

# Behavioural Problems Amongst Pre-School Children in Chongqing, China: Current Situation and Influencing Factors

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**Introduction:** Behavioural problems in pre-school children are closely related to their mental health. Such problems include attention deficit, personality disorder, overdependency, poor adaptability and conduct problems.

**Methods:** From December 2018 to January 2019, we conducted a cross-sectional survey of parents of pre-schoolers. The survey covered sixteen kindergartens in six districts of Chongqing, China. A total of 2200 participants participated in the survey, and 1895 questionnaires were returned. After screening, 1496 valid questionnaires were compiled in the data analysis (n=1496).

**Results:** Analysis of the maximum likelihood estimation revealed that age, preterm birth, household income, amount of daily interaction with parents, and scolding frequency affected behavioural problems in the pre-schoolers. Behavioural problems tend to be attenuated as children grow. Preterm children had a higher probability of developing behavioural problems than did non-preterm children. Children from families with monthly household incomes between \$1130–\$1695 USD and \$1696–\$2260 USD were more prone to developing behavioural problems. Children whose parents spent less time interacting with them (39.26% of parents interacted with children less than 1 hour per day) and children who were scolded more often had greater behavioural problems (13.44% of parents often scolded their children).

**Discussion:** This study was conducted to evaluate the influence of parenting methods on pre-school children and the education provided by parents on their pre-school children's behavioural problems to provide insights for Chinese parents and mental health professionals to improve treatment of behavioural problems.

**Keywords:** behavioural problems, pre-school children, parental education, China

## Introduction

With the development of society and progress in medical research, children's mental health has increasingly become a concern.<sup>1</sup> Mental health during the pre-school period profoundly affects the development of personality, self-recognition, emotions and social behaviours. Behavioural problems are amongst the most common mental health problems in pre-schoolers.<sup>2</sup> Behavioural problems affect both the daily lives and future mental health of pre-school children<sup>3</sup> and can degenerate into issues on a societal scale.

Behavioural problems in pre-school children mainly manifest as attention deficit,<sup>4</sup> personality disorder,<sup>5</sup> overdependency,<sup>6</sup> poor adaptability,<sup>7</sup> and conduct problems.<sup>8</sup> The

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minds of pre-school children are extremely mouldable. If diagnosed at an early stage, behavioural problems can be treated effectively through scientific approaches.<sup>9</sup> However, if not diagnosed early enough, the intervention measures will be less effective, which could hinder social adaptation,<sup>10</sup> interpersonal communication,<sup>10,11</sup> and academic performance<sup>11</sup> and will exert more pressure on the children's family and society.

Evidence shows strong connections between children's social environment and their mental health.<sup>11,12</sup> Most pre-school children's activities take place with their parents. Therefore, family plays an irreplaceable role in children's behavioural development.<sup>13</sup> Previous studies conducted globally<sup>13,14</sup> revealed that the education provided by parents is a critical factor in behavioural formation in pre-school children.<sup>15,16</sup>

In China, few studies have explored the impacts of parental behaviours on pre-school children's behavioural formation. This study assessed the current status of pre-school children with behavioural problems and how education provided by parents affects these children. We aimed to provide a theoretical basis for scientifically training parents and to promote further psychological research amongst pre-school children by exploring the relationship between the attitudes of parents toward education and the behavioural problems of their children.

## Methods

### Method and Participants

This cross-sectional survey was conducted in Chongqing, China, from December 15, 2018, to January 15, 2018, in the districts of Jiangbei, Shapingba, Nanan, Banan, and Xiushan County. Participants were parents drawn from six areas with various levels of economic development and whose children attended sixteen different kindergartens. All investigators were kindergarten educators who received uniform training, and all parents consented to the survey.

### Sample

In total, 2200 parents participated in this study, and the final response rate reached 86.19% (1895/2200). The questionnaire contained forty questions. Of the samples, 1496 passed the inclusion and exclusion criteria and were integrated into the statistical analysis. Valid questionnaires were excluded for any of the following reasons: (1) any of the six topics in the psychological and behavioural problems module were unanswered; (2) any of the seven

topics in the parental behaviour module were unanswered; or (3) samples presented abnormal response values.

