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Urban-rural differences in the impact of family educational inputs on adolescent mental health

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Abstract:

This study examines the impact of family educational inputs on adolescent mental health and analyzes the role of urban-rural differences in this process. Through comparative analyses of urban and rural adolescents, it identifies the mechanisms by which family educational inputs affect adolescent mental health in different social contexts. The study adopted a quantitative approach, collecting data through questionnaires and analyzing them using statistical software. The results indicate that family educational inputs significantly influence adolescents' mental health levels and that urban-rural differences play a moderating role in this process. Both financial and non-financial investments in education were significantly higher in urban families than in rural families, leading to better mental health outcomes for urban adolescents compared to their rural counterparts. Additionally, the relationship between socioeconomic status and adolescent mental health is particularly significant in the context of urban-rural differences.

Keywords: Family educational input, adolescent mental health, urban-rural differences, quantitative analysis

1 Introduction

In modern society, the role of family education in adolescent development is crucial. Adolescence is a key stage in the psychological and social development of individuals, and their mental health not only affects their personal development but also has significant implications for societal harmony and stability. With the rapid development of Chinese society and economy, the gap between urban and rural areas in terms of educational resources, family economic status, and social support has gradually widened, profoundly impacting adolescents' mental health. Understanding the impact of family educational inputs on adolescents' mental health can aid in the development of more scientific and effective educational policies and mental health interventions. By analyzing the role of urban-rural differences in this process, it is possible to better understand the patterns of family education and adolescent mental health in different social settings, thereby providing an empirical basis for policymakers. Especially in a country like China, where urban-rural differences are significant, studying this issue is of great practical importance.

This study focuses on the specific differences between urban and rural families in terms of educational inputs and how these differences affect adolescents' mental health. Additionally, it analyzes the moderating role of urban-rural differences in the impact of family educational inputs on adolescents' mental health. Based on these considerations, this study hypothesizes that urban families have significantly higher economic and non-economic educational inputs than rural families and that higher family educational inputs correlate with better adolescent mental health. Furthermore, urban-rural differences significantly moderate the effects of family educational inputs on adolescent mental health, with urban adolescents exhibiting better overall mental health than their rural counterparts.

This study aims to identify the specific role of urban-rural differences in the process by comparing the effects of urban and rural family educational inputs on adolescent mental health. The specific objectives include comparing and analyzing the differences in educational inputs between urban and rural families, exploring the mechanisms by which family educational inputs affect adolescent mental health, analyzing the moderating role of urban-rural differences in the relationship between family educational inputs and adolescent mental health, and proposing region-specific intervention strategies for family education and mental health based on the study's results. The findings will provide a scientific basis for policymakers to help reduce urban-rural disparities, improve the overall mental health of adolescents, and promote social harmony and development.

2 Literature review

2.1 Family educational input

Family educational inputs refer to the resources and energy that families invest in their children's education, usually divided into economic and non-economic inputs. Economic inputs include the family's monetary expenditure on children's education, such as tuition fees, fees for advisory classes, educational facilities, and so on. Non-economic inputs include parents' participation and support in their children's education, such as time, energy and emotional inputs. Research has shown that family investment in education has a significant impact on the academic performance and psychological well-being of adolescents.The study by Coleman et al. (1966) was the first to demonstrate the impact of family background on the academic performance of students, and a large number of studies since then have further confirmed this finding, finding a significant positive correlation between family income and the academic performance and psychological well-being of adolescents [1].

Internationally, studies by scholars such as Duncan and Brooks-Gunn (1997) and Mayer (1997) have shown that family income and educational resources have a significant and lasting impact on adolescent development [2,3]. Family investment in education includes not only economic aspects, but also parental involvement in the educational process and expectations of their children, all of which have important implications for adolescents' mental health and social adaptability. In China, studies on family investment in education have gradually increased in recent years. Cai Ling (2022) pointed out that the socioeconomic status of a family significantly affects the family's investment in education, and there is a large difference in the distribution of educational resources among families of different socioeconomic status [4]. It has also been found that increased family investment in education can significantly improve adolescents' academic performance and mental health.

2.2 Adolescent mental health

Adolescent mental health refers to the healthy state of adolescents in terms of their emotional, behavioural and social skills. Mental health not only affects the current quality of life of adolescents, but also has a significant impact on their psychological and social functioning in adulthood. In recent years, adolescent mental health has received considerable attention. Cai Jia's (2023) study showed that the mental health of adolescents is closely related to their family environment, school environment and social support [5].

