

## **The Influence of Parental Phubbing Behavior on Rural Children's Mental Health: The Mediating Role of Social Participation**

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### **ABSTRACT**

*With the advent of the digital age, the popularity of smart phones and electronic devices has made parental phubbing behavior (that is, parents overuse electronic devices when interacting with their children) a new factor affecting the mental health of rural children. The aim of this study was to explore the influence of parental phubbing on rural children's mental health and the mediating role of social participation. Parents' phubbing behavior, social engagement scale and children's Anxiety Disorder Screening Scale (SCARED) were used to measure parents' phubbing behavior, social engagement and children's mental health. The results show that there is a significant negative correlation between parental phubbing behavior and rural children's mental health level, and social participation plays a partial mediating role in this relationship.*

*Parental phubbing not only directly affects children's mental health, but also indirectly affects children's mental health by reducing their social participation. The findings of this study highlight the importance of parental behavior in early child development and provide practical guidance for parents, educators, and policymakers to promote mental health and social engagement among rural children.*

**Key words:** parents bow their heads; Child development; Social participation; Child mental health

### **Introduction**

Since the introduction of the rural revitalization strategy, China's rural development has made great strides, but on the whole, rural development is still relatively backward compared with that

of urban areas, and the physical and mental health development of rural children is therefore relatively limited. Rural children face many difficulties in their growth process, such as backward educational resources, low literacy of parents, and lack of family functions, which may have a certain negative impact on their mental health development. In response to the psychological problems faced by young people today, China has introduced a number of policies, systems, and documents to care for young people's mental health, such as the Medium- and Long-Term Youth Development Plan (2016-2025), and the Special Action Plan for Comprehensively Strengthening and Improving Students' Mental Health in the New Era (2023-2025) All these reflect the importance as well as the urgency of children's mental health.

With the wave of digitalization, smartphones and electronic devices have become an indispensable part of daily life. The 5th National Survey Report on Internet Use by Minors shows that as of 2022, the Internet penetration rate of rural minors is 96.5%. While the number of Internet users among minors continues to increase, a new trend, the phenomenon of low parental head, has gradually emerged. Parents are immersed in the electronic screen, thus neglecting face-to-face communication with their children, and this silent detachment has a significant impact on the mental health of rural children, which may lead to loneliness, low self-esteem, and social barriers for individual children.

An in-depth discussion of the intrinsic connection between parents' head-down behavior and rural adolescents' mental health is not only a profound reflection on the current social phenomenon, but also an urgent need to provide scientific evidence and practical guidance for the protection of adolescents' mental health.

## **I. Literature Review**

### **(I) Parental Phubbing and Rural Children's Mental Health**

Jiang Qianyun et al. (2021) defined parental head-down behavior as the phenomenon of using cell phones in the process of communication between parents and children, which is called "phubbing", and refers to the behavior of parents who use cell phones in the process of interacting with their children without having time to pay attention to their children, while Yu Bin et al. (2024) believed that parental head-down behavior is the specific manifestation of head-down behavior in parent-child interaction, and that parents are the initiators of head-down behavior and children are the ones who are being head-down. specific manifestation of parent-child interaction, where parents are the initiators of the head-down behavior and children are the ones who are being head-down, and Ding Qian et al. (2018) studied that parental head-down behavior refers to the behavior of parents who are overly concerned with using their cell phones and neglecting their children when taking care of their children or communicating with them.

