism of the second child on the growth of teenagers in the context of China’s new universal two-child policy. It adds some early empirical insights on the physical and mental health of teenagers in two-child families.

Keywords: Universal two-child; Growth of teenagers; Empirical research; NLP understanding hierarchy theory; Econometric model

1. Introduction

Introduced in 1979, China has implemented the one-

child policy for more than 30 years, and the “a family of three” structure has become the main family pattern in China. However, with the aggravation of China’s ageing

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population, one-child family planning has had a distinct influence on China's fertility rate, causing changes in China's population pattern, especially the increasingly prominent problem of ultra-low fertility rate. Lopez and Veiga (2020) analyzed the commonly attributed demographic consequences of the one-child policy: decline in fertility, decline in population growth, accelerated ageing, increase in gender imbalance and in marriage market imbalance^[1]. In 2016, China decided to implement a new two-child policy. According to the birth population data of 2019 released by the National Bureau of Statistics: the birth population in 2019 was 14.65 million. The second children account for 57% of the total. It indicates that the universal two-child policy has played an important role, which has accordingly changed the original family structure of only child in China. At present, most of the elder children in the families with two children are still in adolescence and have strong self-awareness. At this stage, their emotions and psychology are extremely unstable. Under the influence of many factors, many psychological problems have emerged^[2]. In addition, many of the elder children's classmates are still only child in their families. The appearance of the second child is easy to cause a comparison with the only child classmates, and then lead to the changes in behavior and psychology of the elder children. As indicated by Cheng (2021), family upbringing has a very important impact on the physical and mental health of teenagers. Positive or negative parenting styles will make children grow up into teenagers with different characteristics^[2]. According to the Pew Research Center, Generation Z (Gen Z) consists of people born between 1997 and 2012. That means, the most of elder children in the two-child families belong to Gen Z. While Gen Z have quite different characteristics. A survey in China indicates that 63% of GEN Z in China feel lonely despite being surrounded by family and friends^[3].

In the process of a person's socialization, adolescence is the key period of socialization, and family is an important place for socialization. The arrival of the second child as the new member in the family and the change of family structure would make the elder children have a psychological gap. The second child would bring many influence factors on the growth of teenagers. For example, changes in family environment, age gap between two children, gender combination, birth order, etc. would have a significant influence on the growth of elder children in adolescence. In turn, the growth of teenagers would have a crucial influence on the implementation of the two-child policy. So it is necessary to study deeply about the teenagers' views on the two-child policy, the root sources for different views and influence factors.

With the increasingly prominent population aging in China, China has fully implemented the two-child policy. Many families have begun to plan a second child. However, many families have a "wait-and-see" attitude, with the reasons of economy, life quality, and working pressure, etc. The most important factor is to consider the influence on the growth of the only child in the family, which mainly refers to the group of teenagers. The physical and mental health of teenagers has always been a significant topic of social concern, and it is also one of the crucial goals of family education. Discussing the relationship between the second child and the physical and mental health of the middle school students under the background of the two-child policy has far-reaching theoretical and practical significance. It can provide guidance for the parents who are planning a second child on how to carry out correct family education in the future, and for schools to cultivate the physical and mental health of the elder children in adolescence.

The increase of the newborn population in one-child families means the acquisition of new identity for the elder children, the emergence of sibling relations, and the complication of parent-child relations and family relations. Therefore, this paper focuses on the changes in learning, life, family member relations, psychological status and other aspects (i.e., the second child syndrome) of the elder children in adolescence under the background of the two-child policy, so as to analyze the causes and mechanism of the changes, and then figure out the physical and mental health of the elder children in adolescence. This will help to identify the influence factors and mechanism of the second child on the physical and mental growth of the middle school students, thus to put forward effective countermeasures and suggestions for the two-child families and schools in actively dealing with the relationship between the two children and scientifically guiding the physical and mental health of the teenagers. In this paper, the whole empirical research covers 407 valid questionnaires. Python is used to mine and explore the data, and an econometric model is established to deeply study the influence factors and paths of "the second child" on the growth of teenagers. In addition, combined with the questionnaire survey results, an in-depth interview was made on five students with siblings, which is compared with the empirical research results.

This paper aims to explore the "influence factors and influence mechanism of the second child on the growth of teenagers" and has great practical significance to promote the physical and mental health of teenagers and the harmony of two-child families. The research results can also be used to formulate effective family and school educa-

tion guidance measures so as to promote the physical and mental health of the elder children.

The remainder of this paper is organized as follows. In Section 2, we review the relevant literature. Research data, variables, and methods are given in Section 3. And, combined with the NLP Understanding Hierarchy Model, Section 3 provides a dependent variable system framework of the second child affecting the growth of teenagers. In Section 4, results and analysis of both prior interviews and questionnaire survey are given. Section 5 concludes the paper. Finally, Section 6 provides discussion and suggestions for future research.

2. Literature Review

This study is related to three streams of relevant literature: the influence of the two-child policy on the behavior and psychology of the elder child, teenagers' views on the two-child policy, and influence of the family environment on the two-child policy.

2.1 The Influence of the Two-child Policy on the Behavior and Psychology of the Elder Children

Based on the survey data of the Rural-Urban Migration in China from 2008 to 2009, Fan (2016) employed self-esteem, mental stress, and depression as indicators to measure mental health. The results show that as the number of sibling increases, the mental health indicators of children initially increase and then decline^[4]. Jiang (2017) investigated the problems in the education of adolescent children and the ones of elder children in the two-child family by questionnaire survey and case analysis. It was found that the problems were mainly in the aspects of mental health, health habits, time concept, and learning quality^[5]. By questionnaire survey on 502 elder children and their parents, Zhang (2019) analyzed the causes of the elder children having psychological problems^[6]. By analyzing cases of "peeping" behavior of the elder children in two-child families and interpreting its phenomenology, Zou and Zhang (2019) believe that behind the "peeping" behavior is the adjustment problem of the children due to the changes in their living environment, which is mainly manifested in existential anxiety and the crisis of self-identity caused by it^[7]. From June 2017 to December 2018, Sun Ya, et al. (2020) selected 80 two-child families from both Mogolian and Han nationalities, using the hospital self-designed questionnaire to investigate the psychological and behavior changes of the elder children after the birth of the second child^[8]. The study found that the top three positive psychological behaviors are strong sense of responsibility, caring for others and knowing how

to share. The top two negative psychological behaviors are physical symptoms and inattention. Taking the two-child policy as the background, Guo (2021) found that the elder children are difficult to adapt to the changes of their roles and positions, and are prone to psychological problems such as jealousy, emotional fluctuations and lack of awareness of independence^[9]. Zhang (2019) used the case study, taking a two-child family in a Shenzhen Primary School as an example, to explore the current situation and causes of parent-child conflict in the client's family, and suggestions were put forward to improve parent-child conflict in two-child families^[10]. Peng (2020) studied the influence of birth order in the two-child families on middle school students' mental health by empirical methods, and concluded that birth order negatively predicts mental health problems of middle school students^[11].

2.2 The Teenagers' Views on the Two-child Policy

In order to investigate the post-1995 generation's attitude towards having a second child in the families, Zhang (2021) investigated the post-1995 generation in Hangzhou with questionnaire in a number of factors such as the education level, expenditure level and the situation of only child^[12]. Based on a survey of 427 teenagers, Hu (2016) analyzed the influence of age and gender factors on whether teenagers are willing to accept their parents to have second child^[13]. From the perspective of the implementation of the two-child policy, Wang and Qu (2018) believed that the vast majority of teenagers who resisted this policy are due to psychological reasons^[14].

2.3 The Influence of the Family Environment on the Two-child Policy

Drawing on data from the China Family Panel Studies (CFPS), Hu & Shi (2020) assessed the state of gender equality among Chinese children under the one-child policy^[15]. Xiao and Wang (2020) used the cross-sectional data of "CFPS2016" to analyze the influence of housework support provided by elderly parents on the second child-bearing status of their children's families^[16]. Li et al. (2020) explored the child-bearing desire and influence factors of the new generation of women under the background of the universal two-child policy^[17]. Jia et al. (2021) studied the influence of the family decision-making for the second child on family financial asset allocation by taking the "two-child policy for couples of which one partner is an only child" and "universal two-child policy" as quasi-natural experiments^[18].

In summary, very few existing literature has explored the influence of the second child on the growth of elder children

in adolescence from the perspective of the elder children with the four dimensions of learning, life, psychological status and family member relationship. There is a need to investigate the influence factors and mechanism on the mental growth of the teenagers within two-child families, which is not found in the existing literature. At the same time, there is no relevant literature combining NLP Understanding Hierarchy Theory to carry out research in this field.