### Ethical Approval

Prior to participating in the study, all participants provided informed consent. The ethical approval number for this study was delivered by the Chongqing Collaborative Innovation Centre for Functional Food of Chongqing University of Education. This study was conducted in accordance with the Declaration of Helsinki (201901HS01).

### Reliability and Validity

A panel of experts in psychology and epidemiology oversaw compiling the questionnaires from the target populations. A preliminary survey was conducted at a teacher recruitment event 2 months before the formal survey. Before the test, the investigators were trained to ensure that each tester fully understood the survey requirements and instructions. Ninety samples were collected in the final pilot survey. The questionnaire was subsequently adjusted and revised according to the feedback results.<sup>17</sup> Cronbach's  $\alpha$  coefficient was 0.811, the Kaiser-Meyer-Olkin validity statistic reached 0.775, and the Bartlett sphericity test reached  $p < 0.0001$ .

### Questionnaire

#### Sociodemographic Characteristics

The sociodemographic factors included children's gender and age, number of siblings, preterm/non-preterm birth, breastfeeding duration, parental education level, single-parent or dual-parent family, monthly household income, and daily phone/computer screen time.

#### Parents' Educational Behaviours and Attitudes

This module contained ten topics: (1) parents' attitudes towards children's psychological problems (children cannot have psychological problems/children's psychological problems disappear as they grow/I would actively seek solutions/I would be aware of the problems but would not know how to act); (2) parents' behaviour in response to their child's wrongdoing (scolding/telling the child how act properly to avoid future mistakes/encourage the child to explore and try); (3) parents' daily communication time with the child (<1 hour/1–2 hours/3–4 hours/≥4 hours); (4) parents' attitude towards controlling their child's time spent watching TV, playing on their phone, and surfing the Internet (parents decide entirely/parents discuss with the child to set screen time limits/parents exert no control

over the child's screen time); (5) whether the parents' behaviour towards the child is consistent (totally consistent/sometimes consistent/totally inconsistent); (6) how frequently parents have had intense conflicts in front of their child (often/occasionally/never); (7) parents' attitude towards their relationship with their child (friendship/the child obeys at all times/harmonious while maintaining parental authority/the child has authority); (8) how frequently parents go outside with their child to experience nature (never/rarely/occasionally/often/always); (9) how frequently parents encourage their child to exchange with other children or participate in group activities (never/rarely/occasionally/often/always); (10) how frequently parents help their child with homework (never/rarely/occasionally/frequently/always).

### Psychological and Behavioural Problems Amongst Pre-School Children

These six topics relating to psychological behaviour of pre-schoolers were as follows: (1) the child has impulsive movements (biting nails, sucking fingers); (2) the child is not in sync with the group (seldom communicates with teachers and other children); (3) the child is overdependent (asking someone for help even if able to perform the task); (4) the child has poor adaptability (unable to adapt to a new environment or strangers); (5) the child has a conduct problem (lying, taking things from others without permission); and (6) the child is easily distracted or inattentive (inattention when studying or doing other things). Each question was scored from 1 to 5 (1: never, 2: rarely, 3: sometimes, 4: often, 5: always), and the score represented a specific mental state. After totalling the scores, a final score representing the overall psychological behavioural problem was obtained. Higher scores indicated more severe behavioural problems ([Table S1](#)).

### Data Analysis

All data were double-entered using Microsoft Office Excel 2007 (Microsoft, Redmond, Washington, DC, USA), and all data analyses were performed using SAS 9.4 two-tailed test (SAS, version 9.4; SAS Institute, Cary, NC, USA).  $P < 0.05$  was considered statistically significant. The children's behavioural problem scores were used as the outcome variable. After the skewness and kurtosis tests, the Bartlett test, the mean  $\pm$  standard deviation ( $X \pm S$ ), and the median (interquartile range) were used for the statistical descriptions. The *t*-test, analysis of variance, and rank-sum tests were used for single factor analysis.

