



Research on the Joint Effects of Parental Protection Motivation and Mediation Strategies on Parent-Child Conflict

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Abstract. With the popularization of smartphones among minors, parent-child conflict arising from children's use of smartphones within the family has gradually become a core issue in contemporary family education. This study uses Rogers' Protection Motivation Theory (PMT) as its theoretical framework, aiming to systematically examine how parents' cognitive appraisal of children's smartphone usage risks influences the level of parent-child conflict through different types of mediation strategies. A questionnaire survey method was employed, and an empirical investigation was conducted with 236 parents of children aged 2 to 18. The results showed that: there was a significant positive correlation between children's smartphone usage time and parent-child conflict; threat appraisal positively predicted the adoption of restrictive mediation strategies by parents, whereas coping appraisal positively predicted the adoption of co-use strategies; restrictive mediation significantly exacerbated parent-child conflict, while the relationship between co-use and parent-child conflict showed complex patterns across different models; mediation effect analysis further indicated that "restrictive mediation" played a fully mediating role between "threat appraisal" and parent-child conflict, whereas "co-use" played a partially mediating role between "coping appraisal" and "parent-child conflict," but its indirect effect was positive, overall manifesting as a suppression effect. From the perspective of PMT, this study illustrates psychological motivations behind the different strategies parents use to manage their children's smartphone use. It aims to help parents rationally understand their own management motivations to alleviate parent-child conflict in the digital era, providing valuable theoretical reference and practical insights for parents and educators in addressing new-era parent-child issues.

Keywords: Protection Motivation Theory (PMT); Parent-Child Conflict; Smartphone Usage; Parental Mediation Strategies.

1 Introduction

According to the latest statistical data released by the China Internet Network Information Center, with the development and popularization of new media technologies, the scale of underage netizens in China continues to grow, and smartphones, as the

primary tool for internet access, maintain high levels of both usage and penetration rates [1].

Although cyberspace provides contemporary children with broader horizons and richer knowledge, it has also simultaneously aroused widespread parental concern about whether children can use the internet appropriately. Therefore, minors' smartphone usage behavior has already become a focal point for family activities and conflict. While from the perspective of family dynamics, the socialization process of minors is inseparable from tension and adjustment within parent-child interactions [2], facing the digital native Alpha Generation (referring to young children born after 2010, growing up in the digital generation), the parent-child conflict arising from smartphone use, compared to previous reasons for family conflict, possesses characteristics of higher frequency and greater emotional intensity, because the Alpha Generation grows up in the digital era, they are often more proficient in digital media operations than their parents. Consequently, they may assume the role of "technology mentors" in family digital media use and even influence their parents' digital media usage behaviors, which now poses a great challenge to the traditional parent-child relationships and children's mental health in the new era [3]. Therefore, in this process, enabling parents to improve their management measures regarding their children's smartphone use appears particularly important in contemporary times. In summary, conducting empirical research on the internal cognition and decision-making processes of contemporary parents when implementing management measures, and clarifying the decision-making motivation behind parents' management of their children's smartphone use, is of decisive significance for resolving conflict at its root and for promoting the healthy growth of children. Simultaneously, this study notes that the Protection Motivation Theory (PMT) can be well used to explain parental management decisions regarding their children's smartphone use [4]. This theoretical model was originally developed to explain how information threatening individual health influences changes in people's attitudes and behaviors. The theory posits that when individuals experience a threat, they undergo a cognitive process comprising "Threat Appraisal" and "Coping Appraisal," which together determine the individual's specific protective behavior [4]. This framework can be perfectly applied to predicting parental control strategies over their children's smartphone use. This paper hypothesizes that parents' "Threat Appraisal" of the potential harms of their children's smartphone use will prompt them to adopt strategies like forced prohibition and rule-setting, i.e., "Restrictive Mediation" strategies. Conversely, parents' "Coping Appraisal" regarding their own ability to manage their children's smartphone use will prompt them to adopt "Co-use" strategies more frequently. According to existing research, the aforementioned two strategies have totally different effects on children: "Restrictive Mediation" may exacerbate children's psychological reactance, while "Co-use" may alleviate conflict by enhancing the parent-child bond [5, 6]. However, there is currently a lack of empirical research in the academic community within the Chinese context that constructs parental mediation strategies for minors' new media use, Protection Motivation Theory, and parent-child conflict into a complete predictive model. This study will employ the questionnaire survey method, controlling for variables such as the child's age, parental education level, family income, and number of children, and based on the Protection Motivation Theory, will establish and verify a

comprehensive model of how parental protection motivation influences parent-child conflict, thereby revealing the internal mechanism through which parental protection motivation affects parent-child conflict.

