



Parental Mediation and Adolescents' Internet Use: The Moderating Role of Parenting Style

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Abstract

Internet use can be distinguished into different uses (e.g., leisure-related, learning-related), yet comprehensive studies on how different uses are associated with everyday parenting situations are still lacking. This study attempts to locate parental mediation within broader family contexts and simultaneously considers the relationships among general parenting style, media-specific parenting practices, and adolescents' amount and types of Internet use. Building on survey data collected from 1284 middle school students in China (mean age = 13, SD = 0.79, 48.60% girls), the Latent Profile Analysis identified three child-perceived profiles of general parenting style: *slight-engaged*, *supportive*, and *rejecting-controller*. The subsequent regressions suggested that adolescents with *supportive* parents reported lower levels of time spent online as well as leisure-related use; more restrictive parental mediation was associated with reduced leisure-related use while more active mediation was associated with more learning-related use. Notably, associations between parental use of active mediation and youth's amount of Internet use and leisure-related use varied based on parenting style profiles. Only for the *supportive* parenting profile, more use of active mediation was associated with decreased amount of Internet use as well as leisure-related use. These findings have implications on how parents can be more effective in guiding youth's Internet use.

Keywords Parenting style · Parental mediation · Internet use · Leisure-related use · Learning-related use · Moderation analysis

Introduction

In the light of Internet's popularity among young people and the ways they use Internet are considered to be strong predictors of their academic achievement and other psychosocial developments (Daoud et al., 2021), how to regulate and guide them to use this medium appropriately has been a major concern for policy-makers, educators, and parents. China has even issued an official policy that bars youth from online gaming on school days since

September 2021 (National Press and Publication Administration, 2021). Despite the stringent social intervention, for children and adolescents, parents remain prime gatekeepers to their access to media devices and contents. Investigating how everyday parenting situations are related to their Internet use is especially critical with the increasing challenges of regulating their kids' media use during a time of rapid growth of Internet-accessible technologies (Vaala & Bleakley, 2015). To date, though a few studies examined the influence of media-specific parenting practices (i.e., parental mediation) on youth's Internet use, they overlooked the role of the broader family climate in which youth are growing up (Livingstone et al., 2017). The present study aims to fill this research gap by simultaneously considering the associations of both media-specific and general parenting behaviors with teenagers' different Internet uses (i.e., amount of Internet use, leisure-related and learning-related Internet use), and further examining whether general parenting style moderates the relationship between parental mediation and Internet use among Chinese adolescents.

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Parenting Style

The study of parenting style has a long tradition in psychology. Parenting style refers to the emotional climate in which parents raise their children (Darling & Steinberg, 1993). While several conceptualizations of parenting style have been sketched (e.g., Rohner et al., 2005), the majority of published studies have focused on quantities and qualities of parent's warmth/responsiveness, control/demandingness, and discipline in the parenting repertoire (Power, 2013). This paper applies the conceptual framework of Perris and colleagues (1980), which describes parenting style in three key dimensions: rejection (being hostile and critical, using punishing behavior, and degrading the child verbally), emotional warmth (support, loving attention, stimulation, and acceptance), and overprotection (having anxiety for her safety and high expectations regarding her achievement as well as being controlling of the child).

Within its long tradition, parenting style has been considered by using either dimensional or typological approaches (Power, 2013). The former involves describing parenting dimensions, for example, rejection or emotional warmth, and examining how each impacted child outcomes. The latter looks simultaneously at how parents differ on multiple dimensions and classify parents into various parenting style profiles according to the combinations of these dimensions. It remains an open question about whether one approach is superior to the other for exploring parental influence on child development (Power, 2013). In this study, the typological approach is adopted by employing Latent Profile Analysis (LPA) to classify adolescent perceived parenting profiles. LPA has an advantage over others as it explores natural groups existing in the population, rather than imposing a categorization based on artificial cutoff scores.

There was growing empirical evidence of some profiles that consistently appeared from previous studies, for example, *rejecting-controller* (also named as *harsh* or *negative type*) and *supportive* (Shen et al., 2020). Whereas the *supportive* profile was defined by a relatively high level of parental emotional support but low levels of rejection and monitoring, the *rejecting-controller* profile was the opposite. Some studies also identified other profiles: *over-involved* (also named as *supportive-controller* or *highly-involved*; Pereira et al., 2009) and *disengaged* (also named as *low support* or *uninvolved*; Beato et al., 2016). The *over-involved* was characterized by relatively high levels of parental emotional warmth, rejection, and control, while the *disengaged* was defined by relatively low levels in all three dimensions. Given that the abovementioned parenting profiles were mostly obtained in Western cultures, it is necessary to identify parenting profiles in the Chinese context to see how similar these empirical-derived clusters are to those reported in prior literature.

Parenting Style and Adolescents' Internet Use

Parental influence on children's development has been studied for decades and the relationships between parenting style and children's psychosocial outcomes have been well documented (for a review, see Sahithya et al., 2019). Nevertheless, comparatively limited research has linked parenting style with Internet use especially different online activities. A few related studies have mostly applied a risk-reduction perspective and explored whether different parenting styles were effective in reducing children's online risky behaviors, such as Internet addiction or compulsive Internet use. Compared with parents of noninternet addicted adolescents, parents of Internet addicted adolescents have reported higher rejection, higher over-involvement, and lower emotional warmth in rearing children (Huang et al., 2010). It was also found that children with parents who provided high warmth as well as exerted sufficient behavioral control had a lower incidence of Internet addiction (Lukavska et al., 2020).

Most prior work has explained the relationship between parenting style and adolescents' Internet addiction from the perspective of psychological needs. Poor parenting style characterized by a lack of parental warmth and high rejection towards children can easily steer children towards the Internet, as it can offer emotional responses to their needs and let them feel understood and accepted by others (Lian et al., 2016). In contrast, children with parents who exhibit positive parenting may not need to seek emotional comforts through the Internet (Zhang et al., 2019). This view coincides with the theoretical approach of Uses and Gratifications (U&G), which assumes that individuals have innate needs that drive selection of and can be satisfied by certain patterns of media use (Katz et al., 1974). U&G literature consistently showed that leisure-related Internet use, which comprises activities such as watching online videos, playing online games, or chatting with friends, was positively associated with escapism, companionship, and relaxing entertainment motives (Pinto & Poornananda, 2017). Given that different parenting profiles offer varied responses to children's inner needs, it is expected that these profiles would be associated with adolescents' amount of Internet use and their leisure-related Internet use.

