

# Visualization, Interaction and Evaluation, and Memory: How Social Media Parenting Practices Mediate the Relationship Between Authoritative Parenting and Mental Health of Young Adult

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**Introduction:** The impact of parenting styles on the mental health of young people has long gained widespread attention, yet in the age of social media, do different forms of social media parenting practice have an impact on the relationship between the two, and how does this impact play out? There is a lack of multifactorial mechanistic analyses in this area.

**Methods:** Based on online survey data from 413 young adults aged 18–24 in China, this study integrates measurements from Thimm et al and Modecki et al on digital parenting practices to examine the roles of visualization, interaction and evaluation, and positive media memory in the relationship between authoritative parenting style (assessed via the PAQ-R and EMBU-C) and young adults' mental health (measured by the MHC-SF) by a chain mediation analysis.

**Results:** (1) there was a significant correlation between authoritative parenting style and young adults' mental health; (2) Interaction & evaluation and positive media memory independently mediate the relationship between authoritative parenting and young adult mental health, but visualization practice do not. (3) Visualization practice, interaction and evaluation, and positive media memory act as pairwise and triadic chain mediators between authoritative parenting and young adult mental health.

**Conclusion:** (1) Digital parenting practices significantly mediate the relationship between authoritative parenting style and young adult mental health. (2) Visualization practice promotes young adult mental health in authoritative family by influencing interaction and evaluation and thus positive media memory. (3) Positive media memory plays a key mediating function in each chain of influence. This implies that various forms of social media parenting practices primarily influence the mental health of young adults in authoritative family in a chain effect mode.

**Keywords:** digital parenting, authoritative parenting, mental health, visualization practice, interaction, evaluation, positive media memory

## Introduction

The impact of parenting style on the development of adolescents and young adults has been widely noted by researchers and practitioners. This impact not only manifests in their psychological and behavioral characteristics but also on their future professional and marital lives.<sup>1–3</sup> It is generally recognized that love and support from the family during a child's formative years can help them develop stable psychological traits. However, whether a child or adolescent receives such support largely depends on the parenting style, which can significantly vary from one family to another. This is especially true when the parenting style is related to a broader sociocultural context.<sup>4,5</sup> For example, the term 'East Asian children' has become popular on social media, referring to the long-term negative impact of authoritarian parenting cultures on children's developmental years.<sup>6</sup> In this context, the digital age not only provides more possibilities for different types of parent-child relationships but also, more importantly, offers more space for the practice of family activities.<sup>7</sup>



In this regard, many studies have analyzed the contributions of digital media on the maintenance of family relationships and role negotiation, especially in terms of information transmission, sharing, visualization, and archiving from the perspective of “doing family”.<sup>8–11</sup> At the same time, the “memory” function of digital media also has an impact on individual identity and family relationships, which, together with the topics of digital memory, digital oblivion and digital immortality, has become an important topic for exploring the construction of family relationships in the era of digital mediation.<sup>12–14</sup> The common fact behind these studies is that the media platforms represented by social media are becoming the new digital infrastructure, and it becomes an important place for people to perform and practice family relationships.<sup>15–17</sup> However, there are no in-depth mechanistic analyses of how the presentation of pictures, the storage of communicative information, and the retention of traces of actions based on the affordance of digital media affect the construction of relationships among family members, especially mental health from the perspective of the individual.<sup>18</sup> In other words, there is a lack of specific analyses of the effects, pathways and mechanisms of different forms of digital parenting practices in the existing research on the association between family parenting styles and members’ mental health, which is a part of the research on mental health associated with family parenting styles in the digital era that needs to be emphasised.

In recent years in China, where authoritarian parenting is traditionally prevalent, a phenomenon of young people becoming “disconnected” due to insufficient support from their families has been observed.<sup>19</sup> Therefore, by focusing on a sample of 413 Chinese young adults (aged 18–25), this study attempts to answer the following questions: First, what role do digital parenting practices through social media play in the relationship between parenting style and the mental health of young adult? Second, how do different types of parenting practices through social media interact with one another to ultimately influence the mental health of young adult? Building on existing research on digital family, this study develops a chain model of digital parenting practices to examine their impact on the relationship between authoritative parenting style and the mental health of young adult.