3. Data, Variables, and Methods

Based on the literature analysis, the research objective and questions become more clear, which laid a solid foundation for the questionnaire design. The main research object of this topic is the teenager group aged 12-18. In the process of a person's socialization, adolescence is a key period of socialization, and family is an important place for socialization. The change of family structure caused by the second child is bound to have an important influence on physical and mental development of teenagers. On the other hand, teenagers' views on the second child will also react on the implementation of the two-child policy. This study is mainly based on the data from the interviews and questionnaire survey.

3.1. Construction of Dependent Variable System of Teenagers' Mental Health Based on NLP Understanding Hierarchy Theory

Growth of teenagers includes many aspects such as study, life, family relations and psychological status. In order to make a systematic analysis of different aspects, this paper adopts the NLP (Neuro Linguistic Programming) Understanding Hierarchy Theory, which was reorganized by Robert Dilts in 1991 according to the logical hierarchy of learning and change proposed by the anthropologist Gregory Bateson^[19]. In this framework, the understanding level is composed of six independent hierarchical concepts, from low to high, which are environment, behavior, ability, belief & value, identity and spirit. In Figure 1, "Environment" refers to various influence factors other than people themselves, such as other people, things, time and culture. "Behavior" refers to all kinds of activities that people are engaged in the environment, such as learning, worrying and crying. "Ability" refers to the options, driving modes and control methods that people have in the current environment, that is, how people act. "Belief" refers to the standard or criterion used by people to judge people, things and objects, that is, the basis for people to make choices, and refers to people's beliefs or values. "Identity" refers to a person's role orientation in the environment and in the process of behavior, and his own iden-

tity to achieve the meaning of life. For example, a teenager wants to become an excellent student by studying hard. "Spirit" reflects the relationship between people and the world. It belongs to the level of world ideology. Not only the realization of self-worth should be considered, but also the altruism, such as family, relatives, children, friends and society. In NLP Understanding Hierarchy Model, the three concepts of "spirit, identity and belief" respectively correspond to the world view, outlook on life and values, and have a decisive influence on people's words and actions. They belong to high-level abstract concepts which are usually hidden. They can only be discovered by careful observation and analysis of people's daily life. "Ability, behavior and environment" are people's daily performance under the guidance of "Three Outlooks" (outlooks on the world, life and values). They belong to lower level concepts and are relatively easy to be observed. The interaction between levels of NLP Understanding Hierarchy is very close. The influence from high to low in the model is direct and rapid. The influence from low to high requires accumulation of quantity, which is relatively slow. Therefore, the NLP Understanding Hierarchy Model provides a general principle for diagnosing and correcting people's psychological and behavior deviations, that is, to seek solutions from a higher level and the possibility of auxiliary solutions from a lower level.

This study, combined with the NLP Understanding Hierarchy Model, designed the dependent variable system framework of the second child affecting the growth of teenagers, as shown in Table 1.



Figure 1. NLP understanding hierarchy model

3.2 Variables and Measurement Model

Let $y=f(x)$. In this equation, the independent variable is x and the dependent variable is y . Applying this equation to sociological research, the independent variable refers to the factors or conditions that researchers actively manipulate and cause the dependent variable to change. Therefore, the independent variable is regarded as the cause of

Table 1. The dependent variable system of teenagers’ mental health based on NLP understanding hierarchy model

NLP understanding hierarchy	Dependent variable of teenagers’ mental health	Examples of only child families	Examples of two-child families
spirit	psychological status	I think my growth is the most important thing in my family.	Now my younger sibling’s growth is the most important thing in my family.
identity	family relations, psychological status	I am Mom and Dad’s treasure. I think my family will support me to achieve my goals in life.	I am Mom and Dad’s “No. 2 treasure”. My family is distracted to care about the growth of my sibling.
belief & values	psychological status	I think my parents care much about me, and I have self-confidence.	My parents no longer care much about me. They are even partial to my younger sibling. My self-confidence decreased.
ability	study	I have solid basic knowledge and good capability to understand.	I don’t have solid basic knowledge but good capability to understand.
behavior	study, life	My home environment is quiet and I will not be disturbed.	My younger sibling is noisy and my study is affected.
environment	life	I seldom do the housework.	My parents are busy, and I have to help to do the housework.

the dependent variable. In other words, the independent variable is the manipulated variable, while the dependent variable is the measured or recorded variable.

In addition, an experiment mainly involves three variables: independent variables, dependent variables and control variables. The independent variable refers to the variable operated and controlled by the experimenter. Dependent variable refers to the experimental response value of the subject’s response to the operation of the independent variable. Control variable refers to potential factors or conditions that affect the experimental changes and results except the experimental variables in the experiment. In this study, the following variables are adopted to describe the econometric model.

3.2.1 Explained Variable (or Dependent Variable)

The explained variables in this topic include: study, life, psychological status and family member relationship.

Take the learning status of teenagers as an example: there are many reference points for it. For example, it can be set as dummy variables here. “1” means that the academic record increases after the birth of the second child. “0” means that the academic record decreases after the birth of the second child. Or we can directly use the academic record as the yardstick of learning status, for example, the total score of the last final exam can be used as the variable.

3.2.2 Explanatory Variable (or Independent Variable)

The explanatory variables in this study include four dimensions: gender, age difference, family economic status, parents’ energy and attitude.

In the research, one of them can be used as an explanatory variable and the others as control variables. For example, if the gender of the second child is chosen as the explanatory variable, we can use the dummy variables as follows: “1” means that the gender of the second child is male, “0” means that the gender of the second child is female.

3.2.3 Control Variable

Control variable refers to all variables that affect the experimental results except experimental factors (independent variables). These variables are not the ones to be studied in this experiment, so they are also called irrelevant variables.

For example, if the purpose of study is to investigate “the influence of the gender of the second child on teenagers’ learning status”, we need to exclude the influence of other factors on teenagers’ learning status, such as age difference and health status in personal characteristic variables, and parents’ educational background, family economic status, parents’ energy in family characteristic variables. Because these variables also affect the dependent variables to be studied, these variables need to be controlled. So, it is necessary to add these variables to the econometric model to control their influence on the dependent variables.

3.3 Econometric Modelling

In order to investigate the influence of the gender of the second child on teenagers’ learning, the econometric model can be established as following:

$$study_i = \beta_0 + \beta_1 * gender_i + \beta_2 * X_i + \varepsilon_i \quad (1)$$

In Equation (1), $study_i$ refers to the learning status of the i^{th} investigated teenager. $gender_i$ refers to the dummy variable of the gender of the second child in the i^{th} investigated teenager's family. The dummy variable is the variable with 0 or 1 only. Here, "1" means that the gender of the second child is male, and "0" means that the gender of the second child is female. X_i refers to control variables, including personal characteristic variables (age difference) and family characteristic variables (family economic status, parents' energy and attitude). ε_i is the residual disturbance term.

Control variables and independent variables can be interchanged. Control variables and independent variables can also be interchanged. If what you want to study is not the influence of the gender of the second child on teenagers' learning status, but the influence of parents' energy on teenagers' learning status, then swap gender of the second child with parents' energy: parents' energy is the independent variable, and gender of the second child is added to the control variable. Then the econometric model would be changed into the following:

$$study_i = \beta_0 + \beta_1 * energy_i + \beta_2 * X_i + \varepsilon_i \quad (2)$$

In Equation (2), $study_i$ refers to the learning status of the i^{th} investigated teenager. $energy_i$ represents parents' energy and attitude in the i^{th} investigated teenager's family. X_i refers to control variables, including personal characteristic variables (gender, age difference) and family characteristic variables (i.e., family economic status). ε_i is the residual disturbance term.

3.4 Research Methods

3.4.1 Pre-survey Interview Method

In order to obtain specific survey results and design the questionnaire questions, we conducted a pilot in-depth interview with five middle-school students, which consist of three female students and two male students. The two-child relationship combination completely covers "elder brother-younger sister", "elder brother-younger brother", "elder sister-younger sister", "elder sister-younger brother" in this survey. According to 11 questions in this interview, we determined the explanatory variables of the study, analyzed the influence of the explanatory variables on the explained variables, and designed a questionnaire. The interview adopted the method of face-to-face communication.

