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Discrepancies in Adolescent–Parent Perceptions of the Parental Phubbing and Their Relevance to Adolescent Smartphone Dependence: The Mediating Role of Parent-Child Relationship

Shi Chen [1,2,3,4], Dongqing Qiu [2,3,4,5,*], Xing Li [2,3,4] and Qingbai Zhao [2,3,4,*]

[1] School of Medical Humanities, Hubei University of Chinese Medicine, Wuhan 430065, China
[2] Key Laboratory of Adolescent Cyberpsychology and Behavior (CCNU), Ministry of Education, Wuhan 430079, China
[3] Key Laboratory of Human Development and Mental Health of Hubei Province, School of Psychology, Central China Normal University, Wuhan 430079, China
[4] School of Psychology, Central China Normal University, Wuhan 430079, China
[5] College of Elementary Education, Jingzhou Vocational College of Technology, Jingzhou 434000, China
* Correspondence: 563990986@qq.com; zqbznr@ccnu.edu.cn

Abstract: Parental phubbing behavior is a significant factor in predicting adolescent smartphone dependence, but prior research has predominantly focused on a unidirectional perspective from the child's viewpoint, overlooking potential perceptual differences between parents and their children regarding parental phubbing. Therefore, are there differences in the perceptions of parental phubbing between parents and their children? Based on the "Discrepancy-Maladaptive" hypothesis, the presence of perceptual discrepancies in family factors can lead to adverse developmental outcomes in children. Does the parent-child perceptual discrepancy in parental phubbing influence adolescent smartphone dependence? And what role does parent-child relationship play in this context? This study selected 728 families from a middle school in Wuhan, and surveys were administered to both children and parents. The findings reveal: (1) There exist significant parent-child perceptual discrepancies in parental phubbing. (2) Parent-child perceptual discrepancies in parental phubbing significantly positively predict adolescent smartphone dependence and negatively predict parent-child relationships, while parent-child relationships significantly negatively predict adolescent smartphone dependence. (3) The parent-child relationship plays a mediating role between parent-child perceptual differences in parental phubbing behavior and adolescent smartphone dependence.

Keywords: parent-child perceptual discrepancies in parental phubbing; parent-child relationship; smartphone dependence

1. Introduction

Smartphone dependency refers to the occurrence of excessive smartphone usage, wherein individuals find themselves unable to control their behavior even in public settings where phone use is prohibited, leading to adverse impacts on both their social and personal lives [1]. In comparison to adults, adolescents exhibit heightened sensory needs, necessitating a greater influx of external stimuli to achieve optimal arousal levels [2]. Smartphones, serving as multifaceted sources of leisure, entertainment, and social connectivity, provide adolescents with ample avenues for sensory gratification. Due to the incomplete development of self-regulatory capacities among adolescents, they are more susceptible to smartphone dependency, resulting in unfavorable psychological outcomes such as diminished concentration, impaired memory, and emotional issues [3,4].

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Consequently, researchers have placed significant emphasis on the predicament of adolescent smartphone usage.

Previous research has identified numerous factors that influence adolescent smartphone dependency, including the intrinsic attributes of the devices, adolescent personality traits, family dynamics, peer relationships, and environmental factors [5-8]. Among these, family factors hold particular significance. In recent years, scholars have increasingly focused on the pervasive phenomenon of parental phubbing within the family context. Parental phubbing is defined as parents directing their attention towards smartphones during parent-child interactions, thereby neglecting or disregarding their children [9]. Researchers have found that such behavior poses a threat to the mental and physical well-being of adolescents. When parental phubbing is more prevalent within the family, adolescents are more likely to experience symptoms such as depression, poor sleep quality, academic procrastination, peer detachment, and even suicidal tendencies [9-13]. A series of studies indicate that parental phubbing can positively predict adolescent smartphone addiction, with factors like parent-child bonding, deviant peer associations, and tendencies towards boredom serving as mediating mechanisms [9,14,15]. Notably, Wang and colleagues further discovered that parental phubbing not only impacts adolescent smartphone dependence but also extends its influence to academic performance [16]. Based on the Parental Acceptance-Rejection (PAR) Theory [17], early experiences of perceived parental acceptance or rejection influence a child's emotional, behavioral, and socio-cognitive development [18], with these effects persisting into adolescence and even adulthood. Parental phubbing results in adolescents feeling neglected in terms of positive attention and emotional feedback, and smartphones become a primary means for them to seek emotional gratification. Adolescents who have experienced rejection by their parents may be more susceptible to developing psychological issues [19,20], such as smartphone addiction.

