

# The Effect of Parental Phubbing on Adolescents' Learning Engagement: The Mediating Role of Loneliness

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## Abstract

As smart phones integrated people's daily life, parental phubbing has become a common phenomenon and caused various adverse effects on children. This study investigated the relationship between parental phubbing and learning engagement among adolescents and examined the mediating role of loneliness. For this purpose, a total of 324 students from a secondary vocational school in China were surveyed using three scales, including the Parents' Phubbing Scale, the Utrecht Work Engagement Scale-Student, and the Children's Loneliness Scale. Descriptive statistics, correlation analysis as well as mediating analysis were adopted to analyze the data. The results showed that parental phubbing negatively predicted adolescents' learning engagement, while loneliness mediated this relationship. This indicates that parents should avoid using phones and ensure high-quality companionship with children to enhance their engagement in academics.

## Keywords

Parental Phubbing, Adolescents' Learning Engagement, Loneliness

## 1. Introduction

Learning engagement is defined as a student's active participation and ongoing efforts in learning activities to achieve academic goals (Coates, 2006; Hu & Hui, 2012). It plays a significant role in students' academic achievement (Kahu & Nelson, 2018; Soffer & Cohen, 2019). Adolescence is a key learning period due to the rapid brain development and enhancement of memory capacity (Zhang et al., 2023). Therefore, it is important to examine the factors that influence learning engagement during adolescence. Parenting practices have been found to predict students' school engagement (Jules et al., 2021). For example, paternal and

maternal parenting behaviors have interaction effects on school engagement with different interaction patterns (Wang et al., 2019a), and harsh parenting can reduce an individual's learning engagement (Zhang & Yue, 2021). Nowadays, a negative parenting practice has emerged due to the integration of smartphones into people's lives called parental phubbing (Mi et al., 2023). Parental phubbing refers to the phenomenon in which parents use mobile phones while interacting with their children, which makes their children feel excluded (Xie & Xie, 2020).

As a new parenting practice, whether and how parental phubbing affects learning engagement among adolescents is unclear. This study explored the association between parental phubbing and adolescents' learning engagement, which would contribute to the emerging literature on parental phubbing.

### 1.1. Parental Phubbing and Adolescents' Learning Engagement

As a parenting behavior, parental phubbing is a manifestation of harsh parenting style. Harsh parenting refers to parents' physical and verbal harm toward children. It involves parents' psychological attacks on children, such as neglect, rejection, and denial of their psychological needs, and their negative feelings or attitudes toward children, such as insensitivity (Wang & Zhou, 2016). Many studies have reported adverse effects of parental phubbing on children. For example, children may feel rejected or ignored (Pancani et al., 2021; Xie & Xie, 2020). Children's attachment to their parents also deteriorates (Xie et al., 2019). Mother's phubbing can increase their insensitivity in responding to their children (Bai et al., 2020). Given that parental phubbing produces similar negative emotional effects in children, it represents an instance of harsh parenting. Studies have indicated that parental phubbing can negatively predict learning engagement among middle school students (Hu et al., 2023). Therefore, we propose the following hypothesis:

Hypothesis 1: Parental phubbing is negatively associated with adolescents' learning engagement.

### 1.2. The Mediating Role of Loneliness

As a negative parenting style, harsh parenting increases the risk of children's internalizing problems (Wang & Zhou, 2016). Studies have shown that harsh parenting positively predicts depression, social anxiety, and loneliness among adolescents (Li & Chen, 2019; Tang et al., 2018; Wang & Wang, 2021). As an instance of harsh parenting, parental phubbing would be closely associated with loneliness among adolescents. Empirical research indicates that parental phubbing is positively associated with loneliness among adolescents (Wang et al., 2022a, 2022b).

Negative mood can function as a workload that impairs an individual's executive functioning by depleting cognitive resources such as attention and memory (Mitchell & Phillips, 2007), thereby resulting in reduced engagement in learning. Studies have found that feelings of loneliness negatively influence students' overall academic experiences (Stoliker & Lafreniere, 2015), and loneliness is nega-

tively correlated with learning engagement (Cao et al., 2021). Therefore, we propose the following hypothesis:

Hypothesis 2: Loneliness mediates the relationship between parental phubbing and learning engagement. Specifically, parental phubbing causes feelings of loneliness, which in turn deteriorates learning engagement among adolescents.

