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Parenting Style and Children's Self- Care Ability: The Moderating Role of Executive Function

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ABSTRACT

Background: Children's self- care ability (SCA) is a very important part of early development and school readiness. Previous studies have shown that parenting style is essential factor that influence young children's SCA. However, much less is known about the association between different types of parenting styles and children's SCA, let alone the moderating role of executive function (EF). **Methods:** This study used measures such as parenting style, EF and SCA to survey children (N = 482) aged 3–7 years old and their parents. **Results:** The results indicated that democratic parenting style was positively correlated with children's SCA, while other par- enting styles were negatively correlated with children's SCA. Moreover, with the exception of inconsistent parenting style and authoritarian parenting style, the predictive effect of parenting styles on young children's SCA is moderated by young children's EF: Democratic parenting styles and children's SCA were significantly and positively correlated when children's EF was high rather than low; coddling and permissive parenting styles and children's SCA were significantly and negatively correlated when children's EF was high rather than low. **Conclusions:** These findings suggest that democratic parenting styles are effective in promoting the development of SCA in children with high EF.

1 | Introduction

For young children, self- care ability (SCA) mainly refers to basic life skills, including six common self- care categories: eating and drinking, toileting, grooming, appearance care, health care and dressing (Sparrow, Bella, and Cicchetti 1985; Chien, Brown, and McDonald 2014). SCA is regarded as a very important part of early development and school readiness (Sato et al. 2020). Developing age- appropriate SCA is the first step toward be- coming independent for young children, which is an important stage of psychological development (Hazen, Schlozman, and Beresin 2008). A survey of Australian teachers' perceptions of school readiness indicated that a child's age- appropriate SCA contributes to the quality of a teachers' class management and daily activities (Serry et al. 2014). A study of young Japanese children found that SCA was positively related to later assertion and cooperation (Zhu et al. 2022). Some studies have shown that parenting styles are important factors that influence young children's SCA (Lin et al. 2016; Wan and Zou 2010). However, there is a lack of research ad- dressing the predictive role of different types of parenting styles on young children's SCA. In addition, the dynamic interaction model suggests that the interaction between young children

Summary

- Democratic parenting style was positively correlated with children's SCA.
- With the exception of inconsistent parenting style and authoritarian parenting style, the predictive effect of parenting styles on young children's SCA is moderated by children's executive function (EF).
- Democratic parenting styles and children's SCA were significantly and positively correlated when children's EF was high rather than low.

and their environment is dynamic and bidirectional (Feldman and Klein 2003). This means that not only does the external environment has an impact on a young child's development but a young child also influences the environment in which he or she lives through his or her own behaviours. For example, it has been suggested that for 2- to 3- year- olds, the greater the child's own effortful control, the less the quality of mother–child in- teraction plays a role in cognitive flexibility (Wang, Hong, and Zhu 2021). However, the vast majority of current research still focuses mostly on the effects of parenting behaviours or parenting styles on young children's executive function (EF), ignoring the fact that young children's varying levels of EF development may result in their responding differently to the same parenting styles. The effects of parenting style on children's SCA may vary with children's EF. Therefore, this study wanted to investigate the relationship between different parenting styles and young children's SCA and whether EF plays a moderating role in the relationship between parenting styles and young children's SCA.

2 |Parenting Style and Children's SCA

The family parenting style refers to the sum of the concepts, emotions and behaviours expressed by the parents in the process of raising their children. It is a relatively stable behaviour mode (Wang and Fu 2005). Baumrind (1971) argued that paren- tal influence on child development is constructed around three parenting styles: authoritarian, permissive, and authoritative. And later, Chinese scholars Yang and Yang (1998) categorised parenting styles into five dimensions, which are coddling, democratic, permissive, authoritarian and inconsistent parent- ing styles. Coddling parenting style means that parents over- satisfy their children's needs and at the same time obey their children's unreasonable demands without principle (Zhang, Yang, and Song 2006). A democratic parenting style is one in which parents are willing to communicate regularly with their children, respect them and reward and punish them appropriately (Zhang, Yang, and Song 2006). Permissive parenting is when the parent pays little attention to the child's behaviour (Baumrind 1966; Zhang, Yang, and Song 2006). Authoritarian parenting is when the parent demands obedience from the child and exerts too much intervention and pressure on the child (Baumrind 1991; Baumrind 2012). Inconsistent parenting style is when parents' behaviours and rules change frequently and are unpredictable when dealing with their children (Zhang, Yang, and Song 2006).