2 Research Method

2.1 Research Method and Design

This study uses Rogers' Protection Motivation Theory (PMT) as its foundational framework.

As this theory was originally applied in the health domain, where the concepts of "threat" and "coping" primarily refer to threats to and coping with individual health and safety, in this study, "threat" and "coping" refer instead to threats to and coping regarding the parent-child relationship and children's development. Therefore, this study made contextual adaptations to the measurement items for the various dimensions of PMT to better fit the research context of "parental management of children's smartphone use." Based on previous research suggesting that "Restrictive Mediation" strategies may exacerbate children's reactance while "Co-use" may alleviate parent-child conflict by enhancing the parent-child bond, this study preliminarily designed a theoretical model [5, 6]. This study proposes three hypotheses: Hypothesis 1(H1), parental "Threat Appraisal" can positively predict frequent parent-child conflict. Hypothesis 2(H2), parental "Coping Appraisal" can negatively predict frequent parent-child conflict. Hypothesis 3, the two parental management strategies (Restrictive Mediation and Co-use) mediate the exacerbation or alleviation of parent-child conflict, respectively. If these three hypotheses are confirmed in subsequent verification, the theoretical model is considered validated.

2.2 Descriptive Statistics of the Study Sample

This study employed a cross-sectional survey design.

Using a combination of convenience sampling and snowball sampling methods, questionnaires were distributed through online social platforms, which ultimately resulted in 236 valid questionnaires. Among the respondents, mothers accounted for 55.08%, and fathers accounted for 36.02%. Regarding the children's age in the participating families, children aged 2 to 10 years comprised 68.64% of the sample, while adolescents aged 10 to 18 years comprised 31.36%. In terms of family structure, single-child families accounted for 61.02%, whereas families with two or more children accounted for 38.98%. Concerning parental education level, the sample exhibited a relatively high level of parental education, with parents holding a bachelor's degree or higher accounting for as much as 72.88%.

2.3 Research Instruments and Measurements

The questionnaire employed a five-point Likert scale, where scores from 1 to 5 represented responses ranging from "strongly disagree" to "strongly agree".