Taken together, the whole research model is presented in **Figure 1**.

## 2. Method

### 2.1. Participants and Procedure

The subjects included should be among adolescent students at school and have basic reading ability. Those who are sick or absent from school are excluded. Enough time is ensured for them to finish the questionnaires. Under the inclusion criteria, the participants were recruited from a secondary vocational school in Guangdong Province, China. A total of 324 adolescents aged from 15 to 18 participated in this study. Their mean age was 16.76 ( $\pm 0.62$ ) years. Forty-one percent of the participants were female. Twenty percent of the participants were an only child in their family. Prior to administration of the questionnaires, all participants provided consent to participate in this study and were informed about the study's purpose and the confidential nature of their information.

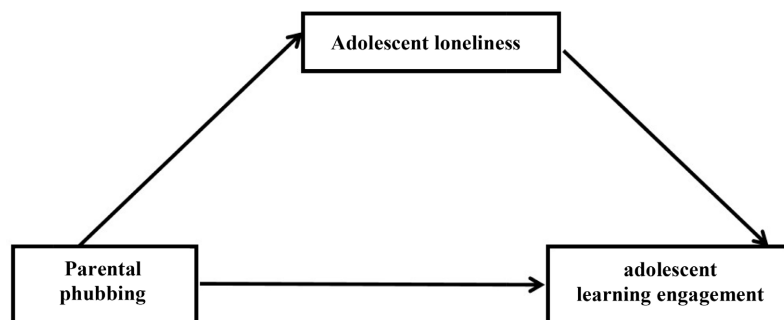
### 2.2. Measures

#### 2.2.1. Parents' Phubbing Scale

Ding et al. (2020) revised the Parents' Phubbing Scale developed by Roberts and David (2016) to measure Chinese adolescents' perceived levels of parental phubbing. This scale consists of nine items and is rated on a Likert scale ranging from 1 (completely did not meet) to 5 (completely met). A higher total score represents more serious parent phubbing behavior. Cronbach's alpha for this scale was 0.79 in this study.

#### 2.2.2. Utrecht Work Engagement Scale-Student

This study used the Utrecht Work Engagement Scale-Student revised by Fang et al. (2008) to measure Chinese participants' level of learning engagement. Each item was rated on a seven-point Likert scale. Higher scores indicated a higher level of learning engagement. Cronbach's alpha for the scale was 0.95.



**Figure 1.** The research model.

### 2.2.3. Children's Loneliness Scale

This study used the Children's Loneliness Scale developed by Asher et al. (1984) to measure the level of loneliness among adolescents. This scale includes 24 items, of which 16 are used to assess loneliness and 8 are included to make the participants comfortable. The items are rated on a Likert scale ranging from 1 (completely did not meet) to 5 (completely met). The average score on the scale represents the level of individual loneliness, with a higher score indicating a stronger sense of loneliness. This scale has been widely used in China to assess the level of adolescents' loneliness and has high reliability and validity (Peng et al., 2018; Zhao et al., 2019). Cronbach's alpha for this scale was 0.82 in this study.

## 3. Results

### 3.1. Descriptive Statistics

First, descriptive statistics were calculated for each variable. Table 1 presents the mean, standard deviation, maximum value, minimum value, corresponding kurtosis, and skewness of each variable. As shown in Table 1, most of the variance ranges of the variables are within 1. Although the scores on the learning engagement scale fluctuated more, its variance range was only 1.049, indicating that the data for the variables in this study were relatively stable and had a comparable basis. Considering skewness, the absolute value of skewness was within 1, indicating that the data were close to normal and in line with the subsequent analysis method to be performed.

### 3.2. Correlation Analysis

Second, the correlation coefficients between the variables were further analyzed to prepare for subsequent difference and mediating effect analyses. As shown in Table 2, there were significant correlations between the variables, indicating a potential causal relationship between them.