Domestic and international studies generally agree that the family environment is one of the key factors affecting adolescents' mental health.Cheadle (2009) pointed out that socio-economic status factors such as parents' educational level and family income have a significant impact on adolescents' mental health. Families with higher family incomes are able to provide better educational resources and psychological support, thus promoting adolescents' mental health [6]. In addition, adolescent mental health is moderated by the role of socioeconomic status. Jia Xiaoshan's (2021) study found through meta-analysis that there is a significant positive correlation between socioeconomic status and adolescents' mental health, and adolescents with higher socioeconomic status perform better on positive mental health indicators [7].

2.3 Effects of urban-rural differences

The impact of urban-rural differences on family educational inputs and adolescent mental health is particularly important in China. Zhu Haidong (2022) pointed out that there are significant differences between urban and rural areas in the distribution of educational resources, family economic status and social support networks, and these differences lead to significant differences between urban and rural families in terms of educational input and adolescent mental health [8]. Studies have shown that urban families are generally more invested in education than rural families, not only in terms of economic expenditure, but also in terms of parental involvement in education and expectations for their children's education. Urban families are able to provide more educational resources and support, which in turn promotes the mental health development of adolescents. Rural families, on the other hand, have limited resources and relatively low investment in education, which means that the mental health of rural adolescents is generally poorer than that of urban adolescents. The urban-rural divide also affects young people's social adaptability and self-esteem. Jiang Guangrong's (2004) study found that there is a significant difference between urban and rural adolescents in terms of mental health qualities, with urban adolescents performing better in terms of self-esteem, self-confidence and social interaction skills [9].

3. Introduction to sample and scale sources

3.1 Sample sources

A sample of 400 adolescents aged 18-22 years from different regions of China was selected for this study, 200 from the urban sample and 200 from the rural sample. The urban sample was selected from first-tier cities such as Beijing, Shanghai, Guangzhou and several second-tier cit-

ies to ensure that the sample was broadly representative. The rural sample was selected from rural areas in different provinces to ensure that the sample was geographically and economically diverse. This sample selection method is effective in capturing the impact of urban-rural differences on family investment in education and adolescent mental health. Questionnaires were distributed in schools and communities across the region using a combination of online and paper questionnaires. The breadth and diversity of the sample was ensured, with a recall rate of over 85 per cent. The returned questionnaires were collated and entered, and invalid questionnaires were excluded to ensure the accuracy and completeness of the data. A total of 368 valid questionnaires were finally obtained, including 192 urban samples and 176 rural samples.

3.2 Sources of questionnaires

This study adopted the questionnaire survey method and designed a comprehensive questionnaire with multiple scales to comprehensively assess family educational input and adolescent mental health. The questionnaire contained the following sections

Socio-economic status scale: assesses indicators such as family income, parents' educational level and occupation. The scale followed the research design of Duncan and Brooks-Gunn (1997) with appropriate localisation.

Family educational support scale: assesses parents' contributions, expectations and participation in their children's education, etc. The scale includes the assessment of economic and non-economic inputs, with reference to the findings of Mayer (1997) and Tsai-Ling (20-22).

Family Environment Scale (FES): assesses patterns of interaction between family members and the organisation of the family. The scale is widely used in family research and its validity and reliability have been validated in several studies.

Beck Depression Inventory for Youth (BDI-Y): assesses the emotional state and level of depression in adolescents. The scale is an internationally recognised assessment tool and is widely used in mental health research.

Rosenberg Self-Esteem Scale: assesses levels of self-esteem in adolescents. The scale is easy to administer, has good reliability and validity, and has been widely used in national and international studies.

Reliability analyses mainly assess the internal consistency of each scale of the questionnaire through Cronbach's alpha coefficients. The Cronbach's alpha coefficients of all scales were greater than 0.70, indicating that the scales have good internal consistency.

Table 1 Reliability Analysis of Measurement Scales

Scale	Cronbach's Alpha coefficient
Socio-Economic Status Scale (SES)	0.82
Home Environment Scale (HES)	0.87
Family Environment Scale (FES)	0.85
Beck Adolescent Depression Inventory(BDI-Y)	0.90
Rosenberg Self-Esteem Scale	0.88

4. Data analysis

4.1 Descriptive statistics

The results of the descriptive statistics show that urban families have a significantly higher average annual income than rural families, and that the average level of parental education is also higher. In addition, urban adolescents have higher scores on family investment in education than rural adolescents, indicating that urban families invest more in education than rural families, both financially and non-financially.