Using the mental health behavioural problem scores as dependent variables and the general situation of the children and their families, the children's screen time, the parents' attitudes about children's behavioural problems and their educational behaviours as independent variables, a generalized linear model was established to analyse children's behavioural problems relative to these factors. Finally, by stratifying family income, a generalized linear model was established to explore the correlations between children's behavioural problems, economic context, the general situation of the children and their families, the children's screen time, parents' attitudes about children's behavioural problems and related educational behaviours.

## Results

### General Characteristics

#### Demographics

Of the respondents, 53.78% were boys ([Table 1](#)), and more than half were only-children (no siblings; 58.32%). Of the children interviewed, 8.48% were preterm. Most were breastfed for 6–9 months (26.76%) and 9–12 months (24.16%). Most parents had completed higher education. A larger proportion of household monthly incomes ranged between \$565 USD and \$1130 USD (30.97%). Most children's average daily screen time was 30–60 minutes (44.16%).

#### Parents' Educational Behaviours

Of parents, 76.05% actively sought solutions if their children had psychological problems, while 9.83% of parents would not know how to solve such problems even after becoming aware of them ([Table 1](#)). Of the parents, 13.44% scolded their child for committing a wrongdoing. Most children spent 1–2 hours with their parents daily (51.17%), but 39.26% of parents spent less than 1 hour daily with their children. Most parents (75.52%) controlled their children's daily screen time by discussing a schedule with their children, and 61.34% of parents maintained totally consistent behaviours towards their children. Regarding parent-child relationships, most parents tried to get along peacefully with their children while maintaining authority (60.00%), and 55.99% of parents had had intense conflicts in front of their child. Most parents encouraged their children to communicate with other children or participate in group activities (59.14%); 48.19% of parents often took their children outside to experience nature, and 44.09% of parents often tutored their child when doing homework.

**Table 1** Basic Situation Distribution

	Number of People (n)	Percentage (%)
Gender		
Male	782	53.78
Female	672	46.22
Age		
3 years old	339	22.68
4 years old	563	37.66
5 years old	414	27.69
6 years old	179	11.97
Number of children in the family		
One	862	58.32
Two	573	38.77
Three or more	43	2.91
Was the child born prematurely?		
No	1359	91.52
Yes	126	8.48
Duration of the breastfeeding period		
1–3 months	267	18.23
3–6 months	284	19.39
6–9 months	392	26.76
9–12 months	354	24.16
12 months or more	168	11.47
Education level of the father		
Primary school	420	28.46
High school	318	21.54
Higher education	738	50.00
Education level of the mother		
Primary school	449	30.71
High school	295	20.18
Higher education	718	49.11
Is the family a single-parent family?		
No	1305	94.36
Yes	78	5.64
Household monthly income (USD)		
<565	176	12.25
565–1130	445	30.97
1130–1695	431	29.99
1696–2260	170	11.83
2261–2820	119	8.28
>2820	96	6.68
Daily screen time		
<30 minutes	423	28.74
31–60 minutes	650	44.16
61–90 minutes	264	17.93
91–120 minutes	83	5.64
≥120 minutes	52	3.53

(Continued)

**Table 1** (Continued).

	Number of People (n)	Percentage (%)
If your child had psychological problems, what would you do?		
Children cannot have psychological problems	136	9.10
Children's psychological problems disappear as they grow up	75	5.02
I would actively seek solutions	1137	76.05
I would be aware of the problems, but would not know how to act	147	9.83
If your child does something wrong, how do you usually respond?		
I would scold my child	201	13.44
I would tell my child how act properly in order to avoid future mistakes	1120	74.92
I would encourage my child to explore and try	174	11.64
How much time do you spend interacting with your child every day?		
Less than 1 hour	587	39.26
1–2 hours	765	51.17
3–4 hours	115	7.69
4 hours or more	28	1.87
Do you control how much time your child spends watching TV, playing on the phone, or surfing the internet?		
Yes, I decide entirely	301	20.13
Yes, I discuss with my child to set screen time limits	1129	75.52
I do not exert control over my child's screen time	65	4.35
Are you consistent in your behaviour towards your child?		
Totally consistent	917	61.34
Sometimes consistent	491	32.84
Totally inconsistent	87	5.82
How often do you have intense conflicts in front of your children?		
Often	29	1.94
Occasionally	808	54.05
Never	658	44.01
How do you qualify your relationship with your child?		
Friendship	518	34.65
My child obeys at all times	51	3.41
Harmonious while maintaining parental authority	897	60.00
My child has the authority	29	1.94