In prior research endeavors, the measurement of parental phubbing has predominantly relied upon the child's perception, with little attention afforded to investigating the parents' own perception of their engagement in such behavior. Consequently, **does a perceptual discrepancy concerning parental phubbing exist between the parent-child dyad?** Within the realm of developmental psychopathology research, the evaluation of family or parental contributions relevant to child psychopathology often entails the utilization of multi-informant reports. Participants typically encompass children, parents, teachers, peers, and clinical professionals, with the reports encompassing diverse facets such as academic performance and criminal records. However, discrepancies in these reports are not uncommon, manifesting as perceptual discrepancies, where disparate individuals possess contrasting subjective perceptions of a shared objective entity [21-24]. Drawing upon this backdrop, we posit Research **Hypothesis 1: There may exist perceptual discrepancies regarding parental phubbing between parents and their children**.

If there exists a perceptual discrepancy between parents and adolescents regarding parental phubbing behavior, **could this perceptual discrepancy serve as another factor influencing adolescent smartphone dependence?** De Los Reyes and Ohannessian introduced the "Discrepancy-Maladaptive" hypothesis [25]. This theoretical framework posits that the "discrepancy" observed in the parent-child dynamic is indicative of parents' limited insight into the genuine circumstances of their offspring, which consequently leads to an inadequate appreciation of the child's subjective perceptions. Within such a paradigm, adolescents are more predisposed to adverse developmental outcomes, which commonly encompass behavioral, emotional, social adaptive, and academic domains [21,23,25]. Presently, studies rooted in this hypothesis predominantly center on the realm of perceived disparities in parenting styles. Notably, positive parenting behaviors are typically less recognized by adolescents than by their parents, while negative parenting behaviors are often perceived in excess by adolescents in comparison to parental recognition. Such dynamics are correlated with a heightened susceptibility to negative developmental outcomes encompassing externalizing behaviors, emotional perturbations, social adaptation challenges, and compromised academic achievements [21,26-28]. Some scholars contend that the predictive efficacy of parent-child perceptual discrepancies on developmental outcomes might surpass the impact of parenting styles reported solely by adolescents [29]. Parallel to these notions, parental phubbing can be conceived as

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a form of negative parental behavior, and adolescent smartphone dependence, a manifestation of externalizing problem behavior. In light of this context, we posit **Hypothesis 2 : Perceptual discrepancies regarding parental phubbing positively predict adolescent smartphone dependence**.

Furthermore, if the perceptual disparities regarding parental phubbing indeed prove to be an influencing factor on adolescent smartphone dependence, **what mechanistic pathways underlie this phenomenon?** Within the familial milieu, the parent-child relationship occupies a pivotal centrality. The dynamics of interaction and emotional resonance between parents and their offspring wield substantial influence on the adolescents' prospective social interactions. According to attachment theory, establishing secure attachment bonds with parents can provide adolescents with a foundation of nurturing support [30]. In contradistinction, the failure to cultivate such secure attachment bonds augments the susceptibility to psychological and behavioral maladies among adolescents, rendering them predisposed to the grip of smartphone addiction [31]. Qualitative interviews have revealed that many full-time mothers cite their use of electronic devices at home as a means of temporarily escaping the monotony and frustrations of parenting, seeking respite from the burdens of domestic minutiae [32]. Anchored in these insights, parental phubbing is deemed a manifestation of negative parenting conduct, encompassing practices such as harsh discipline, neglect, dishonesty, and disregard. Drawing from the "Discrepancy-Maladaptive" hypothesis, When there is a perceptual discrepancy between parents and adolescents regarding parental phubbing behavior, adolescents may develop dissatisfaction towards their parents. This, in turn, could potentially trigger an avoidance attachment strategy, resulting in impoverished communication quality, diminished trust, and ultimately, a decline in the quality of the parent-child attachment bond. Hence, we posit **Hypothesis 3 : The perceptual discrepancies regarding parental phubbing significantly negatively predict the parent-child relationship quality**. Concurrently, a substantial body of research has substantiated that parent-child relationships exhibit a significant negative predictive capacity concerning adolescent smartphone dependence. Adolescents embedded within harmonious parent-child relationships exhibit lower levels of smartphone dependence [31,33]. In summation, we advance **Hypothesis 4 : The parent-child relationship acts as a mediator between the perceptual discrepancies regarding parental phubbing and adolescent smartphone dependence.**