To measure the constructs, this study adapted or utilized the following established scales: A classic Protection Motivation Scale was adapted to measure parental "Threat Appraisal" and "Coping Appraisal" [7]. "Threat Appraisal" consisted of three subcomponents: "Perceived Severity" (2 items, e.g., 'I believe excessive smartphone use will seriously harm my child's eyesight'), "Perceived Vulnerability" (2 items, e.g., 'My child is easily addicted to smartphones'), and "Intrinsic Rewards" (3 items, e.g., 'Smartphones enable my child to learn many new things'; note: reverse scoring was applied during data processing). Higher scores on each subcomponent indicated stronger threat appraisal. Therefore, the mean score of these three subcomponents was calculated to represent "Threat Appraisal." Similarly, "Coping Appraisal" also comprised three subcomponents: "Response Efficacy" (1 item, e.g., 'I believe using the phone with my child is a good way to guide his proper phone use'), "Self-Efficacy" (2 items, e.g., 'I am confident I can successfully enforce the phone use rules I set for my child'), and "Response Costs" (3 items, e.g., 'Supervising and managing my child's phone use consumes a lot of my time and energy'; note: reverse scoring was applied during data processing). The mean score of these three subcomponents was calculated to represent "Coping Appraisal." The television mediation scale developed by Valkenburg et al. was adapted to measure parental smartphone mediation strategies [8]. For example, "Restrictive Mediation" included 4 items (e.g., 'Do you set specific daily or per-session time limits for your child's smartphone use?'), and "Co-use" included 4 items (e.g., 'Do you watch short videos or programs you both like on the phone with your child?'). The three-item parent-child conflict scale developed by Beyens and Beullens was adopted, using a nine-point scale [9]. During data analysis, SPSS and its PROCESS plugin were utilized. Descriptive statistics were first conducted, including means and standard deviations of variables, along with summarizing the sample's demographic characteristics. Correlation analysis was then performed to calculate correlations among all variables, providing a preliminary understanding of their relationships. Subsequently, linear regression equations were constructed with "Threat Appraisal" and "Coping Appraisal" as predictors and "Parent-Child Conflict" as the outcome to test Hypothesis 1 and Hypothesis 2. Finally, the Bootstrap method for testing mediation effects was employed using PROCESS Macro Model 5 to verify Hypothesis 3, with 5000 bootstrap samples and controlling for variables such as child's age and screen time. Specifically in this study: 1, X1 was Threat Appraisal, M1 was Restrictive Mediation, Y was Parent-Child Conflict. X1 was entered into PROCESS to test its total effect on Y and to analyze the mediating role of M. 2, X2 was Coping Appraisal, M2 was Co-use, Y was Parent-Child Conflict. X2 was entered into PROCESS for testing. Similarly, the effects of "Threat Appraisal" on "Co-use" and "Coping Appraisal" on "Restrictive Mediation" were also tested to ensure model completeness.

3 Research Results

3.1 Correlation Analysis of Variables

This study employed Pearson correlation analysis to examine the correlations among variables including parental threat appraisal of children's smartphone use, coping appraisal, parent-child conflict, restrictive mediation, co-use, and children's weekly total smartphone usage time.

The results are presented in Table 1.

Table 1. Pearson correlations - standard format.

| | Mean | Standard Devia- tion | Threat Ap- praisal | Coping Ap- praisal | Coping Ap- praisal | Parent- Child Con- flict | Co-use | Estimated Weekly Smartphone Usage Time per Child |
|---|--------|----------------------------|--------------------------|--------------------------|--------------------------|-----------------------------------|---------|---|
| Standard Deviation | 3.770 | 0.557 | 1 | | | | | |
| Coping Ap- praisal | 3.014 | 0.661 | -0.328** | 1 | | | | |
| Parent- Child Con- flict | 5.328 | 2.038 | 0.145* | -0.398** | 1 | | | |
| Restrictive Mediation | 3.899 | 0.741 | 0.360** | -0.005 | 0.226** | 1 | | |
| Co-use | 3.576 | 0.786 | -0.073 | 0.208** | 0.200** | 0.506** | 1 | |
| Estimated Weekly Smartphone Usage Time per Child | 18.817 | 14.584 | -0.056 | -0.041 | 0.296** | 0.034 | 0.234** | 1 |

* p<0.05 ** p<0.01

As can be seen from the results in Table 1, "Threat Appraisal" showed a significant positive correlation with "Restrictive Mediation" ($r = 0.360, p < 0.001$), but its correlation with "Co-use" was not significant ($r = -0.073, p > 0.05$). "Coping Appraisal" showed a significant positive correlation with "Co-use" ($r = 0.208, p < 0.001$), yet its correlation with "Restrictive Mediation" was not significant ($r = -0.005, p > 0.05$). "Restrictive Mediation" was significantly positively correlated with "Parent-Child Conflict" ($r = 0.226, p < 0.001$), while "Co-use" was significantly negatively correlated with "Parent-Child Conflict" ($r = -0.200, p < 0.01$).

Furthermore, "Threat Appraisal" was significantly positively correlated with "Parent-Child Conflict" ($r = 0.145, p < 0.05$), and "Coping Appraisal" was significantly

negatively correlated with "Parent-Child Conflict" ($r = -0.398, p < 0.001$). Children's smartphone usage time was significantly positively correlated with "Parent-Child Conflict" ($r = 0.296, p < 0.001$). This series of correlation results lays a solid foundation for the subsequent mediation effect analysis.