## Literature and Hypothesis Development

### Authoritative Parenting and the Mental Health of Young Adult

The impact of parenting styles on adolescent behavior, especially academic performance and achievement, has been widely studied.<sup>20–23</sup> In particular, scholars have focused on the relationship between authoritative parenting and adolescents’ academic achievement and the role of this parenting style in the acquisition of good behavior, resistance to bad behavior, and the development of moral values in children and adolescents.<sup>24</sup>

Researchers generally agree that authoritative parenting provides the necessary support to guide children’s behavior and that high levels of parental involvement provide timely responses and emotional support. Some researchers have even posed the question, “Is authoritative parenting the best parenting style?”.<sup>25</sup> However, the precise role of this parenting style has not been clearly identified in terms of process and mechanism. In this regard, Piko and Balázs<sup>14</sup> found that authoritative parenting is significantly and positively associated with children’s negative interactions with the family and significantly and negatively associated with their identification with their parents; however, it was also beneficial to adolescents’ mental health and was notably negatively associated with depression in girls. Uji et al compared the effects of different parenting styles on children’s mental health and found that while authoritative parenting by both parents was significantly negatively related to children’s mental health, authoritarian parenting by fathers only resulted in a significant reduction of symptomatic problems.<sup>26</sup> Meanwhile, permissive parenting did not significantly contribute to adolescents’ mental health. This indicates that the ability to provide the necessary responses is the key to improving adolescents’ mental health, especially when attempting to maintain a balance between discipline and spoiling. We believe that this relationship still holds for young adults in the 21st century, especially as social media has become an integral part of people’s daily lives and an important space for parenting practices. Thus, we present the following hypothesis:

H1: Authoritative parenting positively influences the mental health of young adult.

# The Impact of Digital Parenting Practices

## Visualization Practice

The development of digital media, especially social media, has ushered in a wide range of possibilities for parenting practices. As videos became increasingly common, parents used them to record information about their children's daily lives, leading to the formation of a variety of sharing phenomena and communities such as "iPad babies".<sup>27</sup> Meanwhile, the concept of parenting and how to guide babies, children, and adolescents to use social media have become widely discussed in these communities, reflecting parents' concerns about their children's mediation. This has resulted in numerous discussions on 'mediation, remediation, and intermediation'.<sup>28</sup> In general, such discussions have been limited to "raising" and "protecting" paradigms.<sup>29</sup> The video documentation of a child's life can be a useful way to enhance the parent-child relationship in itself, especially when presented to the public. Krueger and Forest confirmed that relationship displays on social media have a "commitment" effect that can increase relationship satisfaction.<sup>30</sup> Conversely, Aloia and Warren demonstrated that online maintenance techniques significantly impact the parent-child relationship, with parents that use authoritative parenting likely to engage in planning behaviors, comforting messages, and material sharing (eg, exchanging photos, videos, and social media messages/posts). Thus, they are better able to provide parental support to their children and deepen the parent-child relationship.<sup>31</sup>

The development of social media has made it easier for people to visualize their relationships. In this regard, parents often use their children's photos as their avatars to visually express their love and support. According to Finkenauer et al, this type of relationship disclosure is conducive to parents' and children's emotional connection and relationship satisfaction. Meanwhile, various apps have been developed that make it easier for parents to create a variety of videos and document important moments and events in their children's lives.<sup>32</sup> Likewise, the emergence of cloud storage spaces (eg, iCloud) has enabled this visualization practice to traverse the limits of time and space.

Overall, the development of social media and video-image-assisted technologies has made it easier for parents to visualize the parent-child relationship, and this relationship display (as an emotionally mediated expression) is believed to enhance the mental health of young adult. Hence, we present the following hypothesis:

H2: Visualization practice mediates the relationship between authoritative parenting and the mental health of young adult.

## Interaction and Evaluation

Just as photos and videos are created to be shared and viewed, the mediated presentation and dissemination of parents' lives on social media to their children triggers interactions, such as liking and responding, as well as emotional and behavioral responses from the children and other members of the family. In this regard, parents' posts on social media become a visual display of the parent-child relationship, which enhances children's relationship satisfaction and thus mental health by giving them a direct sense of their parents' love and care for them.<sup>33</sup>

The development of social media has made parent-child practices characterized by sharing and performance a major feature of people's emotional lives. Ewin et al found that "joint media engagement" allows parents and children to positively support one another in cognitive, emotional, physical, and technical aspects.<sup>34</sup> From the perspective of "doing family", Thimm pointed out that families are currently being "mediated", and various types of information and relational performances are becoming part of the family construction process.<sup>8</sup> The acts of interacting, commenting, and liking have become the very practice of maintaining and constructing the family. In other words, parents' visualization of their children as a form of parental performance not only strengthens the unity of the family but also enhances the attributes of the community in the form of external praise. While these behaviors are undoubtedly beneficial to the mental health of adolescents, we can anticipate that parents who use authoritative parenting are more likely to post relevant information on social media to show their support for their children. Therefore, we propose the following hypotheses:

H3: Interaction and evaluation mediates the relationship between authoritative parenting and the mental health of young adult.

H4: Visualization practices as well as interaction and evaluation exert chain-mediated effects between authoritative parenting and the mental health of young adult.

## Positive Media Memory

Thimm mainly discussed digital parenting in mediated families from the perspectives of messenger services, sharing, visualization, and family narratives.<sup>8</sup> In this regard, the advantage provided by media affordance in the digital age is that people can break through the limitations of time and space to communicate and share anytime and anywhere. With regard to parents and children, they can leave many comments, pictures, and videos in social media, which become the materialized proof of their relationship and important archival resources in family communication. These resources can also be used in the future to trace the relationship between parents and children.