The present study aims to investigate the impact of perceptual disparities regarding parental phubbing on adolescent smartphone dependence, subsequently delving into the mediating role of the parent-child relationship. The theoretical framework delineated by the mediation model is graphically depicted in Figure 1. Amid the panorama of adolescent demographics, middle school students stand as a distinctive cohort characterized by a juxtaposition of nascent adult-like cognitions and residual immaturity. This paradox engenders a potent sense of independence within them, often accompanied by an emotional ambivalence in their interactions with adults. Consequently, middle school students forge an increasingly robust rapport with the digital realm. Concurrently, their psychological dependence on parental figures remains a salient facet. Parental understanding, support, and protection continue to wield significance in their lives. Hence, this study centers its focus on the middle school student demographic.

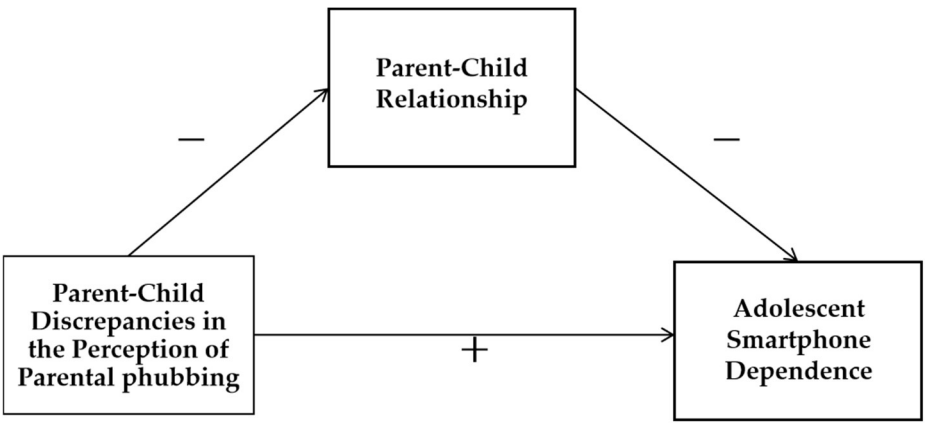

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Figure 1. Theoretical framework of the mediation model.

2. Methods

2.1. Participants

This study targeted first-year and second-year middle school students and their parents from a middle school in Wuhan, China. A total of 1521 questionnaires were distributed, and following the removal of inadequately completed responses (such as those with identical responses for all items or completion times below 60 seconds), 1456 valid questionnaires were obtained. The paired parent-student samples accounted for 728 responses (with 366 from female students), yielding an effective response rate of 95.73%. This study was approved by the Ethical Committee for Scientific Research at the researchers' affiliated institution, and complied with the ethical guidelines protecting human participants. All participants participated in the experiment voluntarily, signed written informed consent, and received a small gift as an incentive.

2.2. Measures

2.2.1. Predictive Variables

Perceptual Discrepancies in Parental phubbing Students completed the Parental Phubbing Scale [34], comprising 9 items (Cronbach's $\alpha = 0.87$), scored on a 5-point scale. They selected an option aligning with their circumstances based on item descriptions (e.g., "When I eat with my parents, they use their phones"). Responses ranged from "1" (strongly disagree) to "5" (strongly agree), with higher scores indicating more pronounced parental phubbing. The parent's questionnaire was adapted from the student's version with subject replacement (e.g., "When I eat with my child, I use my phone"), also comprising 9 items (Cronbach's $\alpha = 0.83$).

Perceived discrepancies were computed using the difference score method. This entailed the standardization of scores separately reported by parents and students, resulting in the utilization of the student's Z-score minus the parent's Z-score to represent the value of perceptual discrepancies. Employing this method addresses the influence of distribution disparities in original scores and equalizes the contribution of scores from different reporters [22,29].