According to the ecosystem theory, the family is an important microsystem that influences adolescent development (Ma Teng, 2022). Children's behavioral development is closely related to the environment, and the family, as an important environment, is prone to trigger many problematic behaviors in children if negative feedback is given frequently (Wang & Gao et al., 2019). Social control theory, on the other hand, suggests that negative parenting can directly increase the incidence of adolescent behavioral problems (Shalini K ,Uloopi KS ,Ratnaditya A ,et al., 2023), and that parental head-down may reduce family interactions and communication (Wang X ,Qiao Y ,Li W et al., 2023) and lead to parent-child alienation and induce adolescent loneliness, and also directly predicts adolescents' cell phone dependence (Mi Z ,Cao W ,Diao W ,et al, 2023), as well as make children feel their parents' neglect, cold response and rejection, which in turn generates some negative emotions (Sui Yang, Liu Xingjuan, 2018), and their prolonged distraction of attention can lead to a series of negative behaviors such as Internet addiction (Wang et al.,2019) while a good parent-child relationship (less head-down, more parent-child interaction) represents a positive abundance of emotional flow between parents and children, which can alleviate adolescent loneliness (Zhou CY ,Dai LJ ,He YP ,et al, 2023).

From the perspective of parent-child relationship, according to the analysis of the substitution hypothesis theory, the time spent by parents on mobile devices will replace or reduce real-life meaningful parent-child interactions, which will have a negative impact on parent-child relationship (Coyne SM ,Padilla-Walker LM ,Fraser AM ,et al, 2014), that is, it will reduce the time spent by parents to communicate with their children offline ( Liu Menghang ,Xiao Qibin ,2023), which in turn will reduce the emotional communication and emotional expression between parents and children (Jiang Qianyun ,Wang Xingchao ,Liu Bing ,et al ,2021), and in this way will induce mental health problems in rural children.

According to the social learning theory, individuals' social behaviors are derived from observation and imitation, and individuals gain psychological development through this social learning. When people lack relevant experience or knowledge, they tend to look for alternative experiences from important individuals in their lives (Yang Yang,Gao Wenbin,Tao Ting,et al.,2022), so children imitate their parents' behaviors, and then develop cell phone dependence or even addiction, anxiety, depression, and other psychological problems. and other psychological problems. Therefore, parents' low head behavior is an emerging family risk factor affecting adolescents' cell phone use dependence (Ding Qian, Zhang Yongxin, 2019). And some existing studies have also highlighted the impact of this problem on children's mental health, for example, Jin Canchan et al. (2010) found, through studies such as the Internet Addiction Scale, that Internet-addicted children have poorer mental health, and when forced to reduce or stop surfing the Internet with withdrawal symptoms, they are prone to psychologically unpleasant feelings (depression, anxiety, etc.), which in turn lead to behavioral problems. The negative impact of

Internet addiction on the mental health of disadvantaged children is further exacerbated by the fact that the family environment of rural children is likely to interact with Internet addiction.

## **(II) Social participation and its mediating role**

Social participation is understood as the process by which an individual participates in and engages with the life environment and daily activities that are essential to his or her development (Levitas et al., 2007; Rosenberg et al., 2010). Regarding the mechanism of parental head-down behavior on rural children's mental health, previous studies have found that social participation is a factor that mediates the effects of parental head-down behavior and mental health.

First of all, social participation has a certain influence on mental health. Some relevant studies have pointed out that participation in various types of activities, including team sports, school activities, and extracurricular activities, has a positive impact on an individual's subjective well-being and psychological adjustment (Abdallah et al., 2014; Fredricks & Eccles, 2010). Korean scholars (Jin et al., 2017) designed for South Korean children aged 9-17 years old. A study found that social participation can buffer the adverse effects of family poverty on children's subjective well-being. Chen Jieyao et al. (2021) noted that the effects of different types of social participation on mental health are not identical, but overall, comprehensive and high levels of social participation are improving mental health to some extent.

Meanwhile, parents' low head behavior affects children's social participation level to a certain extent. Some studies have explored the impact of parents' head-down behavior on children's pro-social behavior, and pointed out that parents' head-down behavior is significantly negatively correlated with children's pro-social behavior, and their head-down gestures will make children have negative emotions, which in turn will affect their social interaction relationships and communication desires (Ma Teng, 2022). Regina J., et al. (2010) found that compulsive Internet use (compulsive Internet use) seriously affected Dutch adolescents. Internet use) seriously affected the leisure time of Dutch adolescents, and that increased time spent using the Internet inhibited children's desire to engage in social interaction, whereas parental habits and specific hours of Internet use may help to prevent the development of CIUs in children within the family, which in turn affects children's early development as well as their level of social engagement.