When analyzing digital parenting practices, scholars tend to focus on the immediate actions and impacts but not the materialization of the memories represented by these archived posts. In recent years, discussions about the digital “right to be forgotten” and the “right to memory” have come to the forefront, as they are related to the concept of “digital immortality” and “being”.<sup>35</sup> Some accounts have also suggested that in the context of digital infrastructures, time can be “assembled”, meaning that the “past” can be combined with the “present.” This indicates that actions from the “past” can impact people in the “present”, which is especially true of digital materials for parent–child communication.

Many studies have shown that remembering and interpreting life events can affect the mental health of young adult.<sup>36,37</sup> In the digital space, parents’ records of their children’s lives (whether posted in social media or preserved in the cloud) as well as the media generated by their daily sharing, communication, and discussion with their children, can be a source of positive memories for their children’s construction (or re-construction) of the parent–child relationship. This may be extremely important for children’s sense of security and the acquisition of a healthy mental state. Thus, we present the following hypotheses:

H5: Positive media memory mediates the relationship between authoritative parenting and the mental health of young adult.

H6: Visualization practice and positive media memory exert a chain-mediating effect on the relationship between authoritative parenting and the mental health of young adult.

H7: Interaction and evaluation and positive media memory exert a chain-mediating effect on the relationship between authoritative parenting and the mental health of young adult.

In summary, various types of digital parenting practices mediate the relationship between authoritative parenting and the mental health of young adult, and these practices are interrelated and progressive. For example, based on the variables in this study, visualization practice serves as a mediator for parent–child and outsider interactions and evaluations, which, in turn, help form positive media memory and ultimately improve the mental health of young adult. Taking digital parenting practices alone, visualization  $\leq$  interaction and evaluation  $\leq$  positive media memory form a chain of interactions centered on parenting practices in the digital age that are both spatial and temporal and have a significant impact on the parent–child relationship. According to Livingstone and Blum-Ross,<sup>38</sup> and borrowing from Goffman’s theory, the identities of parents and children are in a constant process of narrating and re-narrating, with digital parenting practices as the process itself. Therefore, we present the final hypothesis:

H8: Visualization practice, interaction and evaluation, and positive media memory work together to exert a chain-mediating effect between authoritative parenting and the mental health of young adult.

## Research Design

### Sample and Data Collection

This study was conducted in June 2024 with 413 Chinese youths (aged 18–25) who completed an online survey. This age group was chosen because, in China, 18 is the typical age when young people enter universities or the labor market, and parents begin to communicate with their children remotely. Meanwhile, 24–25 is the typical age range for graduating from a master’s degree program, considering that the usual age range for a university graduate is 21–22. Even if they go straight into employment, the youths remain in close contact with their parents, who continue to give their children

**Table 1** Distribution of the Sample's Socio-Demographic Information (N=413)

	Categories	Frequency	Percentage (%)
Gender	Male	188	45.5
	Female	225	54.5
Current status	Study in Middle school	2	0.5
	Study in High school	9	2.2
	Study in College/University	345	83.5
	Postgraduate	31	7.5
	Work and other	26	6.3
Father's occupation	Peasants	55	13.3
	Work in International business or private enterprise	118	28.6
	State-owned enterprises or institutions	62	14.8
	Government departments	21	5.1
	Flexible employment	150	36.3
	Non-working or other	8	1.9
Age	M = 21.5; SD = 1.797; Range: 18–25		

attention and emotional support. Correspondingly, the mental state of young adults at this stage is strongly related to their family parenting style. Considering the many discussions about Chinese young people “breaking up with relatives” in recent years,<sup>39</sup> this study considered this age group as the subject of focus. The demographic information of the final sample is shown in Table 1.

## Measurement

### Authoritative Parenting

For authoritative parenting, we combined Reitman et al's Revised Parental Authority Questionnaire (PAQ-R) with the Embu-C scale and developed a 12-item questionnaire.<sup>40,41</sup> 1) I feel that my parents respect my views; 2) My parents let me develop in a natural way; 3) My parents have strict limits on what I should and should not do, and never give in; 4) My parents often criticize me for being lazy, and I am often criticized for being lazy in front of others; and 5) My parents often say that they cannot spoil me as an excuse for not meeting my demands; 6) My parents trust me and allow me to do certain things on my own; 7) My parents are always picking on my favorite friends; 8) I feel support from my parents if I am faced with a difficult task; 9) I feel that my parents are very strict with me; 10) I feel that my parents interfere with everything I do; 11) I feel that my parents love me; and 12) When I face something bad, I feel that my parents try to encourage me and give me comfort.