One of the key indicators of school readiness is SCA (Xie and Li 2018). Previous studies have shown that positive parenting characterised by warm, supportive and sensitive interactions has been found to support children's school readiness, and nega- tive parenting characterised by harsh, inconsistent and less sen- sitive interactions is detrimental to children's early competencies (Merz et al. 2017; Razza and Raymond 2013; Tamis- Le Monda, Bornstein, and Baumwell 2001; Xie and Li 2018). Positive par- enting predicts children's better readiness skills, while negative parenting predicts children's failure to adapt to kindergarten or primary school (Brooks-Gunn and Markman 2005; Brophy- Herb et al. 2013; Prendergast and MacPhee 2018). Other stud- ies also have shown that parenting style is an important factor in influencing young children's SCA (Lin et al. 2016; Wan and Zou 2010). Despite this preliminary evidence, more specific research on how different types of parenting styles have a pre- dictive effect on young children's SCA is still very limited, and this study will attempt to fill this research gap by exploring the predictive effects of different types of parenting styles on SCA in young children.

3 |The Moderating Role of EF

EF is a series of top–down mental processes that occur when individuals need to concentrate and pay attention and that include three core components: working memory, cognitive flexibility and inhibitory control (Diamond 2013; Smith and Jonides 1999). The development of EF plays an important role in the develop- ment of preschool children, and it is the foundation for children to develop various abilities related to daily living (Xiao, Zhou, and Li 2015). It has been shown that working memory, cognitive flexibility and inhibitory control in children's EF can help children to manage their behaviour in social situations, which in turn can influence their development and adaptation (Carlson and Wang 2007; Riggs, Blair, and Greenberg 2004; Gujral et al. 2014). For 2- to 3- year- olds, the higher the toddler's own level of effortful control, the less the quality of mother–child interaction plays a role in their cognitive flexibility (Wang, Hong, and Zhu 2021). Although the dynamic interaction model assumes that the role of the young child and the environment is dynamic and bidirectional (Feldman and Klein 2003), current research ignores the fact that young children's varying levels of EF development may result in different responses to the same parenting style. Children with high levels EF may be better able to adapt their behaviour to respond to external influences on them, which may include the influence of parenting styles. This means that children may be able to adjust their behaviour to reduce the negative effects of negative parenting and adjust their behaviour to enhance the positive effects of good parenting, including the effects on their own SCA. For example, democratic parenting styles emphasise children's autonomy and participation, and young children with higher levels of executive functioning are usually better able to understand and participate in the decision- making process and may be able to make greater progress in their ability to care for themselves, compared to young children with lower levels of executive functioning. The effects of parenting style on children's SCA may vary with children's EF. Therefore, this study wanted to investigate whether EF plays a moderating role in the relationship between parent- ing styles and young children's SCA.

4 | Current Study

Parents adopt different parenting styles, which affects the development of children to a certain extent (Lin and Li 2018; Yan et al. 2021). It has been shown that not only the parenting styles of children with special needs can affect SCA (Bourdeau et al. 2007; Boutain, Sheldon, and Sherman 2020; Kelo and Eriksson 2011; Perna and Talka 2012; Tarazi, Zabel, and Mahone 2008) but also that the SCA of normal young children is affected by parenting style influence (Lin et al. 2016; Wan and Zou 2010). However, much less is known about the association between different types of parenting styles and children's SCA, let alone the moderating role of EF. The solution to this problem will help parents reflect on their parenting style and improve their family's education level. Therefore, the research hypothe- ses are discussed in this study.

Hypothesis 1. Democratic parenting styles are positively related to young children's SCA. Other parenting styles are negatively associated with young children's SCA.

Hypothesis 2. The moderating role of EF in the relationship between parenting style and young children's SCA is significant for children with high levels EF.

5 | Method

5.1 | Participants

The Ethics Committee of the first author's university approved the study. In this study, 10 kindergartens were randomly selected from Changchun City, Jilin Province and Yongji County. There are normally three grades in a Chinese kindergarten: (1) first year in kindergarten, (2) second year in kindergarten and (3) third year in kindergarten. Parents voluntarily signed up. A total of 500 children were selected (10 children in each class) through a random sampling method to perform an EF test, and parent questionnaires were distributed in the form of online questionnaires. Invalid questionnaires were eliminated, 482 valid questionnaires were recovered and the questionnaire recovery rate was 96.4% (Table 1). Among the young children, the age range was 2–7 years (M = 5.02, SD = 1.13); there were 233 boys (Mage = 4.93, SD = 1.12) and 249 girls (Mage = 5.10, SD = 1.15). First year in kindergarten with 156 children (Mage = 3.88, SD = 0.55), second year in kindergarten with 163 children (Mage = 5.03, SD = 0.80) and third year in kindergarten with 163 children (Mage = 6.10, SD = 0.07). All children were Chinese.