2.2.2. Outcome Variable

Adolescent Smartphone Dependence The Smartphone Addiction Scale [35], encompassing 32 items, was employed as a metric for evaluating the phenomenon of adolescent smartphone dependence (internal consistency reliability were 0.95). The scale utilizes a 6-point scoring system, where higher scores correspond to a more profound level of smartphone dependence among middle school students. The scale encompassed six dimensions: daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, overuse, and tolerance.

2.2.3. Mediating Variable

Parent-Child Relationship The Parent-Child Closeness Scale, developed by Buchnan, Maccoby, and Dornbush, was employed in this study [36]. It comprises two subscales, one for father-child relationships (Cronbach's $\alpha = 0.89$) and the other for mother-child relationships (Cronbach's $\alpha = 0.88$), each consisting of 9 items. A 5-point rating scale was used, ranging from 1 for "completely disagree" to 5 for "completely agree." The average score was used to reflect the parent-child relationships, with higher scores indicating a closer relationship between adolescents and their parents.

2.3. Procedure

In the psychology course, adolescent questionnaires were distributed to students in each class, and students completed them in the classroom. At the beginning, the test administrator introduced

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the instructions, purpose of the assessment, response procedures, and confidentiality principles to the participants. Subsequently, adolescents completed the questionnaires. Parental questionnaires were transferred to students for subsequent completion by their parents.

2.4. Statistical Analyses

To rigorously assess potential common method bias, We conducted Harman's single-factor test by loading all variables into an unrotated exploratory factor analysis [37]. The outcomes of this assessment revealed a presence of 19 factors with eigenvalues surpassing the critical value of 1. However, the initial factor only accounted for a cumulative variance of 12.32%, distinctly below the critical threshold of 40%. These results suggest that common method bias is not a major concern in this study.

The statistical package SPSS 19.0 and its associated plugins was employed for an array of analytical operations encompassing descriptive statistics, correlation analysis, independent samples t-tests, mediation tests, and response surface analysis.

Response surface analysis was conducted through a two-step process. Step one incorporated polynomial regression to integrate children's perceived scores (C), parents' perceived scores (P), children's perceived squared scores (C^2), the multiplicative interaction term of parents' perceived scores and children's perceived scores ($C*P$), and parents' perceived squared scores (P^2) into a polynomial regression model (as expressed below). If the interaction term's predictive effect (coefficient b_4) proved significant, subsequent simple slope analysis was employed to explore the impact of perceptual discrepancies on the outcome variable: $Y = b_0 + b_1C + b_2P + b_3C^2 + b_4C*P + b_5P^2 + e$. Step two encompassed computation of polynomial regression coefficients, yielding four response surface analysis coefficients: $a_1 = b_1 + b_2$, testing the linear predictive effect of parental and student perceptions being aligned, whether the smartphone dependence of middle school students changes linearly when parent-child perceptions of parental phubbing exhibit a similar trend. $a_2 = b_3 + b_4 + b_5$, testing the quadratic predictive effect of parental and student perceptions being aligned. $a_3 = b_1 - b_2$, testing for linear predictive effect of parent-child perceptual discrepancies (student - parent). $a_4 = b_3 - b_4 + b_5$, assessing quadratic predictive effect of parent-child perceptual discrepancies. Lastly, SPSS plugin PROCESS was employed to investigate the mediating effect of parent-child relationships within the impact of parent-child perceptual discrepancies in parental phubbing on middle school students' smartphone dependence [38].

3. Results

3.1. The Discrepancies in Adolescent–Parent Perceptions of the Parental Phubbing

A paired-samples t-test was performed to gauge the discrepancies between adolescent-reported and parental-reported measures of parental phubbing. Detailed results are depicted in Figure 2. Notably, the adolescent-reported scores (M = 24.14, SD = 7.59) were significantly higher compared to those reported by parents (M = 21.61, SD = 6.16), $t(727) = 9.13$, $p < 0.01$. This observed discrepancy exhibited a moderate effect size (Cohen's d = 0.34).