The adoption of this methodological approach stems from the PAQ-R scale's theoretical suitability for measuring the supportive dimension of authoritative parenting (eg, emotional warmth, autonomy encouragement), while the EMBU-C scale effectively captures the control dimension (eg, behavioral boundaries, over-involvement). This dual-scale integration aligns with the two-process parenting model articulated by Darling and Steinberg (1993). To ensure contextual relevance to social media-mediated parenting practices, we introduced new items specifically addressing digital caregiving dynamics (eg, Item 7: parental interference in peer selection; Item 10: perceived over-control in daily activities). These adaptations enhance the instrument's capacity to reflect technology-embedded parental behaviors. The resulting 12-item composite scale synthesizes these theoretically coherent dimensions, balancing universal constructs of authoritative parenting with context-specific indicators tailored to contemporary digital caregiving environments.

The participants were asked to answer each question according to their actual situations, based on a four-point Likert scale ranging from 1 (never) to 4 (always). Reverse scoring was applied for items 3, 4, 5, 7, 9, and 10. Finally, the value of authoritative parenting was obtained by totaling the results and dividing the total by 12. The mean score for the variable was 3.11 (SD = 4.98). The reliability of this measure was determined to be  $\alpha = 0.85$ . The KMO value is 0.905 (df=66, p=0.00).

## Visualization Practice

Combined with Thimm,<sup>8</sup> Cino,<sup>16</sup> Tariq<sup>18</sup> analysis of the forms and roles of Visualization in child and parent communication in the family, we developed the following three questions to measure visualization practice: 1) My parents often use my photo or family photo as an avatar or background; 2) My parents will often make videos or albums about me; and 3) My parents have family albums in their cloud drive (eg, iCloud and Baidu cloud). The responses were based on a five-point Likert scale ranging from 1 (definitely true) to 5 (definitely false). Finally, the value of visualization practice was obtained after assigning reverse scores to the respondents' answers, totaling the results of all of the items, and dividing the total by three. The mean score for visualization practice was 3.03 (SD = 0.90). The reliability of this measure was determined to be  $\alpha = 0.73$ . The KMO value is 0.782 (df=3, p=0.00).

## Interaction and Evaluation

Following Modecki et al and Thimm's definitions of digital parenting,<sup>8,42</sup> the responses and evaluations obtained from positive digital parenting practices should not only include children's interactions with their parents' social media posts but also their evaluations of this behavior. Thus, we measured Interaction and Evaluation according to the following five items: 1) I care about the likes and comments on my parents' posts of my content in their friends' circles; 2) My parents receive a lot of likes and comments when they post my content; 3) I will like or comment on my content posted by my parents; 4) I like or comment on my parents' posts of content about their family life; and 5) I like my parents posts related to me in their friends' circles. Their responses were based on a five-point Likert scale ranging from 1 (definitely true) to 5 (definitely false). Finally, the value was obtained after assigning reverse scores for all of the items and dividing the total by five. The mean score for the variable was 3.55 (SD = 0.79). The reliability of this measure was determined to be  $\alpha = 0.79$ . The KMO value is 0.797 (df=10, p=0.00).

## Positive Media Memory

In conjunction with Abel, Barclay, Heimo, Vasquezd et al's study of the role and forms of social media memes in family relationship maintenance,<sup>43-46</sup> positive media memory was measured by the following four items: 1) I look up the pleasant posts that my parents have posted about me; 2) I feel uplifted when I look up my parents' encouraging and loving expressions on WeChat; (3) I look up my parents' encouraging and loving words when I am unhappy; and 4) I keep records of pleasant conversations with my parents. The responses were based on a four-point Likert scale ranging from 1 (never) to 4 (always). The scores of the four items were totaled and divided by four to obtain the value for positive media memory. The mean score for the variable was 2.73 (SD = 0.77). The reliability of the measure was determined to be  $\alpha = 0.80$ . The KMO value is 0.777 (df=6, p=0.00).

## General Mental Health of Young Adult

Referring to Petrillo et al's examination of various mental health measurement scales,<sup>47</sup> we selected the following five items to measure the general mental health of young adults: 1) I am generally happy with everything; 2) I am satisfied with the way I do things; 3) I am making the best use of my time, even if I have been quite busy lately; 4) I am able to concentrate on things; and 5) I am able to deal well with everyday things. The responses were scored from 0 to 10, and the value for general mental health of young adults was obtained by totaling the answers and dividing it by five. The mean score for the variable was 6.37 (SD = 1.78). The reliability of the measure was determined to be  $\alpha = 0.86$ . The KMO value is 0.848 (df=10, p=0.00).

## Statistical Analysis

We first performed a pairwise correlation Pearson test on the main variables to check the appropriateness of the variables that we introduced into the model. The eight hypotheses proposed in this study were then tested using model 6 in Process. A chain-mediated model was used to examine how different forms of social media parenting practices interact with each other to ultimately influence the mental health of young adult in family with authoritative parenting style, but it is important to note that as this study was analysed on the basis of cross-sectional data, the findings and the model would have been more persuasive with the addition of data over a longer period of time.