Instead, this study will analyze the relationship and influence mechanism between parental low head behavior and adolescent mental health through the mediating role of social participation. This paper will take the mediating role of social participation as a bridge to put forward relevant hypotheses, focusing on analyzing the relevant influence mechanisms and links between parental low head behavior and adolescent mental health.

## **II. Research hypotheses**

The ecosystem theory proposed by Bronfenbrenner (1992) suggests that adolescents are highly susceptible to the influence of the family environment during their early individual development, and that parents, as the primary responsibility for early child rearing, play a major influential role. Yubin and Guo (2024) mentioned that parental head-down behavior often has a key element of social exclusion, i.e., the child is neglected by others. Combined with the theory of social exclusion, it may lead to children's needs not being met, accordingly, this paper proposes:

H1: Parental head-down behavior has a significant negative effect on children's mental health.

According to the analysis of existing literature, it was found that the factor of social participation assumes the role of a mediator between the two factors of parental low head behavior and children's mental health. Ma Teng (2022) found that parental low head behavior makes children develop negative emotions, which in turn diminishes social engagement activities; and social engagement activities affect children's mental health status, accordingly, this paper proposes:

H2: Social participation mediates the relationship between parental low head behavior and children's mental health.

## **III. Research Methodology**

### **(I) Subjects**

In this study, convenience sampling was adopted, and two classes of students from each of the first to the third grade of a rural middle school in Nanjing, Jiangsu Province and one class of students from each of the fourth to the sixth grade of a rural elementary school in Fuyang City, Anhui Province were selected as the subjects; 370 questionnaires were distributed, and 342 valid questionnaires were recovered, with an effective recovery rate of 92.43%. Among them, 174 were boys and 168 were girls. The mean age of the subjects was 13.35 years old with a standard deviation of 1.718 years old.

### **(II) Research instruments**

#### **1. Parents' Low Head Scale**

The Parental Low Headedness Scale revised and translated by Ding Qian et al. was used, which is a one-dimensional scale with 9 items and is scored using a Likert 5-point scale, with scores ranging from 1 (never like this) to 5 (always like this), with higher scores indicating more serious parental low headedness behaviors. The internal consistency coefficient of the scale in this study was 0.803.

## **2. Social participation scale**

The Children's Social Adaptation Scale developed by Jiana Xu (2015) with reference to the Children's Adaptive Behavior Rating Scale (Yao Shuqiao and Gong Yaoxian, 1993) and the Adolescent Adaptive Behavior Scale (Nie Yengang, 2005) was used. In this study, the social participation dimension scale of this scale was selected, which consists of 9 items and is rated on a Likert 5-point scale, with scores ranging from 1 (never like this) to 5 (always like this), with higher scores indicating higher levels of social participation. The internal consistency coefficient for this subscale in this study was 0.772.

## **3. Children's Mental Health Scale**

The Screening Checklist for Anxious Emotional Disorders in Children (SCARED) used in this study was developed by Birmaher in 1997, and its Chinese version was translated and revised by Kai Wang et al. (2002). The scale consists of 38 entries and is scored on a three-level scale from 0 to 2. In this study, nine questions under generalized anxiety were selected to develop the subscale according to the actual situation in order to measure children's anxiety level; the higher the score, the higher the anxiety level and the lower the mental health level. The internal consistency coefficient of the subscale in this study was 0.869.

### **(III) Common method bias test**

In order to control the problem of common method bias, the Harman one-way test was used in this study. The results show that there are seven factors with characteristic roots greater than 1. The cumulative variance explained by the first factor without rotation is 19.67%, which is less than the critical value of 40%. It indicates that there is no serious common method bias in this study.