(Continued)

**Table 1** (Continued).

	Number of People (n)	Percentage (%)
How often do go out with your child to experience nature?		
Never	16	1.07
Rarely	171	11.45
Occasionally	491	32.86
Often	720	48.19
Always	96	6.43
How often do you encourage your child to communicate with others or take part in group activities?		
Never	15	1.00
Rarely	101	6.76
Occasionally	280	18.75
Often	883	59.14
Always	214	14.33
How often do you tutor your child in his homework?		
Never	29	1.96
Rarely	156	10.53
Occasionally	342	23.09
Often	653	44.09
Always	301	20.32

## Analysis of Factors Affecting Pre-School Children's Behaviours

### Behavioural Problems and Demographic Factors of Pre-School Children

Amongst the demographic factors affecting the children's behavioural problem scores, age, preterm birth, monthly household income and screen time differences were statistically significant (Table 2). Gender, number of children in the family, breastfeeding duration, parental educational background, and whether the family was a single-parent family were not significantly correlated with the children's behavioural problem scores.

### Behavioural Problems in Pre-School Children Relative to Parental Educational Behaviour

All parental educational behaviour and attitude variables were significantly correlated with behavioural problem scores in pre-school children (Table 2). These variables included parents' attitudes regarding the eventuality of their children developing psychological problems, parents'

responses to their child's wrongdoings, daily parent-child interaction time, the control parents exerted over the child's screen time, consistency of parental behaviours towards their child, frequency of intense conflicts in front of their child, the parent-child relationship, frequency of taking the child out to experience nature, frequency of encouraging the child to participate in group activities, and frequency of homework tutoring.

## Analysis of Factors Affecting Children's Behaviours

A generalized linear model was constructed based on the collected data. Behavioural problems were divided into dependent variables used in the linear regression analysis. Age was a significant factor affecting behavioural problem scores (Table 3). As age increased, the behavioural problem scores decreased (95% confidence interval [CI]:  $-0.702 - -.298$ ;  $p < 0.0001$ ). Preterm children scored higher than did non-preterm children (95% CI:  $0.009 - 1.334$ ;  $p = 0.046$ ). Children from families whose monthly income was in the \$1130-\$1695 USD range (95% CI:  $0.582 - 1.901$ ;  $p \leq 0.0001$ ) and the \$1696-\$2260 USD range (95% CI:  $0.152 - 1.630$ ;  $p = 0.036$ ) scored higher than did children from families with monthly incomes below \$565 USD. Regarding parents' educational habits, compared with children who were scolded, children who were told how act properly to avoid future mistakes (95% CI:  $-1.366 - -0.248$ ;  $p = 0.004$ ) or were encouraged to explore and try (95% CI:  $-1.755 - -0.275$ ;  $p = 0.007$ ) obtained lower behavioural problem scores. Pre-schoolers whose daily interaction time with their parents was 1-2 hours (95% CI:  $-0.908 - -0.111$ );  $p = 0.012$ ), 3-4 hours (95% CI:  $-2.502 - -1.030$ ;  $p < 0.0001$ ) and >4 hours (95% CI:  $-3.066 - -0.139$ ;  $p = 0.031$ ) obtained lower scores than did those whose interaction time with their parents was <1 hour per day. In addition, pre-school children who were encouraged by their parents to communicate with other children or participate in group activities rarely (95% CI:  $1.229 - 5.278$ ;  $p = 0.001$ ), occasionally (95% CI:  $1.205 - 5.177$ ;  $p = 0.001$ ), often (95% CI:  $0.778 - 4.775$ ;  $p = 0.006$ ) and always (95% CI:  $0.387 - 4.523$ ;  $p = 0.019$ ) scored higher than did those whose parents never encouraged them to participate in group activities.