## Results

### Test for Correlations of Main Variables

Table 2 presents the descriptive statistics for each variable, showing that all the variables related to digital parenting practices are significantly correlated with authoritative parenting and the mental health of young adults. The correlation coefficients for authoritative parenting with visualization practice, interaction and evaluation, and positive media memory were 0.301, 0.440, and 0.445 ( $p < 0.01$ ), respectively. Meanwhile, the three major forms of digital parenting practices were significantly associated with the mental health of young adults, with correlation coefficients of 0.330, 0.430, and 0.434 ( $p < 0.01$ ), respectively. Authoritative parenting was also significantly correlated with the mental health of young adults ( $r = 0.457$ ,  $p < 0.01$ ), indicating that these variables are appropriate for analysis in the research model.

### Hypothesis Testing

For hypothesis testing, we applied Hayes's Process Model 6. The final model indicators were  $R = 0.5997$ ,  $R^2 = 0.3596$ ,  $F = 28.9903$ ,  $df_1 = 8.00$ ,  $df_2 = 423.00$ ,  $MSE = 2.0839$ , and  $p = 0.0000$ , indicating that the model was well fitted. We observed a direct effect of 1.0679 ( $p < 0.01$ ) for authoritative parenting and the mental health of young adults, implying that the model is a partial mediation model. In other words, the various forms of digital parenting practices only partially mediate the relationship between authoritative parenting and the mental health of young adults. Thus, Hypothesis 1, the basis of our subsequent analysis, is supported.

Table 3 presents the results of each path test. First, visualization practices mediated the relationship between authoritative parenting and the mental health of young adults, with a value of 0.0334. However,  $BootLLCI = -0.0924$  and  $BootULCI = 0.1607$  (including 0), indicating that the mediating effect was not significant. Hence, Hypothesis 2 is not supported. Second, interaction and evaluation mediated the relationship between authoritative parenting and the mental health of young adults, with a value of 0.1553. In this case,  $BootLLCI = 0.0338$  and  $BootULCI = 0.3127$  (excluding 0), suggesting that the mediation effect is significant. Thus, Hypothesis 3 is supported. Finally, positive media memory

**Table 2** Descriptive Statistics and Correlation Tests

	Authoritative Parenting	Visualization Practice	Interaction and Evaluation	Positive Media Memory
Visualization Practice	0.301**			
Interaction and Evaluation	0.440**	0.601**		
Positive Media Memory	0.455**	0.485**	0.530**	
General Mental Health of Young Adult	0.457**	0.330**	0.408**	0.434**

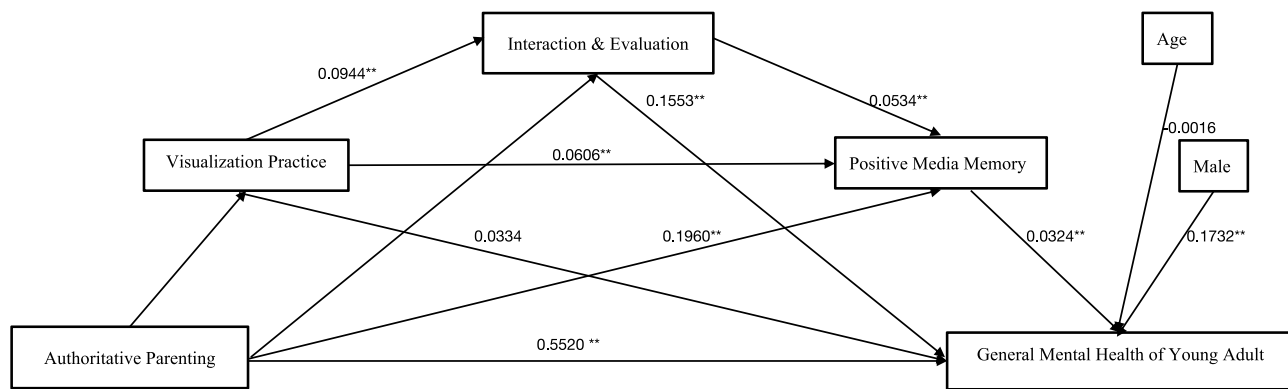
Note: \*\* $p < 0.01$ .