3.2 Hypothesis Testing for H1 and H2

Based on the questionnaire survey data, a regression model was constructed with "Threat Appraisal" and "Coping Appraisal" as independent variables and "Parent-Child Conflict" as the dependent variable. The following conclusions were drawn (see Table 2).

Table 2. Linear regression analysis results (n = 236).

| | Unstandardized Coefficients | | Standardized Coefficients | t | p | Collinearity Statistics | |
|-------------------------|-----------------------------|------------|---------------------------|--------|---------|-------------------------|-----------|
| | B | Std. Error | Beta(β) | | | VIF | Tolerance |
| Constant | 8.751 | 1.215 | - | 7.200 | 0.000** | - | - |
| Threat Appraisal | 0.060 | 0.233 | 0.016 | 0.256 | 0.798 | 1.121 | 0.892 |
| Coping Appraisal | -1.210 | 0.196 | -0.392 | -6.164 | 0.000** | 1.121 | 0.892 |
| R ² | 0.158 | | | | | | |
| Adjusted R ² | 0.151 | | | | | | |
| F | F(2,233)=21.910,p=0.000 | | | | | | |
| Durbin-Watson Statistic | 1.820 | | | | | | |

Note: Dependent Variable = Parent-Child Conflict
 * $p < 0.05$ ** $p < 0.01$

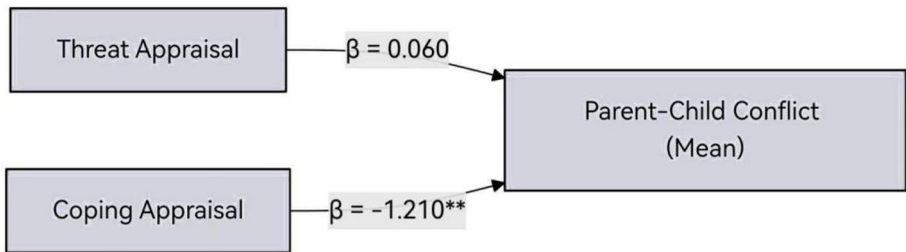


Fig. 1. Simplified model of direct effects.

Based on the results presented in Table 2, building a simplified model excluding the mediator variables allows for a more intuitive visualization of these findings, as shown in Figure 1.

The linear regression analysis, with Parent-Child Conflict as the dependent variable and Threat Appraisal and Coping Appraisal as independent variables, revealed a statistically significant overall model ($F(2, 233) = 21.910, p < 0.001$), which explained 15.8% of the variance. Specifically, the predictive effect of Threat Appraisal on Parent-Child Conflict was not significant ($\beta = 0.060, t = 0.256, p = 0.798$), whereas Coping Appraisal demonstrated a significant negative predictive effect on Parent-Child Conflict ($\beta = -1.210, t = -6.164, p < 0.001$).

3.3 Hypothesis Testing for H3 (Mediation Effect Analysis)

Mediation Effect Analysis of the "Threat Appraisal → Restrictive Mediation → Parent-Child Conflict" Pathway:

Table 3. Summary of Linear Regression Analysis for Variables Predicting Parent-Child Conflict (n = 236)

| | Parent-Child Conflict | Restrictive Mediation |
|--|-------------------------|--------------------------|
| Constant | 2.290 (1.499) | 1.439** (3.578) |
| Threat Appraisal | 0.422 (1.182) | 0.493** (6.111) |
| Estimated Weekly Smartphone Usage Time per Child | 0.052 (0.765) | |
| Threat Appraisal * Estimated | -0.004 (-0.212) | |
| Number of Children in Family | 0.053 (0.208) | 0.248** (2.707) |
| Child Gender | -0.135 (-0.546) | 0.043 (0.485) |
| Child Age Group | -0.720** (-2.673) | 0.083 (0.864) |
| Restrictive Mediation | 0.529** (2.912) | |
| Sample Size | 236 | 236 |
| R ² | 0.170 | 0.160 |
| Adjusted R ² | 0.141 | 0.142 |
| F Value | F (7,228)=6.665,p=0.000 | F (4,231)=10.981,p=0.000 |