## Discussion

Research on factors influencing behavioural problems in pre-school children is essential as the number of children

**Table 2** Analysis of Factors Influencing Behavioural Problems in Pre-School Children

	Mean	SD	P
Gender			
Male	13.933	3.486	0.487 <sup>a</sup>
Female	13.806	3.464	
Age			
3 years old	14.535	3.676	0.0007 <sup>b</sup>
4 years old	13.994	3.493	
5 years old	13.410	3.713	
6 years old	13.452	3.164	
Number of children in the family			
One	13.924	3.444	0.341 <sup>b</sup>
Two	13.785	3.543	
Three or more	13.186	3.540	
Was the child born prematurely?			
No	13.757	3.469	0.0001 <sup>a</sup>
Yes	14.992	3.362	
Duration of the breastfeeding period			
1–3 months	14.329	3.728	0.467 <sup>b</sup>
3–6 months	13.845	3.375	
6–9 months	13.584	3.537	
9–12 months	13.991	3.314	
12 months or more	13.500	3.373	
Education level of the father			
Primary school	14.040	3.625	0.071 <sup>b</sup>
High school	14.116	3.370	
Higher education	13.661	3.428	
Education level of the mother			
Primary school	13.884	3.541	0.464 <sup>b</sup>
High school	14.050	3.414	
Higher education	13.757	3.450	
Is the family a single-parent family?			
No	13.883	3.442	0.485 <sup>a</sup>
Yes	13.602	3.601	
Household monthly income (USD)			
<565	13.233	3.604	0.0045 <sup>b</sup>
565–1130	13.813	3.513	
1130–1695	14.380	3.424	
1696–2260	13.723	3.236	
2261–2820	13.680	3.522	
>2820	13.500	3.586	
Daily screen time			
<30 minutes	13.378	3.621	<0.0001 <sup>b</sup>
31–60 minutes	13.792	3.366	
61–90 minutes	14.143	3.416	
91–120 minutes	15.216	3.561	
≥120 minutes	14.846	3.226	

(Continued)

**Table 2** (Continued).

	Mean	SD	P
If your child had psychological problems, what would you do?			
Children cannot have psychological problems	12.808	3.400	0.0001 <sup>c</sup>
Children's psychological problems disappear as they grow up	13.440	4.240	
I would actively seek solutions	13.770	3.366	
I would be aware of the problems, but would not know how to act	15.632	3.418	
If your child does something wrong, how do you usually respond?			
I would scold my child	14.850	3.688	<0.0001 <sup>b</sup>
I would tell my child how act properly in order to avoid future mistakes	13.768	3.389	
I would encourage my child to explore and try	13.212	3.605	
How much time do you spend interacting with your child every day?			
Less than 1 hour	14.299	3.462	0.0002 <sup>c</sup>
1–2 hours	13.675	3.344	
3–4 hours	12.982	4.056	
4 hours or more	12.714	3.847	
Do you control how much time your child spends watching TV, playing on the phone, or surfing the internet?			
Yes, I decide entirely	14.365	3.574	0.0022 <sup>b</sup>
Yes, I discuss with my child to set screen time limits	13.671	3.430	
I do not exert control over my child's screen time	14.553	3.644	
Are you consistent in your behaviour towards your child?			
Totally consistent	13.473	3.356	0.0001 <sup>c</sup>
Sometimes consistent	14.492	3.517	
Totally inconsistent	14.183	4.010	
How often do you have intense conflicts in front of your children?			
Often	13.896	4.426	0.0037 <sup>b</sup>
Occasionally	14.122	3.456	
Never	13.512	3.442	
How do you qualify your relationship with your child?			
Friendship	13.490	3.407	0.0141 <sup>b</sup>
My child obeys at all times	14.705	4.410	
Harmonious while maintaining parental authority	13.994	3.442	
My child has the authority	14.275	3.721	