Learning or school-related Internet use comprises activities focusing on educational or informational tasks, such as doing homework or finding specific information. These activities are often instrumental-oriented (Senkbeil, 2018). Although there is a paucity of empirical work elucidating the association between parenting style and learning-related use, studies pertaining to academic socialization have evidenced its associations with school performance (Pinquart, 2016). For example, it was shown that parental warmth/responsiveness was associated with higher interests in

school (Steinberg et al., 1992), academic motivation (Rivers et al., 2012), and self-regulated learning (Fuentes et al., 2019). As Internet is a medium with limitless learning opportunities, it is expected that parenting profiles would be related to adolescents' learning-related Internet use.

Parental Mediation and Adolescents' Internet Use

Whereas parenting style is viewed as a more global, stylistic indicator reflecting the emotional tone between parents and children (Darling & Steinberg, 1993), parental mediation refers to media-specific parenting practices or strategies in which parents regulate and manage their children's experience with the media (Nathanson, 2008). In the context of television viewing and Internet use, three most commonly reported strategies of parental mediation are active, restrictive, and co-use mediation (Clark, 2011). Active mediation refers to parents' positive interactions with their children to explain and/or discuss media content and to guide them regarding appropriate media use, such as parents encourage children to view the material more critically or provide supplemental information; restrictive mediation occurs when parents make rules that limit the time of their children's media use or the content their children is allowed to access; co-use occurs when parents use media together with children (Livingstone & Helsper, 2008). The current study focuses on the former two strategies since co-use is less feasible due to physical constraints in the case of digital devices (Rodríguez-de-Dios et al., 2018).

Studies focusing on the linkage between parental mediation and youth's Internet use abound, especially regarding their amount of Internet use. A meta-analysis of 52 empirical studies revealed that both active mediation and restrictive mediation were negatively correlated with amount of time children spent on media, with restrictive mediation exhibiting a larger effect size (Chen & Shi, 2019). Only a few studies have examined how parenting practices were related to children's specific use types. It was shown that parents' recommendation of useful Websites was positively related to the frequency of children's educational online activities but parental restrictions on time and content was not associated with their actual Internet use (Lee & Chae, 2007). Conversely, a recent study revealed that parents' monitoring of children's computer use was significantly correlated with more learning-related use (Lau & Yuen, 2016). Other related studies, however, employed a broader measure of "online opportunities" without distinguishing between leisure-related and learning-related online activities (e.g., Steinfeld, 2021). These studies generally suggested that more active mediation was linked to more online opportunities while more restriction was associated with reduced online opportunities (Cabello-Hutt et al., 2018).

It is worth mentioning that many researchers adopted the term "Internet/digital parenting style" instead of "parental mediation" to describe parenting practices regarding their children's Internet use (Chou et al., 2016; Konok et al., 2020). It was found that the lowest level of child Internet use was associated with a child-perceived authoritarian Internet parenting style (i.e., high restrictive low active mediation,) whereas the highest level of child Internet use was associated with a permissive Internet parenting style (i.e., low restrictive high active mediation) (Valcke et al., 2010). Notably, the items used to measure parental responsiveness/warmth are very similar to those of active mediation and the demandingness/control variable is largely the same as restrictive mediation, which are distinctively different from general parenting style that is displayed across a wide range of parent-child interactions. As such, neither did this line of research address the role of general parenting style in differentiating adolescents' Internet use, nor did they locate parental mediation within wider family contexts.

Parenting Style as A Contextual Moderator

Recognizing the lack of consistency in children socialization literature, Darling and Steinberg (1993) have proposed a contextual model of parenting in which they suggest that researchers need to distinguish parenting into its component parts (i.e., practices, styles, and goals) to fully understand the socialization process. The model advocates that parenting style differs from parenting practices in that style describes parent-child interactions across a wide range of situations, whereas practices are domain-specific. Based on this distinction, parenting style is thought of as a contextual variable that moderates the links between specific parenting practices and child developmental outcomes. A certain parenting style such as authoritative may enhance the effectiveness of a specific socialization behavior through its influence on children's openness to socialization (Darling & Steinberg, 1993).

Spurred by this theoretical model, researchers have investigated the moderating role of parenting style in the relationship between specific parental practices and children's/adolescents' wellbeing (Fletcher et al., 2008), drug use (Mounts, 2002), academic performance (Spera, 2006), and consumption behaviors (Kim et al., 2015). Inconsistent findings were reported due to researchers' different perspectives (risk-reduction versus neutral or adaptive) as well as the varied measures of parenting practices across different socialization domains. For example, it was reported that for several indicators of children's well-being (e.g., internalizing, externalizing, and social problems), negative associations with mothers' punitive discipline were evident only within the authoritarian parenting style group

(Fletcher et al., 2008). A study pertaining to the academic socialization domain found that the association between parental involvement and academic performance was strongest for students with authoritative parents, indicating a moderating role of parental style (Steinberg et al., 1992). In contrast, evidence provided by Kim and colleagues (2015) did not support the moderating role of parenting style in the relationship between their socialization practices and adolescents' consumer outcomes. Regarding the domain of media socialization, few researchers have attempted to adopt the abovementioned theoretical framework. One exception, however, is a study of cyberbullying, which showed that the prevalence rates of adolescent involvement in cyberbullying either as perpetrators or victims were higher when parents generally used a controlling style but became less controlling when mediating their kids' Internet use (Katz et al., 2019).

The Role of Socio-demographic and School Factors

Various surveys have examined how different demographic variables such as age and gender influence patterns of children and adolescent media use (e.g., Li & Ranieri, 2013). Differences do exist as a function of demographic factors, especially location, gender, grade, and parental education (Lauricella and Cingel, 2020). Therefore, this study considers these demographic variables as controls in the main analysis. School support for students' Internet use is also controlled in the current study given that school sector is another important context where digital experience that be learned apart from the family context (González-Betancor et al., 2021).