Additionally, parental phubbing was significantly positively correlated with adolescent loneliness ( $r = 0.24$ ,  $p < 0.01$ ) and significantly negatively correlated with adolescents' learning engagement ( $r = -0.17$ ,  $p < 0.01$ ). Adolescent loneliness was significantly and negatively correlated with their learning engagement ( $r = -0.30$ ,  $p < 0.01$ ).

**Table 1.** Summary table of descriptive statistics for each variable ( $n = 324$ ).

	Minimum value	Maximum value	Mean value	Standard deviation	Skewness	Kurtosis
Parental phubbing	1.00	4.67	2.71	0.66	0.16	0.11
Adolescent loneliness	1.06	4.00	2.39	0.58	0.14	-0.34
Adolescents' learning engagement	1.00	6.53	4.20	1.05	-0.95	1.05

**Table 2.** Descriptive statistics and correlation coefficient matrix between variables (n = 324).

Variable	Mean ± SD	1.	2.	3.
1) Parental phubbing	2.71 ± 0.66	1		
2) Adolescent loneliness	2.39 ± 0.58	0.24**	1	
3) Adolescent learning engagement	4.20 ± 1.05	-0.17**	-0.30**	1

Note: \*\* $p < 0.01$ .

### 3.3. The Mediating Role of Adolescent Loneliness between Parental Phubbing and Adolescents' Learning Engagement

The correlation analysis revealed a significant negative correlation between parental phubbing and adolescents' learning engagement. To further examine this relationship, the mediating effect model was assessed based on the research method proposed by Wen & Ye (2014).

As shown in Table 3, Model 1 included parental phubbing as an independent variable and adolescents' learning engagement as a dependent variable in the regression analysis; the regression coefficient was significant ( $\beta = -0.17$ ,  $t = -2.98$ ,  $p < 0.01$ ). Therefore, H1 (parental phubbing significantly and negatively predicts adolescents' learning engagement) was verified. In Model 2, adolescent loneliness was included as the dependent variable and parental phubbing was considered as the independent variable in the regression analysis. The regression coefficient was significant ( $\beta = 0.24$ ,  $t = 4.24$ ,  $p < 0.001$ ). Model 3 included parental phubbing as the independent variable and adolescents' learning engagement as the dependent variable in the regression analysis. Simultaneously, adolescent loneliness was added as a mediating variable in the regression analysis. The regression coefficients of adolescents' learning engagement on parental phubbing ( $\beta = -0.11$ ,  $t = -1.97$ ,  $p < 0.001$ ) and adolescent loneliness ( $\beta = -0.27$ ,  $t = -4.60$ ,  $p < 0.001$ ) were significant.

We then generated a bootstrapping sample with a capacity of 5000 for the 95% confidence interval (CI) test. The results showed that the indirect effect of adolescent loneliness on the relationship between parental phubbing and adolescents' learning engagement was  $-0.06$  ( $a*b = 0.23 \times -0.26 = -0.06$ ; the 95% CI was  $[-0.17, -0.04]$ ). The mediating effect of adolescent loneliness was 35.18%, which was significant. Therefore, hypothesis H2 (adolescent loneliness mediates the relationship between parental phubbing and learning engagement) was verified.

Finally, a model in which adolescent loneliness mediates the relationship between parental phubbing and learning engagement was constructed (Figure 2).

## 4. Discussion

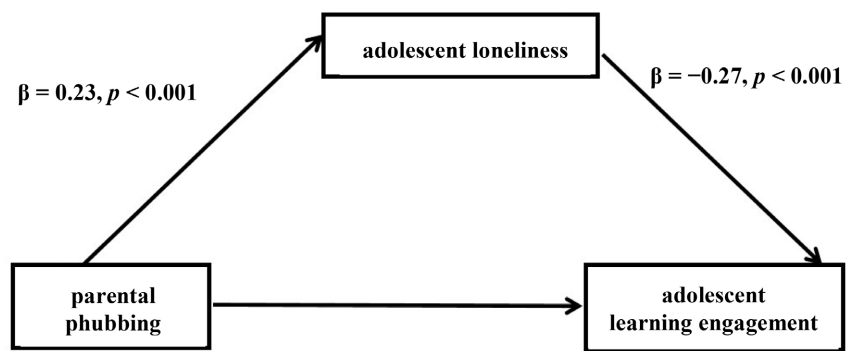
### 4.1. The Relationship between Parental Phubbing and Adolescents' Learning Engagement