* p<0.05 ** p<0.01 t-values in parentheses

Table 4. Indirect effect results.

| Path/Item | Effect | BootSE | BootLLCI | BootULCI |
|-----------------------|--------|--------|----------|----------|
| Total | 0.260 | 0.104 | 0.068 | 0.470 |
| Restrictive Mediation | 0.260 | 0.104 | 0.068 | 0.470 |

Note. Boot LLCI and Boot ULCI represent the lower and upper limits of the 95% bootstrap confidence interval, respectively. Bootstrap type: Percentile bootstrap method.

Table 5. Conditional direct effect results.

| Level | Value | Effect | SE | t | p | LLCI | ULCI |
|------------------|--------|--------|-------|-------|-------|--------|-------|
| Low Level(-1SD) | 4.233 | 0.406 | 0.304 | 1.332 | 0.184 | -0.191 | 1.002 |
| Mean | 18.817 | 0.350 | 0.251 | 1.390 | 0.166 | -0.143 | 0.843 |
| High Level(+1SD) | 33.400 | 0.294 | 0.416 | 0.706 | 0.481 | -0.522 | 1.109 |

Note. LLCI and ULCI represent the lower and upper limits of the 95% confidence interval for the estimate, respectively.

As shown in Table 3: The positive predictive effect of "Threat Appraisal" on Restrictive Mediation was significant (Path a: $\beta = 0.493$, $SE = 0.081$, $p < 0.001$).

After controlling for "Threat Appraisal," the positive predictive effect of "Restrictive Mediation" on Parent-Child Conflict remained significant (Path b: $\beta = 0.529$, $SE = 0.182$, $p < 0.01$). Furthermore, according to Table 4, the indirect effect of "Threat Appraisal" on Parent-Child Conflict through "Restrictive Mediation" was 0.260, with a Bootstrap 95% confidence interval of [0.068, 0.470]. This interval does not include zero, indicating that the indirect effect through Restrictive Mediation is statistically significant. Additionally, Table 3 reveals that the direct effect of "Threat Appraisal" on Parent-Child Conflict was not significant (Path c': $\beta = 0.422$, $SE = 0.357$, $p = 0.238$). Therefore, "Restrictive Mediation" plays a fully mediating role in the relationship between "Threat Appraisal" and Parent-Child Conflict. Meanwhile, this study examined the moderating role of children's smartphone usage time in the direct path from "Threat Appraisal" to "Parent-Child Conflict." The results of the conditional direct effects analysis are shown in Table 5, across different levels of smartphone usage time, the direct effects of Threat Appraisal on Parent-Child Conflict were all non-significant (all $p > 0.05$), with their 95% confidence intervals all containing zero. This indicates that smartphone usage time did not play a significant moderating role in the direct pathway between Threat Appraisal and Parent-Child Conflict. Mediation Effect Analysis of the "Coping Appraisal → Co-use → Parent-Child Conflict" Pathway:

Table 6. Summary of Linear Regression Analysis for Variables Predicting Parent-Child Conflict (n = 236)

| | Parent-Child Conflict | Co-use |
|---|-----------------------|--------------------|
| Constant | 8.209** (7.211) | 2.454** (7.127) |
| Coping Appraisal | -1.577** (-5.491) | 0.222** (2.923) |
| Estimated Weekly Smartphone Usage Time per Child | -0.018 (-0.408) | |
| Coping Appraisal * Estimated Weekly Smartphone Usage Time | 0.016 (1.067) | |
| Number of Children in Family | 0.142 (0.602) | 0.313** (3.067) |
| Child Gender | -0.087 (-0.385) | -0.038 (-0.382) |

| | Parent-Child Conflict | Co-use |
|-----------------|-----------------------------|----------------------------|
| Child Age Group | -0.550* (-2.248) | 0.003 (0.030) |
| Co-use | 0.601** (3.898) | |
| Sample Size | 236 | 236 |
| R 2 | 0.308 | 0.081 |
| AdjustedR 2 | 0.283 | 0.061 |
| F Value | F (7,228)=14.484,p=0.000 | F (4,231)=5.110,p=0.001 |