Current Study

While exploring the linkage between parenting behaviors and children's Internet use, prior work has primarily examined media-specific parenting practices and paid little attention to general parenting style as well as the interactions between the two types of parenting in relation to different Internet uses. Yet study of this issue would not only provide a more comprehensive understanding of how various interactions in the home context are associated with youth's Internet use, but also help develop targeted interventions and recommendations to parents. Therefore, the goals of the current effort are threefold. First, LPA is employed to identify integrative parenting profiles based on three parenting dimensions (i.e., rejection, emotional warmth, and overprotection) and see how similar these empirically-derived profiles are to the profiles in previous studies which mainly include *rejecting-controller*, *supportive*, *uninvolved*, or *overinvolved* parenting types.

Second, the study examines the associations of general parenting style profiles and parental mediation strategies with adolescents' amount and types of Internet use. It is expected that both parenting constructs would be related to their Internet use. Lastly, drawing upon the contextual model of parenting (Darling and Steinberg, 1993), the moderating role of parenting style is tested. It is expected that the relations of parental mediation strategies with youth's different Internet uses would be moderated by the stylistic context in which they are used. In addition to the core studied variables, all multiple regression analyses included known covariates of adolescents' Internet use; i.e., location, gender, grade, parental education as well as school support for students' Internet use.

Methods

Participants and Procedure

The data for the current study was collected from December 2020 to February 2021 at Xi'an, a provincial city located in Western China. A Student's Family and School Lives Survey was conducted among middle school students, which covers a wide range of issues from demographical information, parenting style, media use, home environment to psychological health and educational achievement. Using the stratified sampling method, nine middle schools were first selected given their representativeness of all middle schools in Xi'an with different school qualities, types, and locations, and then two to four classes from each school were randomly selected based on school size. All students in selected classes were included in the sample and instructions on how to fill out the questionnaires were provided to them by research assistants. Students completed the pencil-paper-based survey under the supervision of a teacher and a research assistant in the classroom during school hours, which took about 30 to 50 min. The final sample consisted of 1284 students from 29 classes in 9 middle schools, of which 48.60% were girls, 53.43% were the only child in their home, and 30.14% were studying in rural schools. The mean age of this sample was about 13.02 years old ($SD = 0.79$). The 7th, 8th, and 9th graders accounted for 39.25, 51.71, and 9.3%, respectively.

Prior to the data collection, participation schools were informed about the purpose, content, and duration of the survey. Approval was obtained from all the selected schools. Prior to beginning completion of the measures, students received detailed information about the purpose of the study, the use of data, and ethical principles, and provided informed consent. To ensure complete anonymity, informed consent did not require a signature or the students' name. Students were told that the participation was entirely

voluntary and they could withdraw from the study at any time. A small gift (i.e., a ballpoint pen) was offered for their participation.

Measures

Parenting style

Parenting style was measured by the Chinese version of Short-Form of the Egna Minnen Beträffande Uppfostran for Children– My memories of Upbringing (S-EMBU-C) (Li et al., 2012). The S-EMBU-C has been widely used and good reliability and validity have been obtained among Chinese young population (e.g., Lian et al., 2016). Consistent with the original S-EMBU, this scale evaluated parenting style in three dimensions, including rejection (6 items), emotional warmth (6 items), and overprotection (8 items). On a 4-point Likert scale (1 = *never*, 2 = *occasionally*, 3 = *often*, 4 = *always*), adolescents were asked to indicate their perceptions about their parents' behaviors. Sample items include “It happened that my parents gave me corporal punishment than I deserve” “my parents treated me in such a way that I felt ashamed” for parental rejection, “my parents praised me” “I felt that warmth and tenderness existed between me and my parents” for emotional warmth, and “When I came home, I then had to account for what I had been doing to my parents” “I felt that my parents interfered with everything I did” for overprotection. A confirmatory factor analysis (CFA) of data from this study confirmed the original structure with three factors. Two items (Item 3 and Item 17) were removed due to the lack of empirical fit, leaving 6 items in the overprotection dimension (see Appendix). After removing the two items, the CFA showed that all the 18 items had loadings higher than 0.4, with good overall model fit indices reported: CFI = 0.951, TLI = 0.943, RMSEA = 0.050, SRMR = 0.044. The Cronbach's alpha coefficient was 0.840 for rejection, 0.867 for emotional warmth, and 0.750 for overprotection, demonstrating good internal consistency. For subsequent LPA analysis, the means of rejection ($M = 1.800$, $SD = 0.668$), emotional warmth ($M = 2.846$, $SD = 0.738$), and overprotection ($M = 2.085$, $SD = 0.633$) were calculated.

Parental mediation

Parental mediation was assessed using a 13-item scale adapted from the study of Rodríguez-de-Dios and colleagues (2018), with 6 items for active mediation and 7 items for restrictive mediation. Sample items include “explain why some websites are good or bad” “talk to me about what kinds of things should or should not be shared online” for active mediation, and “restrict the amount of time I spend

online” “check messages in my email, instant messaging or social accounts” for restrictive mediation. Students reported how often their parents engage in regulatory behaviors during their Internet use on a scale ranging from 1 (*never*) to 5 (*always*). The indices of CFA showed a good fit of the 2-factor model: CFI = 0.961, TLI = 0.947, RMSEA = 0.070, SRMR = 0.055. The Cronbach's alpha for active mediation was 0.876 and for restrictive mediation was 0.863, showing good reliability. By using the mean score of the items for each type of parental mediation, this study created composite indicators for active mediation ($M = 2.911$, $SD = 1.126$) and restrictive mediation ($M = 2.698$, $SD = 0.975$), respectively.