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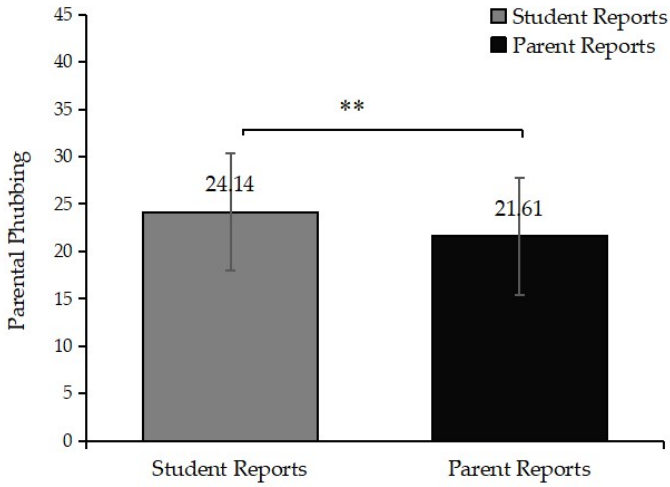

Figure 2. The perceived scores of parental phubbing behavior reported separately by student and thier parents.

3.2. Correlation Analysis

The correlation analysis were conducted and presented in Table 1. It becomes apparent from the table that significant correlations exist between parent-child perceptual disparities in parental phubbing and both parent-child relationship and middle school students' smartphone dependence.

Table 1. Correlations and descriptive statistics among variables.

	M(SD)	1	2	3	4	5
1. Parents perceive their own phubbing	21.61(6.16)	-				
2. Students perceive parental phubbing	24.14(7.59)	0.42**	-			
3. Perception discrepancies of parental phubbing	0(1.07)	-0.05	0.15**	-		
4. Parent-child relationship	3.48(0.86)	-0.15**	-0.41**	-0.22**	-	
5. Adolescent smartphone dependence	2.42(0.88)	0.12**	0.32**	0.16**	-0.25**	-

Note. **$p < 0.01$, Abbreviations *M*, mean; *SD*, standard deviation.

3.3. Predictive Effect of Parent-Child Perceptual Discrepancies in Parental phubbing on Adolescent Smartphone Dependence

An intricate response surface analysis model was constructed, anchoring student perceptions of parental phubbing on the X-axis, parental perceptions on the Y-axis, and middle school students' smartphone dependence on the Z-axis. Coefficients for the polynomial regression model and response surface analysis are presented in Table 2, with the visualized outcomes depicted in Figure 3. In the relationship between parental phubbing perception and smartphone dependence in middle school students, a consistent positive linear effect is statistically significant ($a_1 = 0.15$, $p < 0.001$), which indicated that as both parental and student perceptions of parental phubbing heightened, middle school students' smartphone dependency also escalated. Furthermore, a noteworthy positive linear effect of disparities ($a_3 = 0.18$, $p < 0.01$) underscored that greater parent-child perceptual discrepancies (student perceptions subtracted from parental perceptions) corresponded to heightened levels of middle school students' smartphone dependency.

Table 2. The coefficients for the polynomial regression model and response surface analysis.

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	Regression Coefficient						Response Surface Analysis Coefficients			
	b_0 (SE)	b_1 (SE)	b_2 (SE)	b_3 (SE)	b_4 (SE)	b_5 (SE)	a_1 (SE)	a_2 (SE)	a_3 (SE)	a_4 (SE)
Adolescent smartphone dependence	2.56*** (0.05)	0.17*** (-0.3)	- 0.01 (0.03)	- 0.03 (0.02)	- 0.07* (0.03)	- 0.01 (0.03)	0.15*** (0.05)	-0.09 (0.03)	0.18* (0.07)	0.05 (0.06)
Parental phubbing										