**Table 3** Summary of Process Model 6 Mediation Test Results

Items	Indirect Effect	BootSE	BootLLCI	BootULCI	Direct Effect
Total Indirect Effect	0.6256**	0.1155	0.4211	0.8778	
NAPS $\geq$ Visualization Practice $\geq$ GMHYD	0.0334	0.0637	-0.0924	0.1607	1.0679**
NAPS $\geq$ Interaction and Evaluation $\geq$ GMHYD	0.1553**	0.0710	0.0338	0.3127	1.0679**
NAPS $\geq$ Positive Media Memory $\geq$ GMHYD	0.1960**	0.0613	0.0871	0.3279	1.0679**
NAPS $\geq$ Visualization Practice $\geq$ Interaction and Evaluation $\geq$ GMHYD	0.0944**	0.0414	0.0214	0.1826	1.0679**
NAPS $\geq$ Visualization Practice $\geq$ Positive Media Memory $\geq$ GMHYD	0.0606**	0.0234	0.0228	0.1126	1.0679**
NAPS $\geq$ Interaction and Evaluation $\geq$ Positive Media Memory $\geq$ GMHYD	0.0534**	0.0222	0.0190	0.1040	1.0679**
NAPS $\geq$ Visualization Practice $\geq$ Interaction and Evaluation $\geq$ Positive Media Memory $\geq$ GMHYD	0.0324**	0.0138	0.0111	0.0638	1.0679**

Note: \*\* $p < 0.01$ .

Abbreviation: GMHYD, General Mental Health of Young Adult.



**Figure 1** The Chain Mediation Effects of the Main Variables.

**Note:** \*\* $p < 0.01$ .

mediated the relationship between authoritative parenting and the mental health of young adults, with an effect size of 0.1960 (BootLLCI = 0.0613, BootULCI = 0.0871). In this regard, Hypothesis 5 is supported.

Further testing of the interactions between the three types of digital parenting practices in the relationship between authoritative parenting and mental health of young adults showed that visualization practices significantly influenced this relationship by influencing interaction and evaluation ( $r = 0.0944$ , BootLLCI = 0.0214, BootULCI = 0.1826). Likewise, visualization practice significantly influenced the relationship between authoritative parenting and the mental health of young adults by influencing positive media memory ( $r = 0.0606$ , BootLLCI = 0.0234, BootULCI = 0.0228). These findings support Hypotheses 4 and 6. Furthermore, Interaction and evaluation significantly influenced the relationship between authoritative parenting and the mental health of young adults by influencing positive media memory ( $r = 0.0534$ , BootLLCI = 0.0190, BootULCI = 0.1040), supporting Hypothesis 7.

Finally, visualization practice significantly chain mediated the relationship between authoritative parenting and the mental health of young adults ( $r = 0.0324$ , BootLLCI = 0.0111, BootULCI = 0.0638) by influencing interactions and evaluations, which, in turn, affected the formation of positive media memory and ultimately the relationship between authoritative parenting and the mental health of young adults ( $r = 0.0534$ , BootLLCI = 0.0190, BootULCI = 0.1040). Therefore, Hypothesis 8 is supported.

To further clarify how digital parenting practices affect the relationship between authoritative parenting and the mental health of young adults, we plotted the results of Table 3 in Figure 1, which indicates that visualization practices alone do not significantly affect the relationship but mediate this relationship by affecting interactions and evaluations and positive media memory. There is a chain mediation effect among the three digital parenting practices. It means parents with high levels of authoritative parenting are likely to engage in visualization practice, which, in turn, enhances interactions and evaluations and ultimately positively impacts the mental health of young adults by promoting the formation of positive media memory.

## Discussion

This study examined how various types of digital parenting practices influence the relationship between authoritative parenting and the mental health of young adults, based on the theoretical perspectives of “digital family” and “mediated affection”.<sup>48</sup> We found that authoritative parenting does have a positive association with young adults’ mental health and this relationship is partially mediated by social media parenting practices. Further exploration of the specific roles of different forms of social media parenting practices reveals that visualization practices alone do not play a direct and significant role in mediating the relationship between authoritative parenting style and young adults’ mental health, in contrast to interaction and evaluation and positive media memory. The mode of operation of visualization practices is through the facilitation of interaction and evaluation, which in turn triggers positive media memory to promote a positive effect between authoritative parenting style and young adults’ mental health. Combining the independent mediation effect value and the roles in all chained mediation pathways, it can be found that positive media memory assumes a key

role in various chains of influence on young adults' mental health in authoritative families. Further, we develop the following analyses of the above results.

- 1) Social media parenting practices do mediate the relationship between authoritative parenting style and young adults' mental health.

As stated by Serrano-Puche and Solís Rojas,<sup>49</sup> digital space is a sociotechnological environment configured around various platforms, and the affordance of the platforms themselves contribute to human emotional practices in the digital age. For parent–child relationships, parenting styles have become a manifestation of the parents' sociocultural characteristics or behavioral tendencies, which, combined with the visualization capabilities of the Internet, the storage capabilities of cloud technology, the distribution and interaction capabilities of social media, and the intertemporal storage capabilities of the overall digital infrastructure, comprise concrete and performable digital parenting practices.