Amount of internet use

The amount of Internet use was represented by students' time spent online, which was measured using two questions: “How many hours on average have you spent on the Internet on weekdays/weekends?” with the six-point scale (1 = *less than 30 min*, 2 = *30 min~1 h*, 3 = *1 h~2 h*, 4 = *2 h~3 h*, 5 = *3 h~4 h*, 6 = *over 4 h*). The score for weekdays was multiplied by 5 and the score for weekends was multiplied by 2. The two scores were then added up and divided by 7 to represent students' amount of Internet use ($M = 2.295$, $SD = 1.197$).

Leisure-related and learning-related Internet use

Adapted from the study of Lau and Yuen (2016), 8 items were used to measure two types of Internet use: leisure-related and learning-related use, 4 items for each type. Students reported how often they engage in certain online activities on a 5-point scale (1 = *almost not*, 2 = *1~2 times per month*, 3 = *1~2 times per week*, 4 = *3~4 times per week*, and 5 = *almost daily*). Items for leisure-related use included: (1) play online games; (2) read online fiction; (3) watch videos for entertainment; and (4) chat with friends via social media platforms such as QQ/WeChat, and items for learning-related use were: (1) search for learning materials; (2) study via the Internet; (3) discuss with teachers or classmates about matters on learning; and (4) watch online course or participate in online learning groups/forums. The 2-factor CFA showed item 2 of leisure-related use (i.e., read online fiction) was loaded lower than 0.4 and thus was removed. The remained 7 items showed good overall model fit indices: CFI = 0.953, TLI = 0.918, RMSEA = 0.070, SRMR = 0.048. The Cronbach's alpha was 0.654 for leisure-related use and 0.771 for learning-related use, demonstrating acceptable internal consistency. The two subscales were then averaged to represent leisure-related ($M = 2.841$, $SD = 1.070$) and learning-related Internet use ($M = 2.954$, $SD = 0.975$), respectively.

Control Variables

Location

This item is coded as rural or urban, with urban as the reference group in the analyses.

Gender

This item is coded as boy or girl, with girl participants as the reference group in the analyses.

Grade

The item is coded as 7th grade, 8th grade or 9th grade, with 7th grade students as the reference group in the analyses.

Parental education

Parental education was represented by averaging 2 items: students' fathers' and mothers' educational level. Students were asked to indicate their mothers' and fathers' education levels on a 6-point scale (1 = primary school or below, 2 = middle school, 3 = high school, 4 = three-year college, 5 = undergraduate, and 6 = postgraduates or above). The mean score for parental education was 3.439 (SD = 1.447).

School support

School support for Internet use was measured by 4 items on a 5-point scale (1 = *not at all true* to 5 = *very true*). Items included: (1) I have smooth access to Internet at school; (2) My school encourages students to use the Internet; (3) Teachers provide us guidance about how to use the Internet appropriately; and (4) We frequently submit our homework through the Internet. CFA indicated good overall fit indices: CFI = 0.980, TLI = 0.941, RMSEA = 0.084, SRMR = 0.022. The Cronbach's alpha was 0.669, indicating acceptable reliability. Scores on these items were averaged, with a larger score indicating higher school support for students' Internet use (M = 2.511, SD = 0.910).

Analytical procedure

Statistical analysis was performed using Stata 15.1 and Mplus 7.4. Following descriptive analysis, the Latent Profile Analysis (LPA) was firstly conducted in order to identify perceived underlying parenting profiles according to three parenting dimensions. LPA is a model-based probabilistic cluster technique that allows researchers to look at how parents differed on multiple dimensions of parenting and to classify parents into various parenting profiles (He & Fan, 2018). The profile number of LPA is not predefined.

Different models with a varying number of profiles are examined and compared to one another in terms of theoretical assumption, statistical criteria, sample size, and uniqueness and interpretability of the profiles (Lubke & Muthén, 2005). When the final solution was established, Bonferroni's multiple comparison t-test was performed to test differences of each parenting dimension indicator across LPA-derived profiles. The differences on two parental mediation indicators were also compared across these profiles. Lastly, six OLS (Ordinary Least Squares) regressions were performed. In the first step, parenting style profiles and parental mediation strategies were entered simultaneously to see their independent effects on adolescents' Internet use. Then, the interaction terms were added in order to test the moderating effects.

Missing values for both the core studied and control variables were examined before the above analyses. The results revealed that data was missing from 129 participants (10%). The major missing data appeared on two variables i.e., parental education (4%) and amount of Internet use (4%). All the other variables revealed <1% missing data. The value for Little's MCAR test was insignificant ($\chi^2 = 153.49$, $df=151$, $p = 0.428$), meaning that missing values were missing completely at random (Little, 1988). Missing values were then replaced using multiple imputations by chain equations¹ (MICE) due to the great flexibility it offers for imputing various types of data (Azur et al., 2011). Based on the simulation of missing values, 20 new datasets were generated and the regression models were tested with each dataset. The results did not differ substantially across these datasets. Given that no consensus has yet been reached about the best way to combine fit statistics (e.g., the R-squared) with multiple imputations (Bodovski et al., 2017), the models reported in the Results section were analyzed with the first dataset that was obtained from multiple imputations². For sensitive analyses, missing values were alternatively imputed using multivariate normal distribution (MVN), and the results remained unchanged.

Results

Parenting Profiles

Using students' reports on the three parenting dimensions as observed variables, models with one to five profiles were estimated and compared. Model retention is evaluated by the Akaike Information Criterion (AIC) and Sample-size

¹ In this study, variables represented cultural activities and cultural resources at home were used as auxiliary variables as these variables were shown to be correlated with parental education significantly ($r > 0.4$).

² The descriptive statistics also used this dataset.