This study found that parental phubbing negatively predicted adolescents' learning

**Table 3.** The mediating effect test of adolescent loneliness.

Models	Variables	Non-standardized coefficient	Standard error	Standardized coefficient	t	significance
1) (Predictive variable: adolescent learning engagement)	Parental phubbing	-0.27	0.09	-0.17	-2.98**	0.003
2) (Predictive variable: adolescent loneliness)	Parental phubbing	0.21	0.05	0.24	4.24***	0.000
3) (Predictive variable: adolescent learning engagement)	Parental phubbing	-0.18	0.09	-0.11	-1.97*	0.05
	Adolescent loneliness	-0.49	0.11	-0.27	-4.60***	0.000

Note: \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

**Figure 2.** Mediating effect model of adolescent loneliness.

engagement, which is consistent with previous research showing that parental phubbing had adverse effects on children's learning (Jiang et al., 2023; Wang et al., 2023). This result is also consistent with the social learning theory (Bandura & Walters, 1977). Children's imitation of parental phubbing leads to mobile phone dependency (Wang et al., 2022b), social media addiction (Xie et al., 2019), and gaming addiction (Zhou et al., 2022). Consequently, it affects their attention in academics (Zhang et al., 2018). This study analyzed parental phubbing as an instance of harsh parenting and verified its negative impact on adolescents' learning engagement, which not only contributes to the emerging literature on parental phubbing but also provides a new perspective for studying learning engagement.

#### 4.2. The Mediating Role of Loneliness

This study confirmed that loneliness mediated the relationship between parental phubbing and adolescents' learning engagement. Based on the hypothesis that parental phubbing represents a manifestation of harsh parenting, this result is consistent with the development-in-sociocultural context model for children's engagement in learning. The model proposes that parenting style can directly or indirectly affect learning engagement through individual developmental abilities,

such as emotion regulation (Wang et al., 2019b). Parental phubbing, as a parenting behavior, harms children's psychology, leading to internal problems such as loneliness. Loneliness can deplete attentional resources and reduce learning engagement (Mitchell & Phillips, 2007). Therefore, loneliness is an important mechanism through which parental phubbing affects adolescents' learning engagement. This suggests that there may be similar emotional pathways (such as loneliness and anxiety) between parental phubbing and learning engagement caused by harsh parenting.

### 4.3. Research Implications and Limitations

This study explored the mechanism of parental phubbing on adolescents' learning engagement from the perspective of harsh parenting and extended the existing literature on the negative impact of parental phubbing on adolescents. The results of the study suggest that parental phubbing affects adolescents' engagement in learning by increasing loneliness. Additionally, these actions reduce children's engagement in studies and increase their sense of loneliness. The family provides a crucial environment for the adolescent's development. To create a good environment that helps children engage in learning, parents should avoid using phones when accompanying their children. For example, when children stay at home, parents can turn off entertainment apps, quit social software, or put their phones in remote corners. In other words, it is important to ensure high-quality companionship with children. By doing so, children's feelings of loneliness will be reduced or prevented, which would increase their attention and energy in studying.

This study had two limitations. First, it adopted a cross-sectional approach to examine the mechanism by which parental phubbing contributed to adolescents' learning engagement through adolescent loneliness. However, it was unable to reveal the causal relationships among these variables. Therefore, it is necessary to use a follow-up design in future studies to examine changes in these three variables. This would enhance our understanding about the mechanisms underlying parental phubbing in the development of learning engagement among adolescents. Second, this study did not examine the positive factors that could interfere with the adverse effects of parental phubbing on students' engagement. Future studies should examine the moderating factors that could protect adolescents' learning engagement from parental phubbing.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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