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

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. 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. Behavioural problems affect both the daily lives and future mental health of pre-school children and can degenerate into issues on a societal scale.

Behavioural problems in pre-school children mainly manifest as attention deficit, personality disorder, overdependency, poor adaptability, and conduct problems. The
minds of pre-school children are extremely mouldable. If diagnosed at an early stage, behavioural problems can be treated effectively through scientific approaches. However, if not diagnosed early enough, the intervention measures will be less effective, which could hinder social adaptation, interpersonal communication, and academic performance 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. Most preschool children’s activities take place with their parents. Therefore, family plays an irreplaceable role in children’s behavioural development. Previous studies conducted globally revealed that the education provided by parents is a critical factor in behavioural formation in preschool children.

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 preschool 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. Cronbach’s α 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 ± standard deviation (X ± 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

| Gender       | Number of People (n) | Percentage (%) |
|--------------|----------------------|----------------|
| Male         | 782                  | 53.78          |
| Female       | 672                  | 46.22          |

| Age          | Number of People (n) | Percentage (%) |
|--------------|----------------------|----------------|
| 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 | Number of People (n) | Percentage (%) |
|----------------------------------|----------------------|----------------|
| One                              | 862                  | 58.32          |
| Two                              | 573                  | 38.77          |
| Three or more                    | 43                   | 2.91           |

| Was the child born prematurely? | Number of People (n) | Percentage (%) |
|--------------------------------|----------------------|----------------|
| No                              | 1359                 | 91.52          |
| Yes                             | 126                  | 8.48           |

| Duration of the breastfeeding period | Number of People (n) | Percentage (%) |
|--------------------------------------|----------------------|----------------|
| 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       | Number of People (n) | Percentage (%) |
|-------------------------------------|----------------------|----------------|
| Primary school                      | 420                  | 28.46          |
| High school                         | 318                  | 21.54          |
| Higher education                    | 738                  | 50.00          |

| Education level of the mother       | Number of People (n) | Percentage (%) |
|-------------------------------------|----------------------|----------------|
| Primary school                      | 449                  | 30.71          |
| High school                         | 295                  | 20.18          |
| Higher education                    | 718                  | 49.11          |

| Is the family a single-parent family? | Number of People (n) | Percentage (%) |
|--------------------------------------|----------------------|----------------|
| No                                   | 1305                 | 94.36          |
| Yes                                  | 78                   | 5.64           |

| Household monthly income (USD)      | Number of People (n) | Percentage (%) |
|-------------------------------------|----------------------|----------------|
| <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                   | Number of People (n) | Percentage (%) |
|-------------------------------------|----------------------|----------------|
| <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           |

Table 1 (Continued).

| Number of People (n) | Percentage (%) |
|----------------------|----------------|

If your child had psychological problems, what would you do?
- Children cannot have psychological problems
- Children's psychological problems disappear as they grow up
- I would actively seek solutions
- I would be aware of the problems, but would not know how to act

| Number of People (n) | Percentage (%) |
|----------------------|----------------|

If your child does something wrong, how do you usually respond?
- I would scold my child
- I would tell my child how act properly in order to avoid future mistakes
- I would encourage my child to explore and try

| Number of People (n) | Percentage (%) |
|----------------------|----------------|

How much time do you spend interacting with your child every day?
- Less than 1 hour
- 1–2 hours
- 3–4 hours
- 4 hours or more

| Number of People (n) | Percentage (%) |
|----------------------|----------------|

Do you control how much time your child spends watching TV, playing on the phone, or surfing the internet?
- Yes, I decide entirely
- Yes, I discuss with my child to set screen time limits
- I do not exert control over my child's screen time

| Number of People (n) | Percentage (%) |
|----------------------|----------------|

Are you consistent in your behaviour towards your child?
- Totally consistent
- Sometimes consistent
- Totally inconsistent

| Number of People (n) | Percentage (%) |
|----------------------|----------------|

How often do you have intense conflicts in front of your children?
- Often
- Occasionally
- Never

| Number of People (n) | Percentage (%) |
|----------------------|----------------|

How do you qualify your relationship with your child?
- Friendship
- My child obeys at all times
- Harmonious while maintaining parental authority
- My child has the authority

| Number of People (n) | Percentage (%) |
|----------------------|----------------|
Table 1 (Continued).

| Number of People (n) | Percentage (%) |
|----------------------|-----------------|
| How often do you go out with your child to experience nature? |
| Never                | 16              | 1.07            |
| Rarely               | 171             | 11.45           |
| Occasionally         | 491             | 32.66           |
| 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 likelihood 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 – -0.298; 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<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 |       |

### 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 |       |
Table 2 (Continued).

| How often do you encourage your child to communicate with others or take part in group activities? | Mean | SD  | P    |
|-------------------------------------------------------------------------------------------------|------|-----|------|
| 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?                                                   | Mean | SD  | P    |
|-------------------------------------------------------------------------------------------------|------|-----|------|
| 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).

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

(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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