Table 1 LPA model fit indices

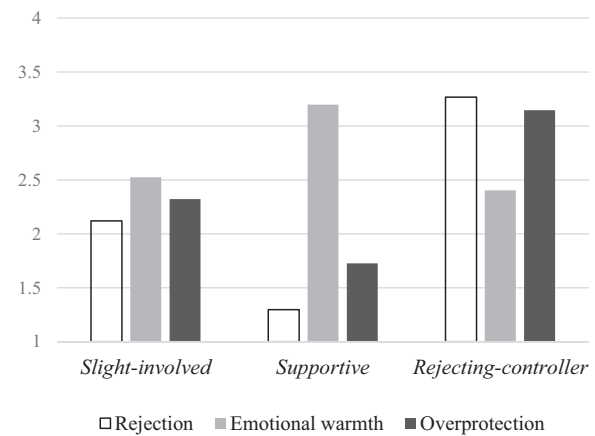
	#1	#2	#3	#4	#5
AIC	7890.36	7114.06	6727.60	6573.00	6493.35
ABIC	7902.20	7133.80	6755.23	6608.52	6536.77
Entropy	–	0.814	0.828	0.853	0.863
LMR p	–	<0.001	<0.001	0.006	0.178

Note. *LMR* Lo-Mendell-Rubin log-likelihood ratio test. The selected model is bolded

adjusted Bayesian Information Criterion (ABIC), for which lower values indicate a better fit (Ferguson et al. 2019). Entropy is used to estimate the accuracy of classification, with higher values suggesting a model that better divides the data into profiles (Nylund-Gibson & Choi, 2018). The Lo-Mendell-Rubin test (LMR) compares the improvement in model fit between the k and $k + 1$ model (Lo et al., 2001). A significant LMR indicates that adding a cluster improves model fit significantly.

Table 1 contains different model fit statistics that were employed to evaluate which model fits the data best. The 5-profile solution shows lowest AIC and ABIC values and highest entropy values, but the LMR test is insignificant for this solution ($p = 0.178$), implying that 5-profile solution is not a better fit than the 4-profile solution. Instead, the 4-profile solution obtains significantly better model fit than the 3-profile solution. To note, the greatest limitation of clustering techniques such as LPA is that there are no standard criteria for selecting the best solution from the options. They are mostly exploratory procedures and the selection must rely on the examination of different profile solutions and theoretical considerations. In this study, although the model fit indices favor the 4-profile solution, 3-profile solution is selected given the uniqueness and interpretability of each profile. Compared with the selected solution, the 4-profile solution further differentiated the scores on parental rejection and overprotection dimension while the score on emotional warmth remained largely the same, making the distinctions among several categories less obvious. Besides, the 3-profile solution also indicates acceptable model fit indices.

Figure 1 and Table 2 summarize the characteristics of the three parenting profiles identified using mean scores. Profile 1 (39.25%) comprises parents characterized by a moderate level of parental warmth but also a moderate level of rejection and overprotection. Hence, this profile is named as *slightly-involved*, to distinguish it from the *overinvolved* and *uninvolved* that were identified in prior literature (Beato et al., 2016). Profile 2 (51.71%) displays the highest level of emotional warmth and the lowest level of rejection and overprotection. Profile 3 (9.03%) presents a converse pattern of profile 2, with a distinctively high level in parental rejection and overprotection but a moderate level in parental

**Fig. 1** The three child-perceived parenting profiles

warmth. Thus, in line with previous research, profile 2 is labeled as *supportive* and profile 3 as *rejecting-controller*.

Table 2 also demonstrates how values for each mediation strategy vary across the three parenting profiles. The *slightly-involved* profile shows a relatively low level of active and restrictive mediation. The *supportive* profile exhibits the highest score in active mediation but a relatively lower score in restrictive mediation. In contrast, profile 3, the *rejecting-controller* displays the highest level of restrictive mediation but a lower level of active mediation.

Regression Analyses

Three multiple linear regressions estimated how general parenting style and parental mediation were associated with teenagers' Internet use (See Table 3). The dependent variables for the three models (Models 1, 3, and 5) were the amount of Internet use, leisure-related and learning-related Internet use, respectively. As shown, compared with the *slightly-involved* profile, adolescents who perceived their parents as *supportive* spent less time online ($b = -0.311$, $p < 0.001$) and evidenced lower levels of leisure-related Internet use ($b = -0.328$, $p < 0.001$). In contrast, adolescents who described their parents as *rejecting-controller* reported significantly higher levels of total amount of Internet use ($b = 0.197$, $p < 0.1$) and leisure-related Internet use ($b = 0.332$, $p < 0.01$) compared with the *slightly-involved* parenting profile. For the two parental mediation strategies, it is shown that active mediation was negatively related to adolescents' amount of Internet use ($b = -0.078$, $p < 0.05$) but was positively related to learning-related online activities ($b = 0.214$, $p < 0.001$). Restrictive mediation was negatively associated with students' amount of Internet use ($b = -0.299$, $p < 0.001$) as well as leisure-related Internet use ($b = -0.149$, $p < 0.001$).

Table 2 Mean value for the three variables of parenting style and two variables of parental mediation by the three parenting profiles

Variables	Profile 1 <i>slightly-involved</i> <i>n</i> = 504, 39.25%	Profile 2 <i>supportive</i> <i>n</i> = 664, 51.71%	Profile 3 <i>rejecting-controller</i> <i>n</i> = 116, 9.03%	Bonferroni's <i>t</i> -test
Rejection	2.120 (0.300)	1.297 (0.244)	3.263 (0.403)	3 > 1 > 2
Emotional warmth	2.523 (0.604)	3.173 (0.650)	2.349 (0.866)	2 > 1, 2 > 3
Overprotection	2.324 (0.468)	1.720 (0.426)	3.134 (0.568)	3 > 1 > 2
Active mediation	2.682 (1.036)	3.108 (1.129)	2.774 (1.280)	2 > 1, 2 > 3
Restrictive mediation	2.806 (0.920)	2.535 (0.933)	3.159 (1.215)	3 > 1 > 2

Note. Bonferroni's multiple comparison *t*-test was used ($p < 0.05$); Standard derivation in parentheses

Table 3 Multiple linear regression analyses of general parenting style and parental mediation on adolescents' Internet use ($n = 1284$)