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

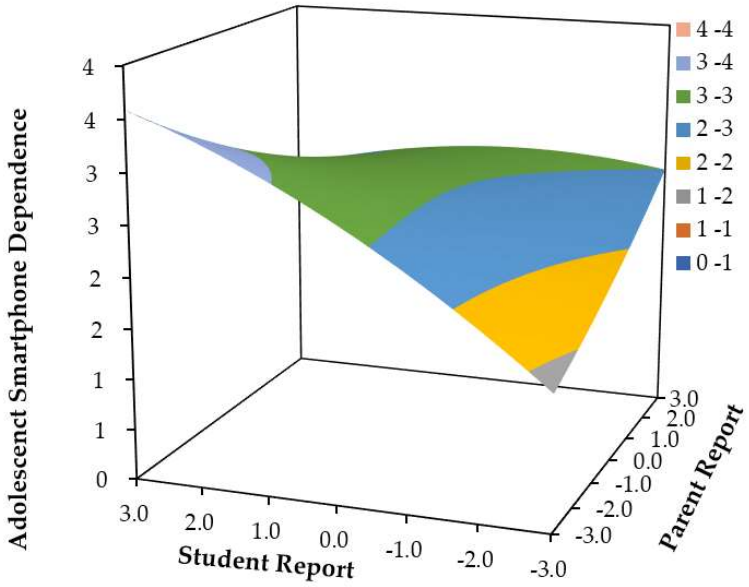

Figure 3. The response surface between students' perception of parental phubbing (X), parents' perception of their phubbing (Y) and students' smartphone dependency (Z).

3.4. Mediation Analysis

In the mediation analysis, the parent-child perceptual discrepancies in parental phubbing were introduced as the independent variable, middle school students' smartphone dependency served as the dependent variable, and parent-child relationship was designated as the mediating variable. Additionally, student grade level was controlled. The mediation analysis was conducted employing Model 4 of SPSS plugin PROCESS [20].

As illustrated in Table 3, the overall regression equation exhibited significance, $R^2 = 0.08$, $F(3,724) = 19.833$, $p < 0.001$. To validate the mediation effect, Bootstrap resampling methodology was implemented, and the outcomes are portrayed in Figure 4. The findings reveal that parent-child perceptual discrepancies in parental phubbing significantly positively predicted middle school students' smartphone dependency, $\boldsymbol{\beta} = 0.12$, $p < 0.01$, 95%CI = [1.25,5.06]. Moreover, these discrepancies negatively predicted parent-child relationship, $\boldsymbol{\beta} = -0.20$, $p < 0.01$, 95%CI = [-3.85,-1.8], and the parent-child relationship inversely predicted middle school students' smartphone dependency, $\boldsymbol{\beta} = -0.23$, $p < 0.01$, 95%CI = [-0.56,-0.28]. The overall effect size was 0.17 ($p < 0.01$), with a direct effect size of 0.12 ($p < 0.01$). The cumulative indirect effect emanating from the parent-child relationship amounted to 0.05 (95%CI = [0.03, 0.07]). Consequently, the mediating effect accounted for 27.05% of the total effect.

Table 3. Regression analysis of the mediating role of parent-child relationship.

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Predictor	Criterion: Parent-child relationship				Criterion: Adolescent smartphone dependence			
	β	*SE*	*t*	[LLCI, ULCI]	*β*	*SE*	*t*	[LLCI, ULCI]
Grade	-0.14	1.13	-3.95***	[-6.68,-2.29]	-0.06	2.06	-1.53	[-7.24,0.85]
Perception discrepancies of parental phubbing	-0.2	0.53	-5.36***	[-3.85,-1.80]	0.12	0.97	3.27***	[1.25,5.06]
Parent-child relationship					-0.23	0.07	-6.21***	[-0.56,-0.29]
R^2	0.07				0.08			
F	27.08***				19.83***			

Note. **p<0.01,***p<0.001; Grade: The first grade of junior high school = 1, Second year of junior high school = 2.

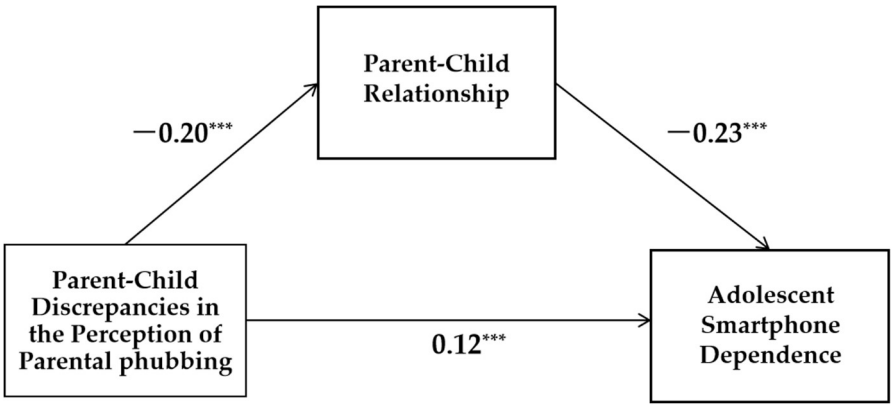

Figure 4. The result of the mediation model.