### **(IV) Sample characteristics**

A total of 342 samples were analyzed in this study, and the research participants were mostly rural children in the upper grades of elementary school and the lower grades of secondary school, and the age range was mainly in the 11-14 years old. Most of the children's parents were manual laborers and had a low level of education, which led to a lack of education within the family in the early stages of children's development. The mean value of the social participation score of the research participants was 2.47, and the sample size of more than 4 is small, which indicates that rural children are less active in social participation. As for the values of the Parental Low Head Behavior Measure, families with high values were characterized by low parental education, lower social participation of children, and higher levels of depression compared to the sample population with low values.

**Tab.1 Descriptive statistics**

Variables	Values and meanings	Mean/percentage
Distinguishing between the sexes	Male	51.0
	Female	49.0
Age	Continuous variable	13.35
Mother's occupation	Public officials	5.3
	Teachers	1.5
	Farmers	15.2
	Workers	38.3
	Business managers	4.7
	Individuals	12.0
Mother's education	Others	23.1
	Elementary and below	20.4
	Middle School	54.2
	High School	16.5
	Undergraduate and above	5.4
Father's occupation	Specialty	3.6
	Public officials	2.1
	Teachers	0.6
	Farmers	8.6

	Workers	59.8
	Business managers	9.2
	Individuals	7.1
	Others	12.7
Father's education	Elementary and below	13.4
	Middle School	51.2
	High School	25.0
	Undergraduate and above	6.7
	Specialty	3.7

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#### **IV. Results of the analysis**

##### **(i) Relationship between parental head-down behavior and children's mental health**

Using SPSS 27.0 software, the mediating effect in the relationship between parental low head behavior and rural children's mental health was tested by the simple mediation model in the SPSS macro prepared by Hayes (2012), controlling for the two major demographic variables of age and gender. The results are shown in Table 2. The results presented indicate that parental head-down behavior has a more significant effect on the mental health status of rural children ( $B=0.18$ ,  $t=4.89$ ,  $p<0.01$ ).

##### **(ii) Mediating role of social participation**

When the mediating variable of social participation was added, the effect of parents' low head behavior on children's mental health remained significant ( $B=0.12$ ,  $t=3.50$ ,  $p<0.01$ ). The negative effect of parents' low head behavior on children's social participation was significant ( $B=-0.18$ ,  $t=-4.11$ ,  $p<0.01$ ), as was the negative effect of children's social participation on their mental health status ( $B=-0.32$ ,  $t=-7.25$ ,  $p<0.01$ ).

In addition, the analysis using Bootstrap method is shown in Table 3, and the upper and lower limits of bootstrap 95% confidence intervals did not pass through 0, which means that the

original proposition can be rejected, that is to say, there is a significant direct effect of parents' low head behavior on children's mental health status. At the same time, parents' head-down behavior not only can directly affect children's mental health status, but also can affect the degree of children's mental health through the mediating effect of having control variables. The table shows that the direct and mediating effects account for 68.13% and 31.87% respectively.

**Tab.2 Mediation Analysis with control variable**

Outcome Variables	Regression equation	Fitting Indicators			Parents' head down	
	Predictor variables	<i>R</i>	<i>R</i> <sup>2</sup>	<i>F</i>	<i>B</i>	<i>t</i>
Mental health		0.31	0.10	4.74		
	Sex				0.0757	1.3586
	Age				-0.0159	-0.9588
	Mother's occupation				-0.0032	-0.1720
	Mother's Education				-0.0051	-0.1385
	Father's occupation				-0.0070	-0.2874
	Father's Education				-0.0475	-1.2517
	Low-head behavior				0.1815	4.8872**
Social participation		0.27	0.07	3.5749		
	Sex				0.0588	0.8823
	Age				0.0336	1.6947

	Mother's occupation				-0.0279	-1.252
	Mother's Education				0.0174	0.3947
	Father's occupation				0.0074	0.2469
	Father's Education				0.0376	0.8275
	Low-head behavior				-0.1825	-4.1069
Mental health		0.47	0.22	11.3896		
	Sex				0.0943	1.8226
	Age				-0.0053	-0.3416
	Mother's occupation				-0.0120	-0.6942
	Mother's Education				0.0004	0.0115
	Father's occupation				-0.0047	-0.2028
	Father's Education				-0.0356	-1.0114
	Low-head behavior				0.1238	3.5040**
	Social participation				-0.3160	-7.2467**