	Amount of Internet use		Leisure-related use		Learning-related use	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Supportive</i> (ref. <i>slightly-involved</i>)	-0.311 ^{***} (0.070)	-0.032 (0.234)	-0.328 ^{***} (0.063)	-0.041 (0.211)	0.041 (0.057)	0.070 (0.191)
<i>Rejecting-controller</i> (ref. <i>slightly-involved</i>)	0.197 ⁺ (0.117)	0.536 (0.360)	0.332 ^{**} (0.105)	0.502 (0.325)	-0.141 (0.095)	-0.460 (0.294)
Active mediation	-0.078 [*] (0.032)	0.010 (0.053)	-0.016 (0.029)	0.055 (0.047)	0.214 ^{***} (0.026)	0.191 ^{***} (0.043)
Restrictive mediation	-0.299 ^{***} (0.036)	-0.317 ^{***} (0.058)	-0.149 ^{***} (0.033)	-0.157 ^{**} (0.053)	0.034 (0.030)	0.046 (0.048)
<i>Supportive</i> * Active		-0.140 [*] (0.068)		-0.119 ⁺ (0.061)		0.028 (0.055)
<i>Rejecting-controller</i> * Active		-0.125 (0.108)		-0.072 (0.098)		0.077 (0.088)
<i>Supportive</i> * Restrictive		0.045 (0.079)		0.020 (0.071)		-0.040 (0.064)
<i>Rejecting-controller</i> * Restrictive		0.002 (0.116)		0.008 (0.105)		0.032 (0.095)
Urban (ref. rural)	0.138 (0.085)	0.140 ⁺ (0.085)	0.044 (0.077)	0.046 (0.077)	0.168 [*] (0.069)	0.169 [*] (0.069)
Boys (ref. girl)	-0.078 (0.063)	-0.074 (0.063)	0.234 ^{***} (0.057)	0.237 ^{***} (0.057)	-0.127 [*] (0.052)	-0.127 [*] (0.052)
8th.grade (ref. 7 th grade)	0.277 ^{***} (0.068)	0.284 ^{***} (0.068)	0.231 ^{***} (0.061)	0.237 ^{***} (0.061)	-0.101 ⁺ (0.055)	-0.100 ⁺ (0.055)
9th.grade (ref. 7 th grade)	0.216 [*] (0.109)	0.220 [*] (0.109)	0.058 (0.098)	0.062 (0.099)	-0.328 ^{***} (0.089)	-0.328 ^{***} (0.089)
Parental education	-0.083 ^{**} (0.026)	-0.083 ^{**} (0.026)	-0.098 ^{***} (0.024)	-0.098 ^{***} (0.024)	0.026 (0.021)	0.026 (0.021)
School Support	0.122 ^{***} (0.036)	0.119 ^{**} (0.036)	0.101 ^{**} (0.033)	0.099 ^{**} (0.033)	0.083 ^{**} (0.029)	0.085 ^{**} (0.030)
Constant	3.240 ^{***} (0.160)	3.057 ^{***} (0.213)	3.247 ^{***} (0.145)	3.078 ^{***} (0.192)	1.966 ^{***} (0.131)	1.986 ^{***} (0.174)
R^2	0.122	0.125	0.107	0.110	0.120	0.121
adj. R^2	0.115	0.116	0.100	0.100	0.113	0.111

Note. Unstandardized coefficient; Standard errors in parentheses;

⁺ $p < 0.1$, ^{*} $p < 0.05$, ^{**} $p < 0.01$, ^{***} $p < 0.001$

Moderation Analyses

Three additive multiple moderation models were performed to show the interactions between the two parental mediation strategies and three parenting profiles. The interaction coefficients in Model 2 showed how general parenting style would moderate the associations between parental mediation strategies and adolescents' amount of Internet use. As depicted, the interaction term of *supportive* parenting profile with active mediation towards students' amount of Internet use was significant ($b = -0.140$, $p < 0.05$), indicating that

for *supportive* parents, the relationship between their use of active mediation and amount of Internet use was different from that of *slightly-involved* parents. However, the interaction term of *rejecting-controller* and active mediation was not significant ($b = -0.125$, *ns*), implying that the degree to which active mediation was related to adolescents' amount of Internet use had no significant difference between the *slightly-involved* and *rejecting-controller* parenting groups. More specifically, when restrictive mediation was held constant, the relationship between active mediation and adolescents' amount of Internet use was insignificant for

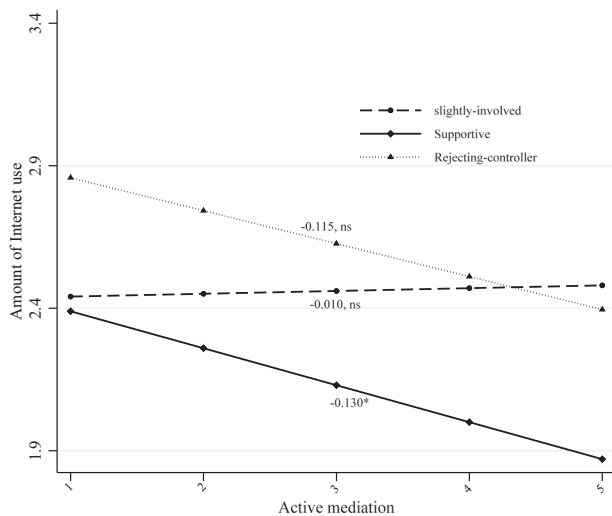


Fig. 2 Associations between active mediation and adolescents' amount of Internet use within different parenting profiles. Note: * $p < 0.05$, *ns*: not significant

both *slightly-involved* ($b = 0.010$, *ns*) and *rejecting-controller* ($b = -0.115$, *ns*) parenting profiles, whereas the association was significantly negative ($b = -0.130$, $p < 0.05$) for the *supportive* parenting profile (visualized in Fig. 2). The interaction terms of restrictive mediation with any parenting profiles were insignificant, indicating that general parenting style did not moderate the relationship between restrictive mediation and adolescents' amount of Internet use. Considering these interactions with the main coefficient of restrictive mediation ($b = -0.317$, $p < 0.001$), it can be further concluded that no matter what parenting style the restrictive mediation was negatively associated with youth's amount of Internet use.