3.4.2 Questionnaire Survey

In the form of questionnaire, we investigated various influences of the second child on the growth of the teen-

agers (the first children). The questionnaires were done online. We edited the questionnaire and distributed it through an online survey platform called *sojump* on April 30, 2021. The data collection was finished by May 7, 2021. There are 33 questions in the questionnaire, which is divided into six parts, involving the basic information of the respondents (questions No.1, 2, 3, 4, 7, 8), family status (questions No.5, 6, 9, 10, 11, 12), learning (questions No.13, 14), life (question No. 15, 16, 17, 18, 19), relationship of family members (questions No.20, 21, 22), and psychological status (questions No.23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33). According to the number of children in the respondent's family, ranking at family and personal status, the questionnaire was designed with a skip logic to make the results more accurate. According to the Chinese *Middle School Students' Mental Health Scale* (MSSMHS, <https://www.wjx.cn/vj/OpPTuum.aspx>), the psychological status part of the questionnaire was designed to make its results more reliable.

3.4.3 Data Analysis Method

In this study, Python is used to invoke Pandas Library to clean and pre-process the collected questionnaire data. Then the processed data were visually analyzed through Matplotlib Library, and at the same time the descriptive statistical information was obtained. On this basis, the relevant conclusions on the influence of the second child on the growth of the teenagers were drawn by doing the regression analysis of data through Scikit-learn Library according to the hypothesis test results. Moreover, we also compared the only child in one-child families and the first-born teenager in two-child families through statistical t-test, and further discussed the influence factors and paths of the second child on the growth of the teenagers.

4. Results and Analysis

4.1 Interview Results and Analysis

Prior interviews were conducted with five interviewees from four aspects: life, psychological status, family member relations and learning. The interview outline and questions are shown in Table 2.

The interviews were conducted from four dimensions: life, psychological status, relationship between family members and study. In the following, the dimension of psychological status is given for illustration.

Interview question 1: When you have a conflict with the second child, can your parents rationally analyze the problem and solve it? Do they usually criticize you first or the second child? Will they be partial to one side?

Observation 1: From the five interviewees in the pilot

Table 2. Interview outline and questions

Questions	Research contents
1. Did your parents communicate with you before giving birth to the second child? Do you support them?	Communication between parents and the elder child, and the elder child's attitude
2. Will the second child disturb you when you are doing something? Will your study and life be greatly affected?	Influence on study and life
3. Do you think your family becomes more active after having the second child? Do you like such atmosphere?	Influence on relations between family members
4. After having the second child, are there any major adjustments in your family? (for example, have you changed your room?).	Influence on life
5. Do you think your parents have the energy to take care of two children (do they need help from the elderly or nanny)? Do you think you have any improvement in taking care of people?	Influence on parents' energy and the elder child's personality
6. When you have a conflict with the second child, can your parents rationally solve the problem? Will they be partial to one side?	Influence on parents' attitude and the elder child's psychological status
7. Did your younger brother/sister bring you anything that made you very happy?	Influence on family member relations
8. In addition to the above, what greater influence has the second child had on your life?	Influence on life
9. Are you getting along well with your younger brother/sister?	Influence on family member relations
10. Do you want to be the first child or the second one in your family if you can choose?	Compare with the opinions of the control group (the only child), investigate the attitude of the first child and the only child towards the second child
11. Do you want a younger brother or a younger sister if you can choose ?	Compare with the opinions of the control group (the only child), investigate the attitude of the first child and the only child towards the gender of the second child

interview, three people's parents can rationally analyze the problem when their children have conflicts, and won't be partial to either side. One person's parents will criticize the elder child first. One person's parents won't intervene in the conflict between their children. It is preliminarily judged that when the first child and the second child have conflicts, basically the parents can analyze the problem rationally and won't be partial to either side.

Interviewee A (elder brother and younger brother): No. They don't care.

Interviewee B (elder brother and younger sister): They can analyze the situation rationally, and won't be overly partial to my younger sister. They always stick to the issues, and won't criticize me because I am the elder brother.

Interviewee C (elder sister and younger sister): They always criticize me first, especially my grandparents. Their excuse is that my sister is still small.

Interviewee D (elder sister and younger brother): No. They are very fair.

Interviewee E (elder sister and younger brother): In this respect, my parents are quite rational. Most of the time, my younger brother annoyed me first, so they would criticize my younger brother and treat two children fairly.

Interview question 2: Do you think your parents have the energy to take care of two children? Do they need help

from the elderly or nanny? Do you think you have any improvement in taking care of people?

Observation 2: All of the five interviewees in the pilot interview thought that they didn't improve their ability to take care of people after the birth of the second child. Four of them help to take care of the younger siblings, and one doesn't do it. Secondly, two interviewees' parents have enough energy and didn't ask for help from the elderly or nanny after the second child was born. Three families asked for help from the elderly and nanny after the second child was born. It is preliminarily judged that most probably the first child will help take care of the second child after the second child was born, but the birth of the second child will not improve the ability of the elder child to take care of other people. The proportion of families that need help after the birth of the second child is slightly larger, and the parents whose first child is a sister are lack of energy. Such families need help.

Interviewee A (elder brother and younger brother): No elderly or nanny helps us. I can take care of my younger brother, but my ability to take care of other people hasn't been improved.

Interviewee B (elder brother and younger sister): Without a nanny or grandparents, my parents can still take care of us. Sometimes I take care of my younger sister. It

seems that I've not improved in taking care of other people.

Interviewee C (elder sister and younger sister): My parents are not hardworking. Usually my grandparents help with the housework, taking care of my younger sister, taking her to school and picking her up. Although I help take care of my younger sister, there is no improvement in taking care of other people. We have a part-time maid helping us.

Interviewee D (elder sister and younger brother): My mother resigned. Sometimes my grandmother comes to take care of my younger brother, nothing else. I don't take care of him, there is no improvement on my ability to take care of other people.

Interviewee E (elder sister and younger brother): Usually my parents are very busy. They can only accompany my younger brother when they come home from work in the evening. Usually my grandparents take turns to help take care of my younger brother. I will also help take care of my younger brother, but I feel that there is no improvement in taking care of other people.

4.2 Questionnaire Survey Results and Analysis

4.2.1 Descriptive Statistics

A total of 457 questionnaires were collected in this survey. By screening the questionnaires (only reserved the questionnaires of the respondents who is the only child and the first child in two-child families) and excluding the unreasonable answer options, 405 valid questionnaires were obtained, with an effective recovery rate of 88.6%. For the sample size, there are no clear statistical requirements. Usually, the sample size is about 5~10 times of the

topic. Therefore, it can be considered that the questionnaires used in this research are representative and valid.

In the valid questionnaires, 224 teenagers are the only children, accounting for 55.3%, and 181 teenagers are the first children in the two-child families, accounting for 44.7%. First of all, the growth of the first children in the two-child families was studied and analyzed. Among the gender of the first children, girls accounted for 73.66% and boys accounted for 26.34%. In contrast, among the gender of the second children, boys accounted for 62.98%, while girls accounted for 36.02% only. Furthermore, the samples of this study mainly come from Shanghai and surrounding areas, so the household income is relatively good. About 30% of the households have a monthly income of more than RMB20,000.

Based on NLP Understanding Hierarchy Theory, relevant dependent variables and independent variables are established for data analysis. We used Python to invoke Pandas Library to clean and pre-process the collected questionnaire data. Based on the processed data, 11 variables related to the research were obtained. The field names and meanings of the variables are shown in Table 3.

Then, we invoked the Matplotlib Library to visually analyze the data and got a series of descriptive statistical information. The correlation between the variables was obtained by calculation of the correlation coefficient matrix, as shown in Figure 2. It can be seen that the correlation coefficient between the independent variable of parents' attitude and the five dependent variables is relatively large. Furthermore, the correlation coefficient between the two dependent variables is also large (0.44), which are the relationship between teenagers and parents, and the psychological status of teenagers.