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**Tab.3 Total infect, direct infect and indirect infect**

	Effective Value	Boot standard error	BootCI lower limit	BootCI upper limit	Effect Percentage
Mediating effects of attentional control	0.058	0.017	0.026	0.093	31.87%
Direct effect	0.124	0.035	0.005	0.0543	68.13%
Total effect	0.182	0.037	0.000	0.1084	

**V. Conclusion and Discussion**

**(i) Results of the research data**

This study found that there is a significant negative correlation between parents' low head behavior and rural children's mental health level, and the more severe the parents' low head behavior, the lower their children's mental health level. Meanwhile, rural children's social participation plays a partially mediating role in the association between parental low head behavior and rural children's mental health level.

**1. The impact of parental low head behavior on adolescent mental health**

This study found that there is a positive correlation between parents' low head behavior and children's anxiety and depression levels, which indicates that the more severe the parents' low head behavior, the higher the children's anxiety and depression levels, and the lower the children's mental health levels, which is consistent with previous studies. Parents with more severe head-down behavior unconsciously reduce the frequency of communication with children on the one hand, and on the other hand, they tend to ignore important information when communicating with children. In the family environment, children feel more negative feedbacks such as “not being paid attention to” and “being neglected”, which makes them more prone to anxiety, depression and other unhealthy psychological states, and lower levels of mental health.

**2. Relationship between adolescents' social participation and mental health**

This study further found that social participation partially mediates the relationship between parental low head behavior and rural children's mental health.

Previous studies have pointed out that parental head-down behavior is significantly negatively

correlated with children's pro-social behavior, and this study further validates this view. Parental head-down behavior not only directly creates negative emotions in children, which in turn affects their social relationships and desire to communicate, but also negatively affects the development of children's socio-emotional functioning, leading to a lower quality of social communication (Field, 1994), and negatively affects children's social participation. Parents who use cell phones all the time and ignore their children when they are with them tend to set a negative "example" for their children, resulting in increasingly serious head-down behaviors, which reduces the level of social participation.

Lower levels of social engagement can lead to higher levels of anxiety and depression, i.e. lower levels of mental health. Previous studies have shown that participation in various types of social activities, including team, school and extracurricular activities, has a positive impact on an individual's subjective well-being and psychological adjustment. At the same time, social participation may also buffer the negative effects of negative family environments on children's subjective well-being. Children with severe parental head-down behavior have significant deficits in social participation willingness and social participation time compared to normal children, which leads to a double reduction in the opportunity to generate positive psychological states and alleviate negative emotions, increasing the risk of anxiety, depression and other emotions, and the level of mental health is correspondingly lowered.

## **(ii) Discussion**

For the present study, social participation plays a partial mediating effect, and subsequent studies should incorporate more research variables, and in addition to the existing common variables, they should also pay attention to factors such as family economic status, schooling atmosphere, and peer relationships, in order to construct a more comprehensive research model and explore in depth the interrelationships and mechanisms of action among the factors.

Based on the data of this study, the importance of parental behavior in family relationships is highlighted. Parents, as key figures in the growth process of adolescents, have behavioral patterns that not only affect the interactive atmosphere within the family, but also extend to adolescents' social participation and psychological development. In the digital era, parents should pay more attention to the influence of their own behavior on their children, actively adjust their behavioral habits, and increase the time for face-to-face communication and joint participation in activities with their children, in order to promote the establishment of good family relationships and provide positive family environment support for adolescents' social participation and psychological health.

Social network theory emphasizes that an individual's position in a social network affects his or

her ability to access resources. In this study, rural children's level of social participation may affect their position in the social network and their ability to access resources. Parents should encourage adolescents to actively participate in social activities to promote a more favorable position in the social network and enhance their mental health.

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