Model 4 examined whether general parenting style would moderate the relations between parental mediation and leisure-related Internet use. The coefficient for the interaction term of active mediation and *supportive* profile was marginally significant ($b = -0.119$, $p < 0.1$), indicating that the association between active mediation and leisure-related use within *supportive* parenting was different from that within *slightly-involved* parenting profile. However, this relation showed no difference between *slightly-involved* and *rejecting-controller* parenting profiles. Simple slope analyses showed that active mediation was unrelated to leisure-related Internet use when general parenting style was *slightly-involved* or *rejecting-controller*, but it was significantly related to children's leisure-related use ($b = -0.064$, $p < 0.1$) when general parenting style was *supportive* (see Fig. 3). For restrictive mediation, again, the interaction terms of any parenting profiles with it were insignificant but the main coefficient of it was significant ($b = -0.157$, $p < 0.01$), suggesting that restrictive mediation

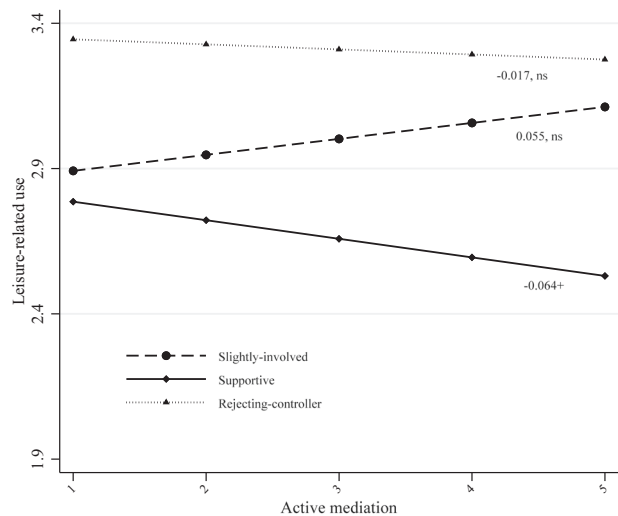


Fig. 3 Associations between active mediation and adolescents' leisure-related use within different parenting profiles. Note: ⁺ $p < 0.1$, *ns* not significant

was negatively associated with adolescents' leisure-related use regardless of general parenting style.

Model 6 investigated whether general parenting style would moderate the relations between parental mediation and youth's learning-related Internet use. None of the four interaction coefficients was statistically significant, indicating that the associations of active and restrictive mediation with online learning activities did not vary by general parenting profiles. Taking the main coefficients of active and restrictive mediation, it is shown that regardless of general parenting style adolescents who experienced active mediation showed higher levels of learning-related Internet use ($b = 0.191$, $p < 0.001$), but restrictive mediation was not significantly associated with learning-related use.

Discussion

The use of Internet is of crucial importance in youth's everyday lives and they learn a lot about its' use in their family. Although some characteristics (e.g., parental education, income) within the family have been widely studied (Zounek et al., 2022), comprehensive analyses on the associations of parenting behaviors, especially parenting style as a general emotional climate in which media-specific parenting practices are used, with different Internet uses are still lacking. Therefore, the present study considered parental mediation in broader family dynamics and investigated how media-specific and general parenting behaviors were related to teenagers' Internet use simultaneously. Based on the conceptual framework proposed by Steinberg and Darling (1993), this study further examined whether

general parenting style moderated the associations between parental mediation strategies and different Internet uses.

Main Findings

The first important finding of this study is that Chinese adolescents' perceived parenting style could be classified into three distinct profiles: *slightly-involved*, *supportive*, and *rejecting-controller*. The *supportive* and *rejecting-controller* profiles closely parallel those derived in prior person-centered studies (Beato et al., 2016), indicating that these two parenting subtypes are relatively stable across cultures. However, the *slightly-involved* profile (parents with moderate levels of emotional support, control, contempt, and rejection) observed in this study is inconsistent with previous findings which commonly discovered another two distinct profiles: *overinvolved* (also known as *supportive-controller* or *highly involved*) and *uninvolved* (also known as *disengaged* or *low support*). Two potential reasons could be used for explaining this inconsistency. Firstly, this study focuses on middle school students rather than primary school students sampled in previous studies. Parental involvement in this stage may decline due to parents' recognition of a rising need for adolescents to express their independence and autonomy, leading to certain changes in parenting style (Spera, 2005). Secondly, different from most studies, this study does not evaluate parenting style separately for mothers and fathers, given that prior work consistently revealed that mothers' and fathers' rearing profiles were very similar across different patterns (e.g., Pereira et al., 2009). It is possible that the scores evaluated together for both parents were higher than those evaluated separately. Therefore, it is suggested that the *slightly-involved* parenting profile is similar to the *uninvolved* or *disengaged* profile that appeared in prior work.

The LPA also indicates that the *supportive* profile occurs most frequently, as it is reported in over half of the cases (52.20%), while the *rejecting-controller* is the least prevailing style (9.15%). This result is in accordance with the study of Shen et al. (2020), indicating that most Chinese families show a high level of warmth but do not favor strict parenting. A possible explanation could be that many children are the only child in their families and receive much more care and love from parents. In the current sample, over one-third adolescents perceived their parents as *slightly-involved*, which may be in relation to the employment status in modern China. With the rapid growth in economy, China has witnessed a rapid rise in the number of dual-earner couples who are faced with increasing difficulties in balancing their time allocation between work and family (Xin et al., 2020).

Furthermore, the study shows that general parenting style was associated with the amount of Internet use and

leisure-related use among adolescents. Specifically, adolescents with *supportive* parents reported lower levels of online time and leisure-related use, though their learning-related use did not differ significantly by parenting profiles. It could be that *supportive* parents are more likely to offer their children rich offline activities (e.g., recommend them books, take them to clubs or arrange them to go on summer campus), making their amount of online time largely reduced. Moreover, the more a child feels parental warmth, support, and love, the more likely his/her emotional needs could be met by parents rather than by cyberspace.