Table 3. Field names and meanings of the variables

Independent variable		Dependent variable	
field name	meaning	field name	meaning
gender1	gender of the first child	study	the study status of the teenagers(the first child)
age1	age of the first child	life	life status of the teenagers
gender2	gender of the second child	parents_relationship	the relationship between the teenagers and the parents
income	household income	child_relationship	Relationship between the first child and the second child
attitude	parents' attitude towards the first child and the second child	mental health	mental status of the teenagers
delta_age	age difference between the first child and the second child		

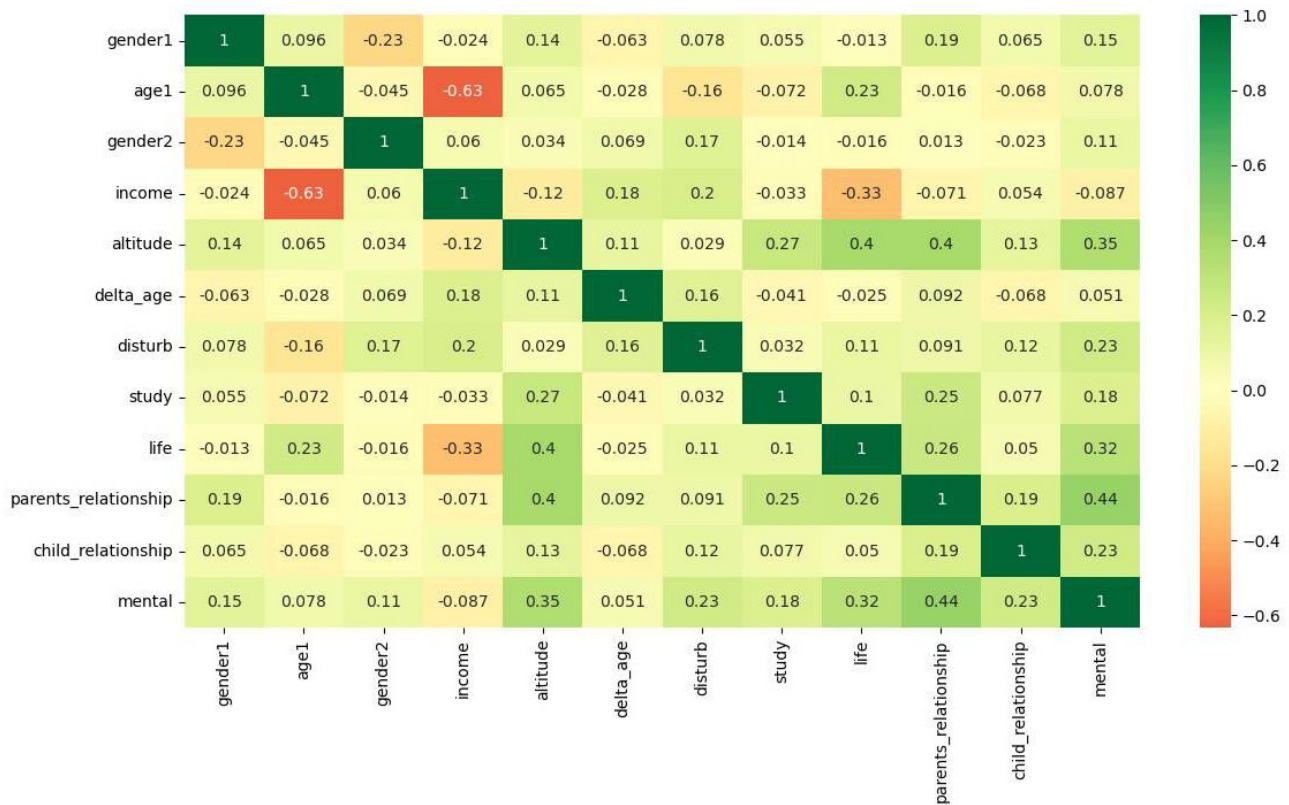


Figure 2. Thermodynamic diagram of correlation coefficient of the variables

4.2.2 Influence of the Second Child on the Study Status of the Teenagers

Before the quantitative analysis, firstly an exploratory analysis is conducted through the matrix diagram, as shown in Figure 3.

It can be seen that in the row of attitude, the blue and green lines are quite clear, which correspond to the increase and decrease of academic performance. It indicates that there is a certain relation between the parents' attitude and the teenagers' study status.

From the results of linear regression model (see Figure 4), we found that the influence of the second child on the teenagers' study status is mainly caused by the partial attitude of the parents after having the second child. According to the regression results, it can be seen that in the first

model, the influence of other variables is not significant except the attitude. While in the second model obtained by model selection, the coefficient of age1 is significantly negative at 10% degree of confidence, and the coefficient of attitude is still significantly positive.

This result showed that the parents' partiality to their second child will lead to the decline of their first child's academic performance. Furthermore, with the growing up of the first child, the influence of the parents' attitude on academic performance will gradually reduce. To our surprise, the disturbance from younger siblings to the first child does not really affect the academic performance of the first child, or such disturbance may need to be mediated by the emotional variables to have an influence. Later, we will verify this point in the influence of the second child on the teenagers' psychological status.

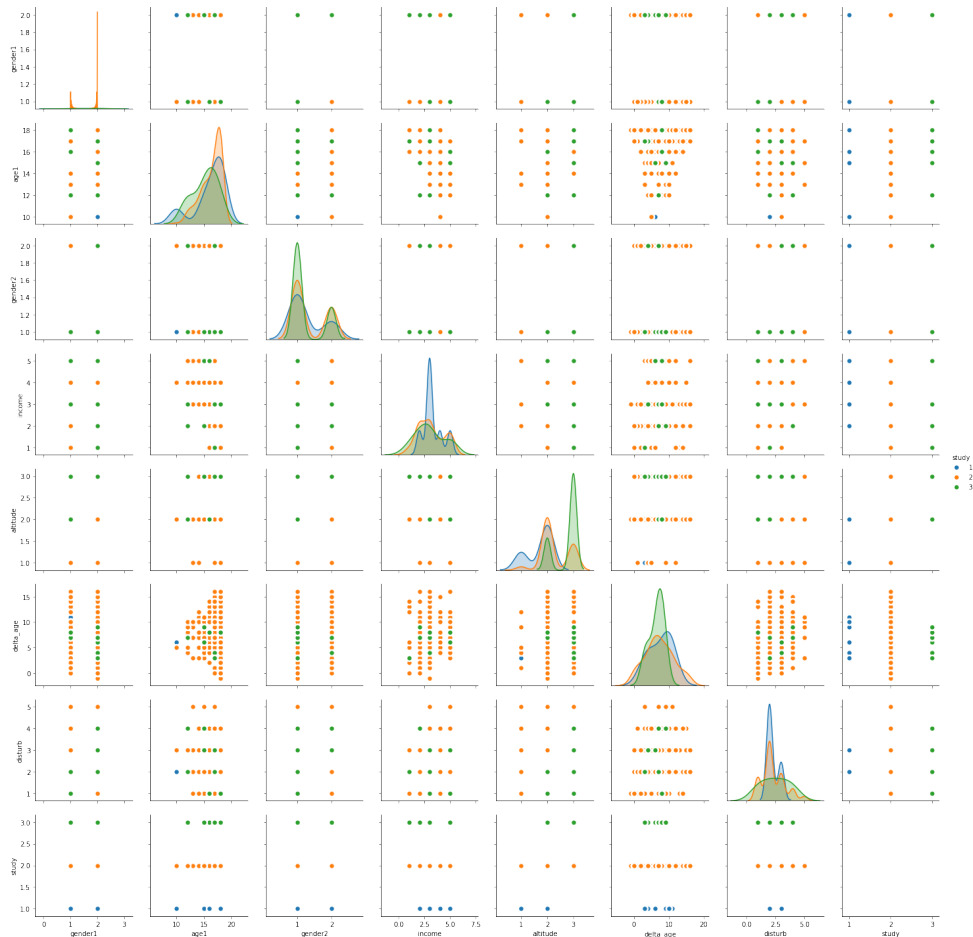


Figure 3. Matrix analysis on the teenagers' study

OLS Regression Results

Dep. Variable:	study	R-squared:	0.092
Model:	OLS	Adj. R-squared:	0.056
Method:	Least Squares	F-statistic:	2.517
Date:	Sun, 16 May 2021	Prob (F-statistic):	0.0173
Time:	21:00:13	Log-Likelihood:	-22.632
No. Observations:	181	AIC:	61.26
Df Residuals:	173	BIC:	86.85
Df Model:	7		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
Intercept	2.0982	0.305	6.872	0.000	1.496	2.701
gender1	0.0118	0.050	0.234	0.815	-0.088	0.111
age1	-0.0214	0.014	-1.513	0.132	-0.049	0.007
gender2	-0.0129	0.046	-0.282	0.778	-0.104	0.078
delta_age	-0.0045	0.006	-0.813	0.417	-0.016	0.006
income	-0.0203	0.023	-0.883	0.378	-0.066	0.025
altitude	0.1443	0.039	3.676	0.000	0.067	0.222
disturb	0.0090	0.022	0.406	0.685	-0.035	0.053

Omnibus:	37.504	Durbin-Watson:	1.896
Prob(Omnibus):	0.000	Jarque-Bera (JB):	434.513
Skew:	0.085	Prob(JB):	4.43e-95
Kurtosis:	10.589	Cond. No.	275.