Visualization practices provide mediators with follow-ups and starting points, which can together become a resource for families with positive parenting styles. Therefore, upon entering the digital parenting era, families who had already adopted supportive parenting attitudes toward their children are more likely to adopt positive digital practices that contribute to their children's mental health. However, it is important to determine whether parents' digital technological competence affects their digital parenting practices, and the extent of its influence on their children's mental health. The results of this study, while corroborating Piko and Balázs's<sup>14</sup> and Uji et al's<sup>16</sup> findings on the relationship between parenting styles and children's mental health, demonstrate how digital parenting practices play an important role in this relationship.

- 2) “Visualization - Interaction and Evaluation - Positive Media Memory” constitute an effective chain of digital practices that influence the mental health of young adults in families with authoritative parenting style, with the role of positive media memory being the most central.

While much of the focus has been on the impact of specific digital parenting practices on the behavior or psyche of young adults, such as Thimm's research on the ability to influence messaging, sharing, visualization, and the construction of family narratives,<sup>8</sup> few studies have examined digital parenting as a systematic practice. From a historical perspective, researchers have focused on the differences and evolution of digital parenting manifestations over time. Although the significance of digital space (as a space for the performance of parent–child relationships) and social media (as a platform for “emotional mediation”) has been noted, a comprehensive ecosystem chain has yet to be developed to analyze the pathways through which digital parenting influences children's mental health. This study reveals such a mechanism from the perspective of dynamic relationships. Specifically, we find that visualization practices, interaction and evaluation, and positive media memory are dynamic processes with time-series significance.

In general, the developments in media technology have made it easier for parents, especially those who tend to give positive responses and support to their children, to visualize the parent–child relationship. Specifically, visualization practice generates a “medium” that triggers emotional responses in the parent–child relationship, ultimately influencing the construction of the individual's memories of the parent–child relationship, which, in turn, positively impacts their mental health. This process of communication and feedback, although ostensibly taking place within the family, is a combination of media affordance and responses from an extra-familial public, and is the result of parenting practices within the sociocultural environment and society as a whole. Hence, rather than solely examining the impact of a specific form of digital parenting on children, a more holistic approach should be to utilize the perspective of the digital parenting chains as a whole.

- 3) Visualization practice does not work alone, but rather in conjunction with interaction and evaluation and positive media memory to influence the mental health of young adults.

Although many studies have demonstrated that relationship displays on social media have a “commitment” effect that increases relationship satisfaction, in turn affecting adolescents' mental health,<sup>20</sup> we found that visualization practice

alone may not enhance the mental health of young adults. However, this may be related to the age group. In this regard, Jeffery found that adolescents do not want their parents to reveal too much of their relationship,<sup>7</sup> as this can lead to a “contextual collapse” and “disruptive effects” on the children. Meanwhile, the effects of visualization practice on the mental health of young adults are primarily mediated by providing parent–child interaction topics that become part of positive media memory. This result echoes Simons et al’s findings that family interactions enhance children’s relationship satisfaction and, in turn, their mental health.<sup>23</sup> It is also in line with Livingstone et al’s conclusion that the identities of parents and children in the family are constructed through constant interactions and narratives.<sup>28</sup>

The positive external reviews obtained from parents’ visualization of the parent–child relationship allow children to receive identity feedback from their out-groups, which is beneficial to their mental well-being. This echoes Koutamanis et al’s analysis of the role of social media reviews in adolescents’ psychological mechanisms.<sup>50</sup> Thus, interactions and evaluations not only contribute to the maintenance of the “intra-family” relationship between parents and children but also to the possibility for them, as a “community”, to jointly gain recognition and psychological support from the outside world.

Finally, social media’s transcendence of time and space facilitates the generation of positive media memory based on stored communication records. In this regard, the storage, display, and constant invocation of such communication processes become a positive psychological resource for the mental health of young adults. Therefore, determining how to further contribute to the generation of such resources through various practices should undoubtedly be one of the subjects of focus in the era of the digital family.

## Limitations

This study includes four limitations that should be noted. First, while there are many possible associations between parenting styles and the mental health of young adults, this study only examined the relationship between the digital parenting practices of authoritative parents and their children’s mental health, limiting a multifaceted perspective about the roles that other types of parenting styles can play in the mental health of young adults. Second, this study was based on a sample of Chinese young adults, raising the following questions: 1) Does China’s particular sociocultural environment play an important role in the findings?; 2) Is the parenting style alone sufficient for summarizing the role of family sociocultural factors in digital parenting practices?; and 3) Are there differences in the digital parenting practices among parents in different cultures, which would have different effects on the mental health of young adults? These questions deserve further exploration. Third, this study examined the role of digital parenting practices in the mental health of young adults by examining digital parenting practices in terms of three ephemeral segments: visualization practice, interaction and evaluation, and positive media memory. However, in practice, there are many other forms of digital parenting practices, including negative practices such as “curatorial interventions” that can impact the mental health of young adults. Thus, exploring and expanding more comprehensive models of digital parenting practices should be a future research endeavor. Finally, the role of gender and age was only briefly presented in [Figure 1](#), which showed that digital parenting is more effective for young men and that it decreases with age. Nevertheless, the complexity of these associations is worth exploring in future studies.