(Continued)

**Table 2** (Continued).

	Mean	SD	P
How often do you go out with your child to experience nature?			
Never	11.562	3.881	<0.0001 <sup>b</sup>
Rarely	14.760	3.442	
Occasionally	14.012	3.409	
Often	13.773	3.407	
Always	12.322	3.776	
How often do you encourage your child to communicate with others or take part in group activities?			
Never	9.600	4.032	<0.0001 <sup>b</sup>
Rarely	14.782	2.955	
Occasionally	14.532	3.444	
Often	13.788	3.413	
Always	13.144	3.622	
How often do you tutor your child's homework?			
Never	12.275	4.495	0.0058 <sup>b</sup>
Rarely	13.871	3.582	
Occasionally	14.155	3.381	
Often	13.955	3.409	
Always	13.385	3.554	

**Notes:** The following three tests were used: <sup>a</sup>t-test for two independent samples (normal and homogenous variance); <sup>b</sup>ANOVA of multiple sets of independent quantitative data (normal and uniform variance); <sup>c</sup>Kruskal–Wallis rank sum test (skewness or unequal variance).

with behavioural problems has increased in recent years.<sup>18</sup> This study analysed data from children aged 3–6 years attending sixteen kindergartens in six different districts of Chongqing, China. The study sought to further explain the factors that influence behavioural problems amongst pre-school children by analysing the relationships between parental behaviours and children's behavioural problems.

Results from this study showed that age significantly affected behavioural problem scores. As children aged, their behavioural problem scores decreased. Previous research revealed that the detection rate of behavioural problems in older children is higher than that for younger children. Studies have indicated that as children age, they develop intellectually. They interact with their environment and family in more complex ways and encounter increasing problems.<sup>19,20</sup> Other studies concluded that because of the lack of maturity and self-control in younger children, the detection rate of behavioural problems in children <5 years old is higher than that in children >5 years old.<sup>21,22</sup> At present, no consensus exists amongst experts regarding the

development of behavioural problems and age; thus, further research is required. The present study showed that preterm birth increased the risk of behavioural problems. Other studies have indicated other factors related to preterm birth: (1) mothers of preterm infants may have mental illness during pregnancy (depression, anxiety and other disorders);<sup>23,24</sup> (2) preterm infants are prone to neurodevelopmental disorders that affect their growth and development,<sup>25–27</sup> and (3) preterm birth increases the risks of cerebral palsy and cognitive, visual and auditory disorders.<sup>28–30</sup>

This study also showed that children with parents whose monthly household income was \$1130–2260 USD had higher psychological and behavioural problem scores. Many previous studies have focused on psychological and behavioural problems among children in low-income and high-income families.<sup>31,32</sup> These studies showed that children in low-income families had more implicit and explicit problems as well as weak social abilities.<sup>33</sup> Related interventional studies also revealed that helping poor families increase their income significantly improved the psychological problems in these children's families.<sup>34,35</sup>

This study yielded diametrically different results when comparing the higher-income (\$1130–\$2260 USD) and lower-income (<\$565 USD) groups. Professor Garnezy indicated that the family's emotional environment, strong cohesion, and fewer conflicts between parents reduce the development of children's psychological problems in low-income families.<sup>36</sup> Further research is needed to better understand the links between the emotional environments of children in low-income families and the development of behavioural problems.

This study found that the duration of daily parent–child interactions affected the behavioural problem scores. Of parents, 39.26% spent less than 1 hour a day interacting with their child. This may be related to the lack of social support.<sup>37</sup> Parents' neglect of their children affects the children's mental health<sup>38</sup> and facilitates the development of psychological behavioural problems. Furthermore, parents' scolding of their children increased the behavioural problem scores in pre-schoolers. Of the parents, 13.44% scolded their children when they did something wrong. While praising and encouraging children to develop improvement goals benefits the children's mental health,<sup>39</sup> excessive scolding negatively affects children's mental health.