OLS Regression Results

Dep. Variable:	study	R-squared:	0.087
Model:	OLS	Adj. R-squared:	0.072
Method:	Least Squares	F-statistic:	5.639
Date:	Sun, 16 May 2021	Prob (F-statistic):	0.00103
Time:	21:01:11	Log-Likelihood:	-23.148
No. Observations:	181	AIC:	54.30
Df Residuals:	177	BIC:	67.09
Df Model:	3		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
Intercept	2.1235	0.290	7.312	0.000	1.550	2.697
age1	-0.0226	0.014	-1.637	0.103	-0.050	0.005
income	-0.0232	0.022	-1.053	0.294	-0.067	0.020
altitude	0.1417	0.038	3.725	0.000	0.067	0.217

Omnibus:	37.609	Durbin-Watson:	1.916
Prob(Omnibus):	0.000	Jarque-Bera (JB):	440.847
Skew:	0.071	Prob(JB):	1.87e-96
Kurtosis:	10.644	Cond. No.	238.

(1) the first model

(2) the second model

Figure 4. Linear regression results of the teenagers' study status

4.2.3 The Influence of the Second Child on the Teenagers' Life

In the similar manner, an exploratory analysis is conducted through matrix diagram, as shown in Figure 5.

From the results of linear regression model (see Figure 6), we found that the family income and the parents' attitude are the factors that affect the teenagers' life. This study investigated the influence of the birth of the second child on the teenagers' life from four aspects: room size, means of getting to school, school time and contribution to housework. It can be seen from the diagram below that family income has a significant negative influence on the

teenagers' life, while the parents' attitude has a significant positive influence on the teenagers' life. This indicates that the higher the family income, the less the influence of the birth of the second child on the teenagers' life. For example, the original family residential space is large. After the birth of the second child, the room size of the first child has not changed. If the family residential space is limited, the first child may have to share his/her own room with the second child. Furthermore, the parents' partiality attitude to the second child is also a major factor affecting the teenagers' life. The more the parents are partial to the second child, the greater the influence on the teenagers' life.

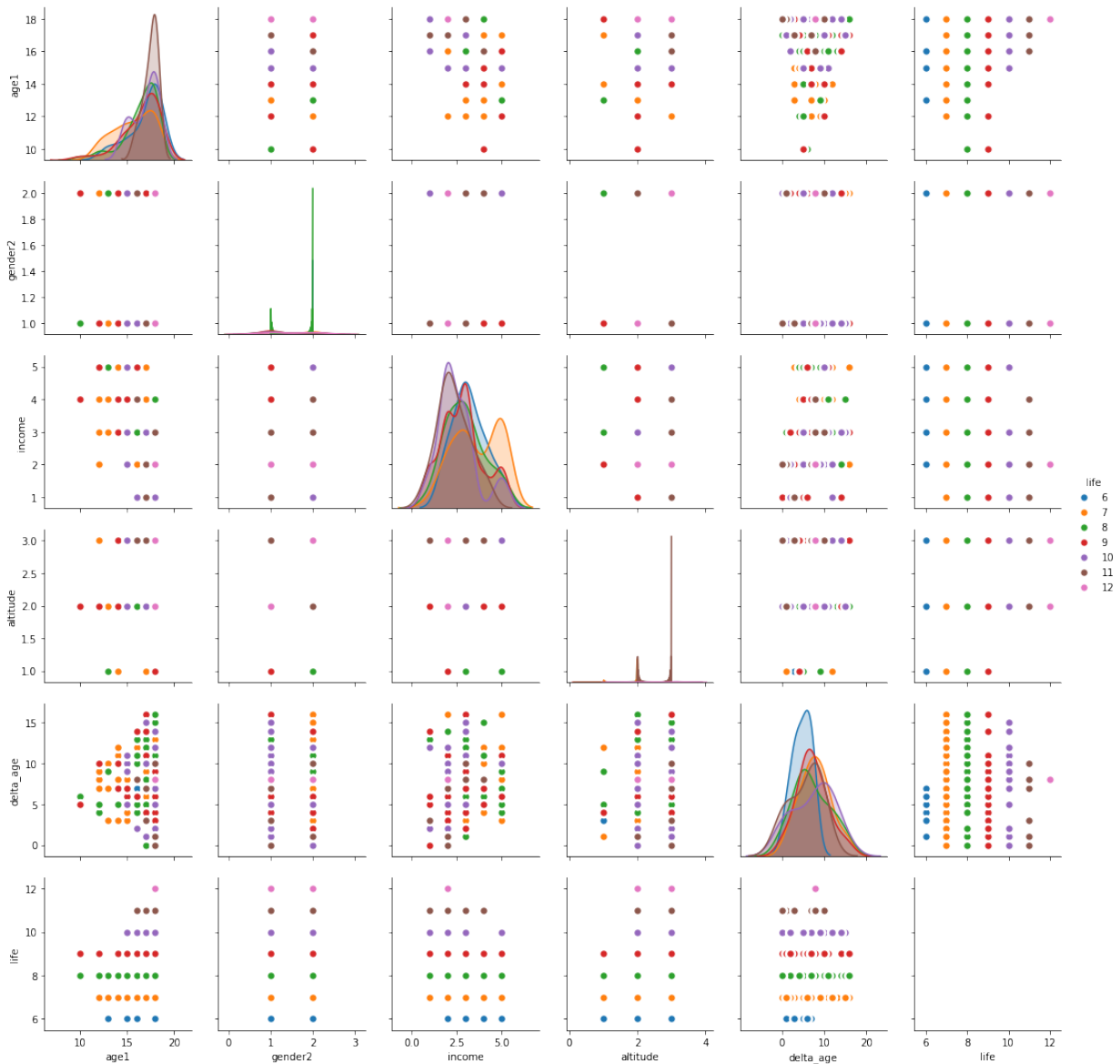


Figure 5. Matrix analysis on the teenagers' life

OLS Regression Results

Dep. Variable:	life	R-squared:	0.246			
Model:	OLS	Adj. R-squared:	0.220			
Method:	Least Squares	F-statistic:	9.484			
Date:	Sun, 16 May 2021	Prob (F-statistic):	5.20e-09			
Time:	21:03:40	Log-Likelihood:	-281.91			
No. Observations:	181	AIC:	577.8			
Df Residuals:	174	BIC:	600.2			
Df Model:	6					
Covariance Type:	nonrobust					
	coef	std err	t	P> t 	[0.025	0.975]
Intercept	6.7985	1.268	5.360	0.000	4.295	9.302
gender1	-0.2567	0.208	-1.232	0.219	-0.668	0.154
age1	0.0383	0.059	0.649	0.517	-0.078	0.155
gender2	-0.0830	0.189	-0.440	0.661	-0.456	0.290
delta_age	-0.0083	0.023	-0.360	0.719	-0.054	0.037
income	-0.2641	0.096	-2.764	0.006	-0.453	-0.076
altitude	0.9221	0.164	5.622	0.000	0.598	1.246
Omnibus:	6.758	Durbin-Watson:	1.779			
Prob(Omnibus):	0.034	Jarque-Bera (JB):	7.007			
Skew:	0.474	Prob(JB):	0.0301			
Kurtosis:	2.829	Cond. No.	272.			

(1) the first model

OLS Regression Results

Dep. Variable:	life	R-squared:	0.243			
Model:	OLS	Adj. R-squared:	0.231			
Method:	Least Squares	F-statistic:	18.98			
Date:	Sun, 16 May 2021	Prob (F-statistic):	1.02e-10			
Time:	21:04:10	Log-Likelihood:	-282.28			
No. Observations:	181	AIC:	572.6			
Df Residuals:	177	BIC:	585.3			
Df Model:	3					
Covariance Type:	nonrobust					
	coef	std err	t	P> t 	[0.025	0.975]
Intercept	7.3584	0.545	13.513	0.000	6.284	8.433
gender1	-0.2153	0.199	-1.081	0.281	-0.608	0.178
income	-0.3098	0.071	-4.339	0.000	-0.451	-0.169
altitude	0.9053	0.161	5.634	0.000	0.588	1.222
Omnibus:	6.930	Durbin-Watson:	1.771			
Prob(Omnibus):	0.031	Jarque-Bera (JB):	7.198			
Skew:	0.481	Prob(JB):	0.0274			
Kurtosis:	2.827	Cond. No.	29.1			

(2) the second model

Figure 6. Linear regression results of the teenagers' life

4.2.4 The Influence of the Second Child on the Parent-Child Relationship of the Teenagers

Similarly, an exploratory analysis for the relationship between the teenagers and parents is conducted through matrix diagram, as shown in Figure 7.