4. Discussion

Grounded in the "Discrepancy-Maladaptive" hypothesis, this study explored the latent relationship between parent-child perceptual discrepancies in parental phubbing and adolescent smartphone dependence, unveiling the mediating role of the parent-child relationship. The outcomes of this study broaden the scope of the "Discrepancy-Maladaptive" hypothesis, potentially offering a theoretical perspective for future interventions targeting adolescent smartphone dependence.

4.1. There exists discrepancies in the perception of parental phubbing between parent and adolescent

The results demonstrate a significant presence of parent-child perceptual discrepancies in parental phubbing, specifically characterized by parents' reported perceptions significantly lagging behind those of adolescents. In other words, parents seem to be less aware of their excessive phubbing compared to their children. This observation aligns closely with previous research results concerning parent-child perceptual discrepancies in parenting styles [28]. From the perspective of the Attribution Bias Context Model [23], in an interactive context, the imputation of negative outcomes is often ascribed by the actor to extraneous or situational factors, while the recipient attributes these outcomes to the inherent traits of the actor. Within parent-child interactions, when parents engage in phubbing, parents might perceive their attention to smartphones as occasional behavior prompted by external influences, such as work requirements. Conversely, children might interpret parents' phubbing as a habitual and consistent trait of the parents themselves. This divergence in attribution leads to subjective cognitive biases regarding the objective phenomenon of parental phubbing.

Furthermore, empirical research suggests that, in comparison to overt negative parenting behaviors, parents' phubbing exhibits distinctive behavioral and affective traits that contribute to

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parental attention attenuation [39]. Firstly, overt negative parenting behaviors typically encompass observable actions such as physical aggression or verbal abuse. These behaviors are conspicuous and readily acknowledged by parents and the public, with a clear understanding of their potential developmental risks for children. In contrast, parental phubbing is subtle, inconspicuous, and concealed [40,41]. For parents, discerning the adverse impact of phubbing on children can be challenging. Secondly, overt negative parenting behaviors like rejection and aggression often accompany intense negative emotions like anger. This makes it easier for parents to recognize and reflect upon the hazards of these negative parenting practices. Conversely, parental phubbing usually transpires during periods of emotional stability rather than strong negative affect, contributing to parents' limited awareness of the potential negative consequences of such behavior [42]. This propels a perceptual bias wherein parents construe their phubbing as less conspicuous than it may objectively be.

4.2. The Impact of Parent-Child Discrepancies in the Perception of Parental phubbing on Adolescent Smartphone Dependence and the Mediating Role of Parent-Child Relationship

The empirical analyses, both the correlation study and the response surface analysis, conspicuously illuminate that parent-child discrepancies in perceiving parental phubbing exert a significant and positive influence on adolescent smartphone dependence. In essence, , the more pronounced these disparities become in the perception of parent-child dyads, the deeper the extent of smartphone dependence among adolescents. From the analytical perspective of the "Discrepancy-Maladaptive" hypothesis, the accentuated discrepancy in parent-child perception offer insights into a discernibly attenuated communicative rapport between parents and adolescents, perhaps as a function of poor estranged parent-child relationship or high levels of conflict between the adolescent and parent [43,44]. Our findings concerning mediating effects elucidate that the discernible parent-child discrepancies in perceiving parental phubbing also bear a significant and inverse predictive relation to the quality of the parent-child relationship. In other words, when children report that their parents engage in a significant amount of phubbing behavior while parents perceive their own phubbing behavior as minimal, their parent-child relationship often tends to be less favorable. Within this context, adolescents are more susceptible to experiencing negative emotional states. Moreover, it proves that increased adolescent-parent perceptual discrepancies relate to increased maladaptive adolescent outcomes including anxiety and disturbed mood, conduct problems, and substance use [21,45-48]. For adolescents ensconced within adversarial parent-child relationships and frequently beset by negative emotions, smartphones emerge as outlets for emotional catharsis and repositories for psychological refuge. Correspondingly, as underscored by the latter segment of our mediating effect findings, adolescents characterized by strained parent-child relationships exhibit a greater severity of smartphone dependence. Concurrent studies show that adolescents entrenched within families marked by feeble cohesion and suboptimal parent-child relationships are more prone to seek external validation, with smartphones and the internet emerging as particularly favored conduits [49]. These outlets serve as emotional regulators [50], often precipitating an overreliance on smartphones among adolescents. The mediating role played by parent-child relationships highlights the crucial impact of the family. Consequently, efficacious strategies for the prevention and intervention of adolescent smartphone dependence should invariably account for the family milieu. A harmonious and positive family environment can aptly mitigate a myriad of adverse adolescent behaviors.