* p<0.05 ** p<0.01 t-values in parentheses

Table 7. Indirect effect results.

| Path/Item | Effect | BootSE | BootLLCI | BootULCI |
|-----------|--------|--------|----------|----------|
| Total | 0.133 | 0.061 | 0.036 | 0.275 |
| Co-use | 0.133 | 0.061 | 0.036 | 0.275 |

Note. Boot LLCI and Boot ULCI represent the lower and upper limits of the 95% bootstrap confidence interval, respectively. Bootstrap type: Percentile bootstrap method.

Table 8. Conditional direct effect results.

| Level | Value | Effect | SE | t | p | LLCI | ULCI |
|------------------|--------|--------|-------|--------|-------|--------|--------|
| Low Level(-1SD) | 4.233 | -1.510 | 0.241 | -6.274 | 0.000 | -1.982 | -1.038 |
| Mean | 18.817 | -1.280 | 0.183 | -7.007 | 0.000 | -1.638 | -0.922 |
| High Level(+1SD) | 33.400 | -1.050 | 0.319 | -3.293 | 0.001 | -1.675 | -0.425 |

Note. LLCI and ULCI represent the lower and upper limits of the 95% confidence interval for the estimate, respectively.

According to the data in Table 6, the positive predictive effect of Coping Appraisal on Co-use was significant (Path a: $\beta = 0.222$, $SE = 0.076$, $p < 0.01$). Furthermore, after controlling for "Coping Appraisal," the positive predictive effect of "Co-use" on Parent-Child Conflict remained significant (Path b: $\beta = 0.601$, $SE = 0.154$, $p < 0.001$). The indirect effect of "Coping Appraisal" on Parent-Child Conflict through "Co-use" was 0.133, with a Bootstrap 95% confidence interval of [0.036, 0.275]. Since the interval does not include zero, the indirect effect is statistically significant (Table 7). Simultaneously, the direct effect of "Coping Appraisal" on Parent-Child Conflict was also significant (Path c': $\beta = -1.577$, $SE = 0.287$, $p < 0.001$). Therefore, "Co-use" plays a partially mediating role in the relationship between "Coping Appraisal" and Parent-Child Conflict (Table 6). Similarly, this study tested the moderating effect of children's smartphone usage time on the direct pathway from "Coping Appraisal" to "Parent-Child Conflict." The conditional direct effect analysis results are shown in Table 8: Across all levels of smartphone usage time, Coping Appraisal maintained a significant negative direct effect on Parent-Child Conflict (all $p < 0.01$). Although the effect sizes showed a slight decrease with increasing usage time (from -1.510 to -1.050), their statistical significance remained unchanged. This indicates that the negative predictive effect of

Coping Appraisal on Parent-Child Conflict is robust, and smartphone usage time does not serve as a substantive moderator in this direct pathway.

4 Discussion

The model initially established in this study is largely supported. A significant fully mediated pathway from "Threat Appraisal" to "Restrictive Mediation" and then to "Parent-Child Conflict" is revealed by data analysis. This uncovers a typical negative cycle in family education that the more strongly parents perceive the potential threats of smartphones (e.g., harming eyesight, causing addiction, exposure to inappropriate content), the more pronounced their anxiety becomes. It is the anxiety that drives them to adopt simple, direct methods, such as strictly limiting or completely prohibiting use and so on. However, according to Psychological Reactance Theory, such management strategies, lacking in communication between parents and children, deprive children of their perceived behavioral freedom, thereby triggering resistance and oppositional behavior in children, ultimately leading to more parent-child disputes and conflict [10]. The occurrence of conflict, in turn, further reinforces parents' threat judgment that "the smartphone is the root cause," thereby trapping the family in a vicious cycle of "escalating restrictions leading to intensified conflicts, and intensified conflicts prompting even stricter restrictions." The fundamental reason lies in the fact that parental mediation strategies is largely driven by emotion (particularly anxiety) rather than based on rational strategic choice.