From the results of the linear regression model (see Figure 8), we found that the gender of the first child and the parents' attitude are the factors that affect the parent-child relationship of the teenagers. Both factors have significant positive influences. We measure the relationship between the parents and the children by the changes in personal feelings and parental relations after the birth of the second child and the times of heart to heart talks with parents. The results showed that if the first child is a girl, the heart-to-heart talks with her parents will be less, and the relationship with her parents will be more distant. The possible explanation here is that comparing with boys, girls will be closer to their parents normally. It is also related to the traditional Chinese concept of family education. Furthermore, comparing with boys, girls' minds are more sensitive, so they can also feel the differences before and after the birth of the second child, a sense of gap coming into being. Therefore, the gender of the first child has

a more significant influence on the parent-child relationship.

4.2.5 The Influence of the Second Child on the Relationship between the Children

Similarly, an exploratory analysis for the relationship between the children is conducted through matrix diagram, as shown in Figure 9.

From the results of the linear regression model (see Figure 10), we found that the regression results in the lower right diagram showed that the age difference has a negative significant influence on the relationship between the children, while parental attitude has a positive significant influence. It showed that the partiality of the parents will affect the harmony between the children. The larger the age difference is, the more harmonious relationship between the children will be.

Because when the age difference of the children is large, their respective needs differ greatly, and there are relatively few contradictions. In addition, when the age difference is extra large, some of the first children will have the mentality of "little parent" to take care of the second child. Thus it will deepen the relationship between the two children.

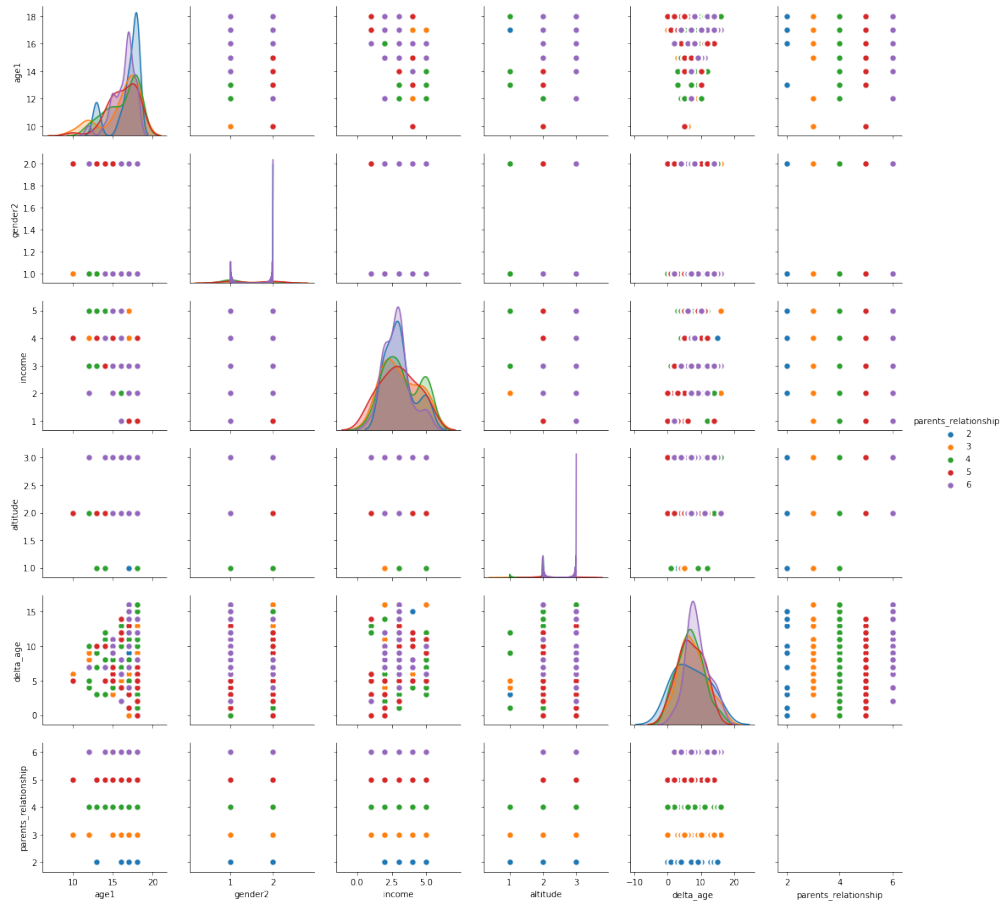


Figure 7. Matrix analysis on the relationship between the teenagers and parents

OLS Regression Results

Dep. Variable:	parents_relationship	R-squared:	0.11			
Model:	OLS	Adj. R-squared:	0.11			
Method:	Least Squares	F-statistic:	6.91			
Date:	Sun, 16 May 2021	Prob (F-statistic):	1.18e-04			
Time:	21:06:47	Log-Likelihood:	-249.1			
No. Observations:	181	AIC:	513			
Df Residuals:	174	BIC:	536			
Df Model:	6					
Covariance Type:	nonrobust					
	coef	std err	t	P> t 	[0.025	0.975]
Intercept	3.1155	1.062	2.933	0.004	1.019	5.212
gender1	0.3936	0.174	2.257	0.025	0.049	0.738
age1	-0.0715	0.049	-1.448	0.149	-0.169	0.026
gender2	0.0762	0.158	0.482	0.630	-0.236	0.388
delta_age	0.0214	0.019	1.111	0.268	-0.017	0.059
income	-0.1079	0.080	-1.349	0.179	-0.266	0.050
altitude	0.7088	0.137	5.161	0.000	0.438	0.980
Omnibus:	2.041	Durbin-Watson:	2.206			
Prob(Omnibus):	0.360	Jarque-Bera (JB):	1.929			
Skew:	-0.168	Prob(JB):	0.381			
Kurtosis:	2.623	Cond. No.	272.			

OLS Regression Results

Dep. Variable:	parents_relationship	R-squared:	0.178			
Model:	OLS	Adj. R-squared:	0.169			
Method:	Least Squares	F-statistic:	19.30			
Date:	Sun, 16 May 2021	Prob (F-statistic):	2.59e-08			
Time:	21:07:09	Log-Likelihood:	-251.51			
No. Observations:	181	AIC:	509.0			
Df Residuals:	178	BIC:	518.6			
Df Model:	2					
Covariance Type:	nonrobust					
	coef	std err	t	P> t 	[0.025	0.975]
Intercept	1.8930	0.399	4.743	0.000	1.105	2.680
gender1	0.3329	0.168	1.986	0.049	0.002	0.664
altitude	0.7464	0.134	5.557	0.000	0.481	1.011
Omnibus:	1.913	Durbin-Watson:	2.208			
Prob(Omnibus):	0.384	Jarque-Bera (JB):	1.749			
Skew:	-0.137	Prob(JB):	0.417			
Kurtosis:	2.604	Cond. No.	17.9			

(1) the first model

(2) the second model

Figure 8. Linear regression results of the relationship between the teenagers and the parents

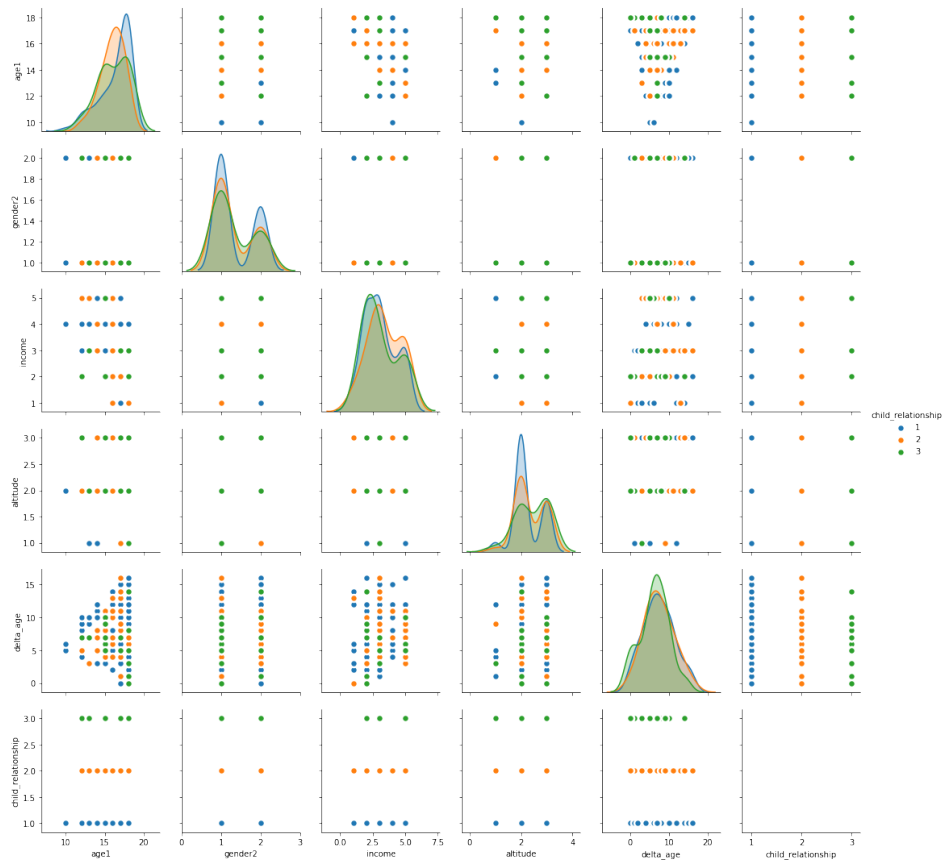


Figure 9. Matrix analysis on the relationship between the teenagers and the second child