On the other hand, pronounced parent-child discrepancies in perception equally illuminate parents' diminished awareness of their own phubbing, which may directly contribute to the phenomenon of adolescent smartphone dependency. De Los Reyes posits that parent-child discrepancies in parent-child reports, where adolescents report higher levels of behaviors than their parents (particularly in negative domains), may signify parents' lack of insight into pivotal aspects of adolescents' lives, rendering them more susceptible to maladjustment [43]. Parent-child discrepancies, in this light, unveil parents' lack of discernment regarding their engagement in rejection behavior. Parents often fail to grasp the gravity of the repercussions instigated by phubbing,

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perpetuating their indifference and possibly exacerbating such behavior, leading to consequential ramifications. Research confirms that children require active parental attention and responsiveness in various domains [51-53]. However, in the context of familial interactions, parents' phubbing emerges as a deleterious factor disrupting parental attentiveness [54,55]. For children, parental phubbing equates to social ostracism [56]. When parents fail to duly address the needs and expectations of their children or spend inadequate time in their company, children feel neglected and excluded by their parents [39,57]. Children perceive their parents as aloof, indifferent, and overbearing, potentially prompting avoidance attachment strategies as a defense mechanism against disappointments [58,59]. In light of this, children feel compelled to seek alternative avenues for emotional fulfillment. In the absence of proper guidance toward seeking appropriate emotional support, the facile accessibility and availability of smartphones naturally become the preferred outlets for emotional fulfillment, thereby culminating in smartphone dependency.

4.3. Limitations and Implications

Two noteworthy limitations should be acknowledged in this study. Firstly, the research design adopted herein takes the form of a cross-sectional investigation, thus precluding causal inferences. Future inquiries should consider experimental and longitudinal approaches to ascertain causal relationships. What's more, the present study's focus on Chinese adolescents limits the generalizability of its findings. Future research endeavors should encompass samples from diverse cultural contexts to bolster the universality of the study's conclusions.

Prior investigations founded upon the "Discrepancy-Maladaptive" hypothesis predominantly spotlight the perspective of "discrepancy" within parental child-rearing practices, whereas the manifestations of "maladaptive" are often concentrated within domains encompassing behavior, emotional state, social adaptation, and academic achievement [21]. The current study significantly enriches the purview of the "Discrepancy-Maladaptive" hypothesis by elucidating the mechanisms through which perceptual discrepancies between parents and children impact addictive behaviors. Our study situates the vantage point of "discrepancy" within the ubiquitous parental phubbing observed within the familial context, thereby extending the realm of inquiry concerning adverse developmental outcomes to encompass the sphere of addictive behaviors.

5. Conclusions

The objective of this study was to investigate the interplay between parental phubbing's perceptual discrepancies, parent-child relationships, and adolescent smartphone dependence. The conclusions drawn from the study are as follows:

The research confirms the presence of substantial perceptual discrepancies between parents and adolescents regarding parental phubbing.

The investigation reveals that perceptual discrepancies in parental phubbing significantly positively predict adolescent smartphone dependence while negatively predicting parent-child relationships. Additionally, parent-child relationships exhibit a significant negative prediction of adolescents smartphone dependence.

Parent-child relationships emerge as a significant mediating factor between the perceptual discrepancies in parental phubbing and adolescent smartphone dependence.

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Institutional Review Board Statement: All procedures performed in studies involving human participants were in accordance with the ethical standards of the Ethics Committee of Central China Normal University (CCNU-IRB-202208-004) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Written informed consent has been obtained from the patient(s) to publish this paper.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Conflicts of Interest: The authors declare no conflict of interest.

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