Evidence shows that parental behaviours can have positive or negative effects on the development of children's behavioural problems.<sup>14–16</sup> Therefore, the best way to

**Table 3** Analysis of the Factors Affecting the Score of Behavioural Problems in Pre-School Children

Parameters	Estimated Value	Standard Error	95% CI		Chi-Squared	P
Intercept	13.455	1.7019	10.120	16.791	62.51	<0.0001
Age	-0.500	0.102	-0.702	-0.298	23.65	<0.0001
BMI	-0.065	0.039	-0.142	0.011	2.75	0.097
Gender						
Female	-0.074	0.185	-0.437	0.289	0.16	0.6893
Male(ref.)						
Number of children in the family						
2	-0.371	0.197	-0.757	0.015	3.55	0.059
3	-1.496	0.603	-2.680	-0.313	6.14	0.013
1(ref.)						
Was the child born prematurely?						
Yes	0.672	0.338	0.009	1.334	3.95	0.046
No(ref.)						
Duration of the breastfeeding period						
3–6 months	-0.734	0.305	-1.332	-0.136	5.80	0.016
6–9 months	-0.923	0.288	-1.488	-0.358	10.26	0.001
9–12 months	-0.490	0.292	-1.062	0.081	2.82	0.093
12 months or more	-1.271	0.356	-1.970	-0.573	12.73	<0.0001
1–3 months(ref.)						
Education level of the father						
High school	0.119	0.300	-0.470	0.708	0.16	0.691
Higher education	-0.373	0.312	-0.986	0.239	1.43	0.232
Primary school(ref.)						
Education level of the mother						
High school	-0.028	0.307	-0.631	0.573	0.01	0.925
Higher education	-0.319	0.311	-0.929	0.290	1.05	0.305
Primary school(ref.)						
Is the family a single-parent family?						
Yes	-0.117	0.420	-0.941	0.706	0.08	0.780
No(ref.)						
Household monthly income (USD)						
565–1130	0.422	0.322	-0.208	1.053	1.72	0.189
1130–1695	1.241	0.336	0.582	1.901	13.61	<0.0001
1696–2260	0.841	0.402	0.052	1.630	4.37	0.036
2261–2820	0.547	0.436	-0.308	1.402	1.57	0.210
>2820	0.801	0.464	-0.108	1.711	2.98	0.084
<565(ref.)						
Daily screen time						
31–60 minutes	0.348	0.222	-0.087	0.783	2.45	0.117
61–90 minutes	0.459	0.281	-0.091	1.010	2.67	0.102
91–120 minutes	1.497	0.456	0.602	2.392	10.76	0.001
≥120 minutes	0.907	0.519	-0.111	1.926	3.05	0.080
<30 minutes(ref.)						

(Continued)



Table 3 (Continued).