OLS Regression Results

Dep. Variable:	child_relationship	R-squared:	0.03
Model:	OLS	Adj. R-squared:	0.00
Method:	Least Squares	F-statistic:	1.04
Date:	Sun, 16 May 2021	Prob (F-statistic):	0.39
Time:	21:09:29	Log-Likelihood:	-177.6
No. Observations:	181	AIC:	369.
Df Residuals:	174	BIC:	391.
Df Model:	6		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
Intercept	1.1658	0.713	1.635	0.104	-0.242	2.573
gender1	0.0614	0.117	0.524	0.601	-0.170	0.292
age1	-0.0157	0.033	-0.473	0.637	-0.081	0.050
gender2	-0.0251	0.106	-0.236	0.813	-0.235	0.184
delta_age	-0.0155	0.013	-1.197	0.233	-0.041	0.010
income	0.0327	0.054	0.609	0.543	-0.073	0.139
altitude	0.1749	0.092	1.898	0.059	-0.007	0.357

Omnibus:	47.612	Durbin-Watson:	2.038
Prob(Omnibus):	0.000	Jarque-Bera (JB):	75.678
Skew:	1.496	Prob(JB):	3.69e-17
Kurtosis:	4.039	Cond. No.	272.

OLS Regression Results

Dep. Variable:	child_relationship	R-squared:	0.032
Model:	OLS	Adj. R-squared:	0.015
Method:	Least Squares	F-statistic:	1.926
Date:	Sun, 16 May 2021	Prob (F-statistic):	0.127
Time:	21:09:50	Log-Likelihood:	-177.97
No. Observations:	181	AIC:	363.9
Df Residuals:	177	BIC:	376.7
Df Model:	3		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
Intercept	0.9268	0.259	3.577	0.000	0.416	1.438
delta_age	-0.0169	0.013	-1.333	0.184	-0.042	0.008
income	0.0486	0.041	1.187	0.237	-0.032	0.129
altitude	0.1827	0.090	2.023	0.045	0.005	0.361

Omnibus:	47.110	Durbin-Watson:	2.035
Prob(Omnibus):	0.000	Jarque-Bera (JB):	74.502
Skew:	1.492	Prob(JB):	6.64e-17
Kurtosis:	3.990	Cond. No.	50.6

(1) the first model

(2) the second model

Figure 10. Linear regression results of the relationship between the teenagers and the second child

4.2.6 The Influence of the Second Child on the Teenagers' Mental Status

In the similar manner, an exploratory analysis for the influence of the second child on the teenagers' mental status is conducted through matrix diagram, as shown in Figure 11.

With reference to Chinese *Middle School Students' Mental Health Scale*, we evaluated the mental status of the teenagers from five aspects. From the linear regression results in Figure 12, it can be seen that the gender of the teenagers (the first child), the gender of the second child and the parents' attitude will have a positive and significant influence on the teenagers' mental status. The

parents' partiality to the second child will stimulate the psychology of the first child to a certain extent, resulting in a sense of imbalance and depression, thus to affect the psychology of the teenagers. However, different from the cognition that women's mental health is better than men's in general studies, if the first child is a girl, the influence on her mental status will be stronger. For this reason, the possible explanation is that although girls' mental status is better, they are also more vulnerable to the interference of the external environment, and the fluctuation of their mental status is greater than that of boys. In addition, if the second child is a girl, the influence on the mental status of the teenagers is greater than that if the second child is a boy.



Figure 11. Matrix analysis on the teenagers' mental status

OLS Regression Results

Dep. Variable:	mental	R-squared:	0.153
Model:	OLS	Adj. R-squared:	0.124
Method:	Least Squares	F-statistic:	5.250
Date:	Sun, 16 May 2021	Prob (F-statistic):	5.39e-05
Time:	21:13:46	Log-Likelihood:	-311.58
No. Observations:	181	AIC:	637.2
Df Residuals:	174	BIC:	659.5
Df Model:	6		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
Intercept	4.5998	1.494	3.078	0.002	1.651	7.549
gender1	0.4509	0.245	1.838	0.068	-0.033	0.935
age1	0.0172	0.069	0.247	0.805	-0.120	0.154
gender2	0.3968	0.222	1.784	0.076	-0.042	0.836
delta_age	0.0092	0.027	0.339	0.735	-0.044	0.063
income	-0.0535	0.113	-0.475	0.635	-0.276	0.169
altitude	0.8590	0.193	4.446	0.000	0.478	1.240

Omnibus:	1.833	Durbin-Watson:	2.221
Prob(Omnibus):	0.400	Jarque-Bera (JB):	1.434
Skew:	-0.153	Prob(JB):	0.488
Kurtosis:	3.310	Cond. No.	272.

(1) the first model

OLS Regression Results

Dep. Variable:	mental	R-squared:	0.149
Model:	OLS	Adj. R-squared:	0.135
Method:	Least Squares	F-statistic:	10.37
Date:	Sun, 16 May 2021	Prob (F-statistic):	2.55e-06
Time:	21:14:13	Log-Likelihood:	-311.99
No. Observations:	181	AIC:	632.0
Df Residuals:	177	BIC:	644.8
Df Model:	3		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
Intercept	4.7333	0.669	7.079	0.000	3.414	6.053
gender1	0.4504	0.242	1.865	0.064	-0.026	0.927
gender2	0.3895	0.220	1.768	0.079	-0.045	0.824
altitude	0.8843	0.189	4.690	0.000	0.512	1.256

Omnibus:	1.352	Durbin-Watson:	2.206
Prob(Omnibus):	0.509	Jarque-Bera (JB):	0.977
Skew:	-0.106	Prob(JB):	0.614
Kurtosis:	3.291	Cond. No.	23.2

(2) the second model

Figure 12. Linear regression results of the teenagers' mental status

In order to verify the results, we invoked the T-test in the Stats Library to compare the mental status of the first child in the two-child family with that of the only child. It can be seen that the statistical value is 3.513 and the P-value is far less than 0.01 (see Table 4). Therefore, it can be considered that the value of the mental status of the first child is larger than that of the only child, that is, the mental status of the only child is generally better than that of the first child. It also showed that the birth of the second child has a significant influence on the mental status of the teenagers.

Table 4. T-test results

statistic	3.5127248995656495
p value	0.0004937641027899569

Furthermore, we invoked the Statsmodels Library and used the method of Logistic Regression to compare the mental status of the first child and the only child from five aspects (social willingness, solutions to difficulties, parental care, self-confidence, and the way to face the negative emotions). From the linear regression results in Figure 13, it can be seen that the situation of the first child is significantly different from that of the only child in four aspects: social willingness, parental care, self-confidence and the way to face negative emotions.

Generalized Linear Model Regression Results

Dep. Variable:	twochild	No. Observations:	405
Model:	GLM	Df Residuals:	399
Model Family:	Binomial	Df Model:	5
Link Function:	logit	Scale:	1.0000
Method:	IRLS	Log-Likelihood:	-259.31
Date:	Sun, 16 May 2021	Deviance:	518.61
Time:	21:25:09	Pearson chi2:	404.
No. Iterations:	4		
Covariance Type:	nonrobust		

	coef	std err	z	P> z	[0.025	0.975]
const	-2.0741	0.493	-4.211	0.000	-3.039	-1.109
W	0.4192	0.272	1.540	0.123	-0.114	0.953
Y	0.1799	0.150	1.200	0.230	-0.114	0.474
Z	0.7461	0.204	3.657	0.000	0.346	1.146
AD	-0.4804	0.144	-3.347	0.001	-0.762	-0.199
AF	0.3807	0.117	3.245	0.001	0.151	0.611

Figure 13. Logistic regression on comparison of the mental status of the first child and the only child

5. Conclusions

Based on the NLP Hierarchy Theory, this study determined the dependent variables of the teenagers' mental health affected by the second child. The main explanatory variables of the teenagers' mental health affected by the second child were determined in terms of the in-depth interviews. Then, a questionnaire for empirical research was designed according to Chinese Middle School Students' Mental Health Scale. Econometric model and Python programming were used to analyze the data. The following conclusions are reached.