## Conclusion

This study developed a chain model to determine how digital parenting practices through social media impact the relationship between authoritative parenting and the mental health of young adults. We found that two variables, interaction and evaluation and positive media memory, significantly mediated the relationship between authoritative parenting and the mental health of young adults, whereas one variable, visualization practice, chain mediates this relationship along with the abovementioned variables. The following three areas are worthy of deeper consideration in future research.

First, traditionally, most discussions on digital parenting practices have focused on the issue of monitoring or helping children digitally. However, Livingstone et al confirmed that contemporary digital parenting practices have shifted to the topic of the construction, interaction, and recursion of parent–child relationships in digital spaces. This indicates that the digital space represented by social media is no longer simply a space for parents to monitor their children’s digital use<sup>51</sup> or have “parenting discussions” with third-party bloggers. Rather,<sup>17</sup> this space is a real-life space constructed by the presence of parents as well as children. Thus, when discussing the transformation of

digital parenting practices, our research questions should go beyond the external objectification of children's problematic digital media use and address how children and parents use and interact in digital spaces, what the media facilitates, and the psychological and social consequences that emerge. In sum, it is important to focus on the interaction process itself to explore how digital parent-child relationships are constructed in different sociocultural contexts.

Second, as digital parenting practices are based on a combination of technological affordance and sociocultural contexts, an analysis of the relationship between parenting styles and the mental health of young adults cannot fall outside of this framework. In this regard, Jeffery found that such practices are a result of a joint combination (or collision) of socio-biological and sociotechnological interactions.<sup>7</sup> In terms of technology, visualization practices, interaction and evaluation, and positive media memory all depend on the material functions of digital technology and the use of people based on these functions. Meanwhile, from the perspective of parenting styles, such practices are manifestations of sociocultural characteristics that traverse history in technologically mediated interpersonal interactions. Hence, research on digital parenting practices should not only focus on the "materiality" represented by the affordance of technology but also on the sociocultural characteristics embedded in such technologies. Only by combining these perspectives can we reveal the sociocultural contexts in which parents adopt digital parenting practices and their impact on children. Besides, without an understanding of different sociocultural characteristics and stages of technological development, it would be difficult to discuss digital parenting practices in a way that can help young people access mental health resources in different contexts.

Finally, "doing family" and "affective mediation" represent two of many theoretical paths of our observations of social media in relation to the parent-child relationship. However, "affective" prioritization is only a typical feature of interactions on social media; the reality is that all physical and instrumental parts of the relationship will unfold through digitally mediated interactions. In this case, some features of the medium, such as "time combination", "spatial mobility", and the "social mediatization" of the mode of interactions, will have a significant impact on the future construction and development of the parent-child relationship. Moreover, when considering the use of artificial intelligence (eg, Siri and "Xiao Ai") as auxiliary tools in this relationship, examining the patterns of relationship occurrence between different actors becomes even more important.

In conclusion, it is hoped that our study will be used as a reference for promoting the mental health of young adults in digitally mediated social life scenarios through the role of the family, the fundamental unit of human solidarity. This is especially important for helping young people from different sociocultural backgrounds obtain better access to family support. Specifically, in practice, it is hoped to (1) promote the active adoption of various forms of social media parenting practices by families, which are effective in promoting the mental health of young adults, and (2) focus on the construction of positive media memory, which is the most effective way to promote the mental health of young adults. This study theoretically seeks to illuminate the specific pathways and mechanisms through which digital parenting practices enhance family members' mental health. However, its conclusions are constrained by cross-sectional data derived exclusively from authoritative parenting families within China's monocultural context, limiting temporal causal inferences and cross-cultural generalizability. To address these constraints, future research should adopt longitudinal tracking designs to capture dynamic developmental trajectories, expand sampling to include diverse parenting typologies (eg, permissive, authoritarian), and conduct cross-cultural comparative analyses across heterogeneous sociocultural contexts to enrich the universality and applicability of findings.

## **Ethics Approval and Informed Consent**

Hereby, the authors of this paper; Ruixia Han do consciously assure that this study has followed the guidelines and principles as set forth by the following ethical statement:

1. The body of work comprising this paper is entirely original and none of it has been previously published.
2. Informed consent was obtained from all participants in this study prior to their participation.
3. This study's research methodology, the data collected, and findings were all conducted without anything being falsified or purposefully altered.

4. This study was conducted under the principles set forth by the most recent Declaration of Helsinki ethical standards and the World Medical Association to ensure the safety, well-being, and overall benefit of all study participants. And the study was approved by the Ethics Committee of Shanghai Jiao Tong University (No.H202302681).

## Disclosure

The author reports no conflicts of interest in this work.

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