Conversely, the mediating role of the pathway from "Coping Appraisal" to "Co-use" and then to "Parent-Child Conflict" was not straightforward. The data indicate that its mechanism of action is more complex than the initial theoretical model, statistically manifesting as a suppression effect (where the direct effect negatively predicts the outcome, while the indirect effect positively predicts it). A possible explanation for this result is that "Co-use" does not always constitute harmonious parent-child interaction. In certain contexts, it can become a trigger for new conflicts, for instance, parental criticism or correction during co-use, or disagreements with children regarding content selection or usage. Therefore, while parents with high "Coping Appraisal" are more willing to engage in co-use of smartphones with their children, the specific nature of their interaction likely determines whether co-use ultimately exacerbates or alleviates parent-child conflict.

Simultaneously, this study found that parental "Coping Appraisal" has a strong direct negative predictive effect on Parent-Child Conflict. This suggests that if parents inherently believe in their own ability to guide their children effectively, their overall demeanor, communication style, and other factors are likely more positive, thereby directly mitigating Parent-Child Conflict.

5 Conclusion

Through data analysis and discussion, the model initially proposed in this study is largely validated.

Furthermore, based on data analysis, the model that this study established at the beginning has been refined and enhanced. Secondly, through meticulous mediation analysis, this research illustrates the internal mechanisms linking parental cognition, parenting practices, and parent-child conflict. A complete risk pathway—"Threat Appraisal → Restrictive Mediation → Conflict" is proved—and confirms the protective role of "Coping Appraisal" in directly mitigating conflict. What needs to be emphasized is that this study uncovered a "suppression effect" of the "Co-use" strategy between Coping Appraisal and Parent-Child Conflict. This indicates that the actual role of this strategy in predicting parent-child conflict is not simply negative as initially assumed. In the absence of further empirical evidence, this study currently indicates that factors such as the quality of parental companionship or how parents' perspective with children during co-use profoundly influence parent-child conflict. This provides a more comprehensive perspective for understanding parent-child relationships within families. Simultaneously, this study holds significant reference value for family education. First, parents should recognize that family education could not rely on restrictive and prohibitive measures, it is not only limited in effectiveness but also likely to damage the parent-child relationship. Furthermore, even when employing "Co-use," a strategy which is often perceived as a positive way to promote parent-child relationship, attention must be paid to the interaction style to avoid triggering new disputes during the "Co-use," focus more on guiding their children to use smartphones properly rather than merely monitoring their children's smartphone use, it is significant to transform smartphone use into opportunities to enhance the parent-child bond and implement education. Finally, this study acknowledges several limitations. Within the established model, parental mediation strategies regarding children's smartphone use were only focused on the two core strategies of "Restrictive Mediation" and "Co-use." However, in practice, parents have more strategy choices, such as technical restrictions (using parental controls model on smartphones) and active monitoring (spot-checking phone content). These unexamined management strategies might hold the same significant positions within the PMT framework. Additionally, this study did not consider the influence of the Chinese cultural context on parental implementation of mediation strategies. For instance, most Chinese parents often possess a strong authority consciousness and frequently deliberately maintain this authority in interactions with their children. Although conducted within a Chinese context, this study did not systematically examine how Chinese cultural values influence Chinese parent-child relationship, such as the deep-seated belief exemplified by the saying "Scholarly learning is the highest pursuit." It leads to high academic expectations for children and shapes the specific Threat Appraisal and Coping Appraisal above Chinese parents, future research needs to incorporate these cultural characteristics as variables for consideration. Recent studies have shown that in Chinese families, parental self-efficacy (a concept highly similar to "Coping Appraisal" in this study) serves as a key mediator through which parenting styles influence child development outcomes [11]. It is itself which is profoundly shaped by local parenting values and academic expectations. Therefore, consider cultural features such as "academic supremacy" as antecedent variables to judge how they systematically influence parents'

threat appraisal on children's smartphone use, their self-efficacy, and choices of mediation strategies is crucial for enhancing the explanatory power of this model within Chinese society.

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