5.1 The Influence of the Second Child on the Teenagers' Study

Among all the factors, the parents' attitude has the most significant influence on the teenagers' study status. The parents' partiality will lead to the decline of the first child's academic performance. The elder the first child is, the less influence it will have on his/her study. At the same time, contrary to the guess, the noise problem from the second child about which people are concerned will not have a direct influence on the first child's academic performance, but it will have an influence by affecting the first child's emotion.

5.2 The Influence of the Second Child on the Teenagers' Life

The family economic status and the parents' attitude are the main factors affecting the teenagers' life. Among them, the higher the family income, the less the influence on the first child's life; The greater the change of the parents' attitude, the greater the influence on the first child's life. After having the second child, the first child needs to undertake more housework.

5.3 The Influence of the Second Child on the Teenagers' Family Member Relationship

5.3.1 The Influence on the Parent-Child Relationship

The gender of the first child and the parents' attitude have the most significant influence on the relationship between the first child and his/her parents. Usually girls have more heart to heart talks and exchanges with their parents. They are more likely to feel the changes in their relationship with their parents after having the second child. So they tend to be estranged with their parents.

5.3.2 The Influence on Sibling Relationship

Age difference and the parents' attitude have the greatest influence on the sibling relationship between the two children. Surprisingly, the greater the age difference, the less the influence of the second child on the relationship between the first child and second child. This is mainly because there is a competitive relationship between the children with similar age. They are more prone to contradictions and frictions. For the children with larger age difference, the first child and the second child have different needs. It is not easy for them to have contradictions. And most of the first children are sensible enough to take the initiative to take care of the second child, so they get along better. The greater the difference in parents' attitude towards the two children, the greater the negative influence on the sibling relationship.

5.4 The Influence of the Second Child on the Teenagers' Mental Status

The gender of the first child, the gender of the second child and the parents' attitude will have a significant influence on the teenagers' mental status. Different from the cognition that women's mental health is better than men's in general studies, if the first child is a girl, the influence on her mental status will be stronger. It's mainly because girls' mental status is better, but they are also more vulnerable to the interference of the external environment. And the fluctuation of their mental status is greater than that of boys. In addition, if the second child is a girl, the influence on the mental status of the teenagers is greater than that if the second child is a boy. Usually people would think that the younger brother is noisier, and have greater influence on the first child. Due to the reduction of the parents' concern and the change of their attitude, comparing with the only child, the first child in the two-child families are less sociable, and more likely to feel insecure. They feel stressed and irritable more often, especially girls.

5.5 The Depth of the Influence of the Second Child on the Growth of Teenagers

According to the NLP Hierarchy Theory, this study concluded that the second child has a more in-depth influence on the growth of the teenagers. Human logic was divided into six levels by NLP Hierarchy Theory. Among them, the second child has a significant influence on the environment at the bottom and the behavior at the sub-bottom, but has little influence on the ability at the

third level and the beliefs and values at the fourth level. The first child's identity cognition is affected, while the deepest spirit is not easily affected. In other words, the second child has a great influence on the first child's daily life, behavior and family identity, but his/her ability and three outlooks (world view, outlook on life and value) are not easily affected.

6. Discussion and Suggestions

6.1 Limitations

A total of 407 valid questionnaires were collected in this research, including 182 questionnaires from the two-child families, which were distributed through the questionnaire platform *sojump*. The questions in the questionnaire were strictly designed and the response time was predicted. The collected data were processed and analyzed by scientific research methods, and conclusions were drawn. Therefore, this research results are scientific and effective, and constructive suggestions can be put forward for the growth of the first child in the two-child families. However, this research still has the following limitations.

6.1.1 Limitations of the Research Variables

Referring to the prior interviews, four explained variables in this study are "study", "life", "psychology" and "family member relationship", and four explanatory variables are "gender", "age difference", "family economic status" and "parental energy and attitude". When reviewing previous research reports and relevant literature in advance, we found that many aspects in the growth of the teenagers were affected. But due to the limit of time and survey scope, the above eight representative research variables were retained for research after discussion and consideration.

6.1.2 Simplified Two-child Family Structures

This study is only aimed at the simplified two-child family structures in which both parents raise families. The family environment is different from individual to individual. This study did not consider the complex family environment, but only investigated the families raised parents. Complex family structures include divorced families, families of left-behind children, families with both parents dead or one party dead, etc. The results of this paper are not applicable to the above special families with complex family structures.

6.1.3 Some Future Research Directions

Based on above research limitations, we put forward

the following suggestions for the research and related topics on the influence on the growth of the teenagers in the two-child families in the future.

1) Expansion of the research variables

Besides the eight variables investigated in this research: "study", "life", "psychology", "family member relationship", "gender", "age difference", "family economic status", "parental energy and attitude", future research can also explore the influence mechanism of the "second child" on the growth of the teenagers from other factors, such as whether the birth of the second child will cause more serious rebellious behavior of the first child during adolescence.

2) Discussion of different family types

Different family types, including divorced families, rural families with left-behind children, families with both parents dead or one party dead, poor families or wealthy families, can be explored and compared in groups, such as the difference in the influence of the parents' energy or family economic status on the children's psychological status. Or, a new econometric model can be established to specifically study the influence on the growth of the first child in such families.

6.2 Suggestions

At present, in order to cope with the severe problem of population aging in China, China relaxed the fertility conditions and implemented a universal two-child policy in 2016. Provinces and cities successively introduced policies to encourage fertility. With the deepening of population aging and the disappearance of demographic dividend, the burden on families and the society has been greatly increased. It has been more than five years since the implementation of the two-child policy. A significant number of families have changed from three people to four people. Considering that the only children will face the social responsibility and the economic pressure to support the elderly in the future, many parents respond to the national policy to have a second child. However, as the society pays more attention to the family education, more and more parents begin to consider the impact and influence of having a second child on the first child. They worry about whether they can treat two children of different ages equally in family education, and worry about whether having a second child will affect the healthy growth of the first child^[20]. At the same time, compared with the one-child family environment, there are influences of the siblings on the two-child family environment. Changes in family structures may affect the children's mental health.

According to the conclusion of this study, this paper aims to provide guidance for the first child in the two-

child families to grow better. The following constructive suggestions are given.

6.2.1 Advice for Parents with Two Children

(a) After the second child was born, the parents should treat any children equally, pay attention to the first child's daily emotions and behaviors, and correctly guide the first child to adapt to the change of family identity as soon as possible.

(b) Care more for the first child in daily life. Communicate with the first child at irregular intervals, or arrange parent-child activities that only the first child participates in. The parents whose first child is a girl need to pay special attention to their children's psychological status, such as social willingness, self-confidence, and ways to face negative emotions.

(c) The parents whose two children are with small age gap should pay attention to the sibling relationship of their children. When the children have disputes and contradictions, the parents should rationally analyze the problem, correctly guide them, and help them solve the problem. The parents whose two children are with large age gap should also make rational analysis, not just blame, and should appropriately guide the elder children to help take care of the younger siblings. While the elder child gets a sense of achievement, the feelings between the two children can also be enhanced.

6.2.2 Advice on Parents Who Plan to Have a Second Child

(a) Ask your child for his/her opinions before deciding to have a second child, and communicate with him/her patiently.

(b) Some factors such as the family economic situation and the parents' energy should be considered comprehensively, so as to avoid the negative influence on the first child in all aspects after the birth of the second child.

(c) Abandon the idea of "son preference". Some parents whose first child is a girl want to give birth to a son as the second child. If the first child is a girl, the psychological negative influence on her is obvious. The parents should consider having a second child carefully.

6.2.3 Suggestions for the Parents Who Have No Intention of Having a Second Child

(a) Always pay attention to the children's daily emotions and behaviors. As there are no siblings in the family, the only child will probably be a little overbearing in personality.

(b) Correctly guide the children to learn to share and to

be considerate.

Conflict of Interest

There is no conflict of interest.

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