Regarding the other two parenting profiles: *slightly-involved* and *rejecting-controller*, this study indicates that adolescents who experienced the two styles showed significant differences in their amount of Internet use as well as leisure-related use. Compared with *slightly-involved* parenting, those with *rejecting-controller* parents had relatively higher levels of online time and leisure-related use. This would mean that parents' strict rules, a high degree of distrust and rejection imposed upon children are likely to drive their children to the Internet especially online leisure platforms. It is likely that leisure-related use is regarded as a means of alleviating the pressure and negative feelings by children who experienced such poor parenting. Considering the well-documented detrimental consequences (e.g., depression) of such parenting, Internet use, especially leisure-related use, may play a role in preventing these children from severe maladaptive behaviors. But caution is also needed, emotional reliance on Internet may increase the occurrence of Internet addiction or other risky online behaviors, leading to adverse impacts on youth's psychosocial development (Chen et al., 2021). Another notable finding pertaining to general parenting style is that, none of these parenting profiles is related to learning-related Internet use. This result may imply that cultivating a preference toward learning-related online activities requires much more than just emotional warmth within the family, and other potential factors such as family cultural capital should be more critical (Ren et al., 2022).

In line with past research (Chen & Shi, 2019), this study reveals that both active and restrictive mediation strategies were associated with decreased amount of Internet use among teenagers. However, two types of mediation appeared to work differently for specific use types. Restrictive mediation was found to be negatively related to leisure-related use but not to learning-related use. In contrast, active mediation was positively linked to learning-related use but not to leisure-related use. It seems reasonable since Chinese parents generally believe that students should focus on their academic career and online entertainment can easily distract them from their learning, they tend to restrict children's leisure-related activities but actively guide their children to use the Internet for educational purposes.

Moreover, it could be that specific activities on the Internet require different levels of active parental mediation. It is conceivable that teenagers just do not need instructions and help from their parents with specific Internet use, such as with leisure-related use, whereas for more advanced use of Internet these instructions seem to be particularly effective when adolescents also require help (Bonanati & Buhl, 2021). Note that different Internet uses described in this study are not inherently risky or problematic, despite that parents may regard some activities as distracting. Rather, the nature of adolescents' use may place teens at risk while others are beneficial to their learning or development. For example, using social media to reinforce friendship is a developmentally appropriate behavior. However, social media could also be used to disclose private information to strangers or bully peers. Future research should query parents' specific time and content concerns on youth's Internet use and look more closely at how parents incorporate those concerns into parental mediation strategies.

The last notable finding of the study is that general parenting style moderated the relationship between active mediation and Internet use but did not moderate any relationships between restrictive mediation and Internet use. Greater use of active mediation was associated with decreased amount of Internet use as well as leisure-related use within the *supportive* parenting profile only. One possible explanation is that in *supportive* parenting families where parents give sufficient support and warmth to their children, children tend to have a good relationship with their parents, be willing to listen to parents' advice, and follow their media-related guidance. This finding implies the importance of a general positive parenting style as well as consistency in parental approaches to their children. If parents want to effectively intervene in their teens' Internet use, they should adopt a *supportive* parenting style in their daily interactions while employing active mediation strategies in order to make their entire parenting behaviors exert maximum influence on their children's different Internet uses.

Limitations and Future Research

Several limitations of the current study should be noted. As parenting profiles derived from the LPA are highly dependent on parenting dimensions to be involved as the inputs for the LPA, future research should consider other widely-used parenting scales to test the contextual model of parenting (e.g., Maccoby & Martin, 1983). Furthermore, the current study focuses particularly on the role of parenting without taking other primary socialization agents such as schools and peers into account. These factors should be considered together with parenting factors in future work. It is also worthwhile to incorporate other indicators of

parenting, for instance, their own Internet use. Hence, it would be necessary to collect parent-report data, which allows researchers to look at both the children's and parents' perspectives in the context of Internet use.

This study is based on a self-reported survey in a provincial city in China, thus the findings might not be generalized to the national-level Chinese adolescents. In addition, as the data is cross-sectional, it is not possible to confirm the direction of the observed relations or confirm causality. Future studies should use a more representative sample and collect longitudinal data for evidence on the influence of parenting on teens' different Internet uses. Additional research could also include some measures that account for outcomes such as physical or mental health to explore how they are influenced by varying levels of Internet use.

Conclusion

Despite the enormous challenges of regulating youth's Internet use, little is known about how the general and media-specific parenting behaviors interplay to shape their different uses. The current cross-sectional study addresses this research gap by examining the complex associations among general parenting style, parental mediation strategies, and adolescents' amount and types of Internet use. The findings indicate that child-perceived *supportive* parents had teenagers who spent less time online and were less engaged in leisure-related use; more restrictive mediation was associated with teens' less engagement in leisure-related use, and more active mediation was related to more engagement in learning-related use. Importantly, parenting style moderated the relationships between active mediation and adolescents' amount of Internet use as well as their leisure-related use, while the associations between restrictive mediation and different Internet uses were not varied by parenting style. Greater use of active mediation was related to lower levels of time online and leisure-related use within the *supportive* group only. These findings have implications on how parents can be more active in guiding youth's Internet use, especially at a time when digital transformation is speeded by the ongoing COVID-19. Although it seems difficult to foresee ordinary life in a post-pandemic world, Internet use is likely to become more frequent, with many activities being facilitated online that involve teenagers. With this in mind, parents and children may be significantly implicated by embracing these technological changes. Findings of this study suggest the importance of overall emotional climate at home when parents adopt media-specific parenting practices in guiding and regulating their teenagers' Internet use. In practice, in order to effectively mediate youth's Internet use, besides instructing parents to

utilize media-specific parenting practices especially active mediation, it is critical to remind them to create a warm and supportive climate within the family.

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Authors' Contributions W.R. participated in the study design and data collection, performed the statistical analyses, interpreted the results, and drafted the manuscript; X.Z. designed and supervised this study, organized the data collection, reviewed the results, and revised the manuscript. All authors read and approved the final manuscript.

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Data Sharing Declaration The datasets generated and/or analyzed in the current study are not publicly available but can be requested from the corresponding author on reasonable request.

Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

Ethical Approval All study procedures were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The research procedure was approved by the Institutional Review Board of School of Humanities and Social Science at Xi'an Jiaotong University.

Informed Consent Informed consent was obtained from all participants included in the study.

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