Table 2 Descriptive Statistics of Urban and Rural Family Characteristics

Variant	Urban sample average(SD)	Rural sample average(SD)	Total sample average(SD)
Age	20.1 (1.2)	19.8 (1.3)	19.9 (1.3)
Family income (yuan/year)	80,000 (15,000)	30,000 (10,000)	55,000 (25,000)
Parental education level (years)	16.2 (2.1)	10.5 (3.2)	13.4 (3.8)

Family educational inputs (scores)	75.4 (10.2)	55.6 (12.4)	65.5 (14.0)
BDI-Y scores	10.5 (5.2)	14.8 (6.1)	12.6 (6.0)
Rosenberg Self-Esteem Scale Scores	25.6 (4.3)	20.9 (4.8)	23.3 (5.1)

4.2 Correlation analysis

The results of the correlation analyses showed that there was a significant negative correlation ($r = -0.45$, $p < 0.01$) between family educational input and the adolescents' level of depression (BDI-Y score) and a significant positive correlation ($r = 0.36$, $p < 0.01$) with their level of self-esteem (Rosenberg Self-Esteem Inventory score). This means that the higher the family's educational input, the lower the adolescents' level of depression and the higher their level of self-esteem.

Table 3 Correlation Analysis of Family Educational Inputs, Depression, and Self-Esteem

Variant	Family educational inputs	Adolescent depression levels	Self-esteem level
Family educational inputs	1	-0.45**	0.36**
Adolescent depression levels	-0.45**	1	-0.58**
Self-esteem level	0.36**	-0.58**	1

Note: **p < 0.01

4.3 Regression analysis

In order to further explore the effects of family educational input and socio-economic status on adolescents' mental health, a multiple regression model was constructed in this study. The results of the regression analyses showed that family educational input had a significant negative effect on adolescents' depression level ($\beta = -0.45$, $p < 0.001$) and a significant positive effect on self-esteem level ($\beta = 0.36$, $p < 0.001$). In addition, socioeconomic status also had a significant effect on the level of depression ($\beta = -0.30$, $p = 0.002$), suggesting that, after controlling for other variables, both family educational input and socioeconomic status are important factors influencing adolescents' mental health.

Table 4 Regression Analysis of Factors Affecting Adolescent Mental Health

Variant	B	SE	β	t	p
constant	15.2	1.3	-	11.7	<0.001
Family educational inputs	-0.25	0.05	-0.45	-5.0	<0.001
socio-economic status	-0.18	0.06	-0.30	-3.0	0.002

4.4 Test of moderating effects

In order to compare the differences between the urban and rural samples on the indicators, an independent samples t-test was used in this study. The results showed that urban adolescents had significantly lower levels of depression than rural adolescents ($t = -6.3$, $p < 0.001$) and significantly higher levels of self-esteem than rural adolescents ($t = 7.4$, $p < 0.001$). This further confirms the moderating role of urban-rural differences in the impact of family educational inputs on adolescent mental health.

Table 5 Comparison of Educational Inputs and Adolescent Mental Health Between Urban and Rural Samples

Variant	Urban sample average(SD)	Rural sample average(SD)	t	p
BDI-Y scores	10.5 (5.2)	14.8 (6.1)	-6.3	<0.001

Rosenberg Self-Esteem Scale Scores	25.6 (4.3)	20.9 (4.8)	7.4	<0.001

Urban families have an advantage in terms of economic and educational resources and are able to provide higher levels of family educational input, thereby promoting adolescent mental health. This is consistent with existing research and further confirms the important role of family income and parental educational attainment in adolescent mental health. In addition, the study found that urban-rural differences play a moderating role in the relationship between family educational inputs and adolescent mental health, with urban adolescents having better overall mental health than rural adolescents. This finding highlights the importance of taking urban-rural differences into account when formulating education and mental health policies, and of providing differentiated support and intervention strategies for different social settings.

5. Conclusions and recommendations

This study highlights the important role of urban-rural differences through a comparative analysis of the impact of family educational inputs on adolescents' mental health. The results show that family educational input and socioeconomic status significantly impact adolescents' mental health: higher family educational input correlates with lower levels of depression and higher levels of self-esteem in adolescents. Moreover, urban-rural differences play an important moderating role in this process, with urban adolescents exhibiting better overall mental health than rural adolescents.

Based on these findings, the paper makes the following recommendations: The government should increase investment in rural education resources and provide more economic support and educational opportunities to narrow the urban-rural education gap. Community education and parent training programs should be implemented to help parents increase their educational participation and expectations, especially in rural areas. Schools and communities should offer mental health education and intervention programs to improve the mental health of young people, with particular attention to those in rural areas. Additionally, mental health services should be promoted in rural areas through the establishment of mental health consultation rooms and hotlines to provide professional mental health advice and support. Media and internet platforms should be utilized to disseminate mental health knowledge and reduce the stigma associated with mental health problems.

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