Parameters	Estimated Value	Standard Error	95% CI		Chi-Squared	P
If your child had psychological problems, what would you do?						
Children's psychological problems disappear as they grow up	0.038	0.588	-1.113	1.191	0.000	0.947
I would actively seek solutions	0.899	0.340	0.231	1.567	6.97	0.008
I would be aware of the problems, but would not know how to act	2.171	0.440	1.309	3.034	24.35	<0.0001
Children cannot have psychological problems(ref.)						
If your child does something wrong, how do you respond?						
I would tell my child how act properly in order to avoid future mistakes	-0.807	0.285	-1.366	-0.248	8.02	0.004
I would encourage my child to explore and try	-1.015	0.377	-1.755	-0.275	7.23	0.007
I would scold my child(ref.)						
How much time do you spend interacting with your child every day?						
1-2 hours	-0.510	0.203	-0.908	-0.111	6.30	0.012
3-4 hours	-1.766	0.375	-2.502	-1.030	22.12	<0.0001
4 hours or more	-1.603	0.746	-3.066	-0.139	4.61	0.031
less than 1 hour(ref.)						
Do you control how much time does your child spend watching TV, playing on the phone, or surfing the internet every day?						
Yes, I discuss with my child to set screen time limits	-0.233	0.243	-0.710	0.242	0.93	0.336
I do not exert control over my child's screen time	-0.115	0.499	-1.095	0.863	0.05	0.816
Yes, I decide entirely(ref.)						
Are you consistent in your behaviour towards your child?						
Sometimes consistent	0.445	0.209	0.034	0.856	4.51	0.033
Totally inconsistent	0.016	0.408	-0.784	0.817	0.00	0.968
Totally consistent(ref.)						
How often do you have intense conflicts in front of your child?						
Sometimes	-0.256	0.721	-1.671	1.158	0.13	0.722
Never	-0.609	0.728	-2.037	0.818	0.70	0.402
Often(ref.)						
How do you qualify your relationship with your child?						
My child obeys at all times	0.344	0.596	-0.824	1.513	0.33	0.563
Harmonious while maintaining parental authority	0.298	0.198	-0.090	0.688	2.26	0.132
My child has the authority	1.276	0.722	-0.138	2.691	3.12	0.077
Friendship(ref.)						
How often do go out with your child to experience nature?						
Rarely	1.258	1.062	-0.823	3.339	1.40	0.236
Occasionally	0.607	1.065	-1.481	2.695	0.32	0.568
Often	0.683	1.067	-1.407	2.775	0.41	0.521
Always	-0.262	1.136	-2.490	1.965	0.05	0.817
Never(ref.)						
How often do you encourage your child to communicate with others or take part in group activities?						
Rarely	3.254	1.033	1.229	5.278	9.92	0.001
Occasionally	3.191	1.013	1.205	5.177	9.92	0.001
Often	2.767	1.014	0.778	4.755	7.44	0.006
Always	2.455	1.055	0.387	4.523	5.42	0.019
Never(ref.)						

(Continued)

**Table 3** (Continued).

Parameters	Estimated Value	Standard Error	95% CI		Chi-Squared	P
How often do you tutor your child's homework?						
Rarely	-0.113	0.790	-1.662	1.435	0.02	0.885
Occasionally	0.499	0.766	-1.003	2.002	0.42	0.515
Often	0.971	0.760	-0.520	2.462	1.63	0.201
Always	0.896	0.782	-0.637	2.430	1.31	0.251
Never(ref.)						

prevent behavioural problems in pre-schoolers is to change parental habits. Criticizing and blaming children often only heightens conflicts. Parents should better understand child psychology and their own child's mental state to reduce the occurrence of children's behavioural problems.

The age of the child, preterm birth, monthly household income, duration of daily interaction between parents and their children, and parental response to children's wrongdoings all affect the behavioural problems of pre-school children in Chongqing. Analysis of the maximum likelihood estimation revealed significant correlations between parents' and children's educational habits and behavioural problems. Further research with more validated measures that incorporate varied measurement techniques is needed to better understand such connections. When establishing intervention plans for children's behavioural problems, mental health workers must fully consider the factors that affect children's psychological and behavioural problems.

This study had some limitations. First, the participants were parents of pre-school children, but the questionnaire did not specify whether the "participants" were "caregivers"; hence, some data might have been biased. Second, parents' self-reports of these variables are biased, especially related to social-expectation biases. Finally, according to the economic and regional characteristics of Chongqing City, China, the sample was representative, but because the research used a self-designed questionnaire, it may be applicable only to areas with the same economic development level as that of Chongqing City. These issues should be addressed in the future research.

## Conclusion

The psychological and behavioural problems of pre-school children are closely related to factors such as age, monthly household income, preterm birth, daily interaction time between parents and their children, parental attitudes toward children's wrongdoings and psychological

problems. To reduce and prevent psychological and behavioural problems, intervention plans should thus focus on the early stages of children's development, preterm children, those who have less than 1 hour of daily interaction with their parents, and those who are often scolded.

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The authors report no conflicts of interest in this work.

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