5.2 | Measures

Parenting Style Questionnaire. Yang and Yang's (1998) parenting style questionnaire was used in the study. The questionnaire has 40 questions and five dimensions: coddling parenting style, democratic parenting style, permissive parenting style, authoritarian parenting style and inconsistent parenting style. One of the questions of coddling parenting style was *parents do not criticise their children even when they make mistakes for fear of upsetting them*. One of the questions of democratic parenting style was *making the child obey by reasoning*. One of the questions of permissive parenting styles *was not caring about the little things in your child's life*. One of the questions of authoritarian parenting style was *scolding children when they disobey*. One of the questions of inconsistent parenting style was *sometimes criticises and sometimes does not care if the child does something wrong*. The 5- point scoring method was used, and the question- naire was completed by the parents. The scores were calculated using average scores. Higher scores in a dimension indicated the dominant parenting style of a family. Zhang, Yang, and Song (2006) conducted a research study on parenting styles of children aged 3–9 years using this scale, and the internal con- sistency reliability of the questionnaire was 0.81. After testing, the Cronbach's α coefficient in this study was 0.82, and the di- mensional coefficients were 0.77, 0.80, 0.80, 0.63 and 0.84, re- spectively, indicating good internal consistency. In addition, the validity of the results was verified by exploratory factor analysis and confirmatory factor analysis. The results of exploratory fac- tor analysis showed that the KMO was 0.91, and Bartlett's test of sphericity reached a significant level ($p < 0.001$), indicating that the data are suitable for factor analysis. The overall explana- tion rate was 45.39%; confirmatory factor analysis removed 12 items according to the model revision index. The fitness indica- tors of the model were all within the acceptable range: GFI, IFI, TLI and CFI were 0.91, 0.92, 0.91 and 0.92, indicating that the model had a good fit, which means that there is good structural validity.

Children's SCA Questionnaire. This study used the Children's Self- care Ability Questionnaire Section of the Social Adaptation Behaviour Scale for Children by Wang et al. (1992). The questionnaire had 26 questions, including six items on food, clothing, hygiene, safety and sleep, and the questionnaires were completed by the parents. One of the questions was the child washes and dries his or her own hands. The questionnaire adopted a five- item scale that assigned the highest score of '5' to 'completely able' and the lowest score of '1' to 'completely unable'. The scores were calculated using average scores. Du (2022) also used the SCA questionnaire, which had a Cronbach's α coefficient of 0.86. After testing, the Cronbach's α coefficient of the questionnaire in this study was 0.93, indicating good internal consistency.

Executive Function Test. A total of 10 masters and doctors in preschool education went to each kindergarten class to take the test, first recording their age and gender before taking the test, then using the research tool to take the test and giving them stickers and other rewards at the end of the test.

Inhibitory control measurement tool. This measurement uses the day/night Stroop task (Gerstadt, Hong, and Diamond 1994; Fei et al. 2019; Jiao, Gai, and Guo 2017). The test requires the preparation of 10 pictures each of the sun and the moon and four pictures of the sun and moon for test pages, and a total of 16 pages are used for the formal test. Before the test, the researchers confirmed that the children knew the sun and the moon. The tester then explained the rules: 'The sun represents the day, and the moon represents the night, so we need to play a game together. When you see the sun, please say night, when you see the moon, please say day'. When the child understood the instructions, the tester used the test page to start the first

TABLE 1 | Description of demographic variable.

Item	Category	Frequency	Percentage	Item	Category	Subcategory	Frequency	Percentage
Sex	Boy	233	48.3	SES	Education	Junior high school and below	168	34.9
	Girl	249	51.7			High school	68	14.1
Age	2 years old	3	0.6			Specialised	81	16.8
	3 years old	33	6.8			University	100	20.7
	4 years old	140	29.0			Master and above	65	13.5
	5 years old	130	27.0		Occupation	Bachelor degree	32	6.7
	6 years old	128	26.6			Freelance	34	7.1
	7 years old	48	10.0			Agricultural labourer	62	12.9
Nature	Public	298	61.8			Commercial worker	83	17.2
	Private	184	38.2			Administrative worker	77	16
Administrative divisions	City	122	25.3			Professionals and technicians	17	3.5
	Rural	360	74.7			Unit heads	87	18
Class	Kindergarten	156	32.4			Others	90	18.6
	Second year in kindergarten	163	33.8		Monthly family income	3000 RMB and below	213	44.2
	Third year in kindergarten	163	33.8			3001–6000 RMB	126	26.1
						6001–10000 RMB	83	17.2
						10 001–30 000 RMB	49	10.2
						Above 30 000 RMB	7	1.5
							4	0.8

test. After confirming that the child understood the rules, the tester used a stopwatch to track the time. A correct answer was counted as 1 point, and an error was counted as 0 point; the highest possible total score was 16 points. The first response was the one considered for the test. Finally, the score was con- verted to a rate, that is, the number of correct responses divided by the time. Working memory measurement tool. Using the back- to- back digital test (Gai et al. 2021) in Webster's Intelligence Scale for Children (WISC- IV), researchers prepared a string of numbers from 2 to 9. Using a recording, the tester played each digit sepa- rated by 1 s. Digit strings of the same length appeared twice, and one digit was added every other time the recording was played so that the child would recall the digit string he/she heard. When the child said the same digit string incorrectly twice, the quiz stopped. Recalling a string of numbers correctly was counted as 1 point, while recalling it incorrectly resulted in 0 points; the total maximum score was 16 points. Cognitive flexibility measurement tool. Fei's dimensional card classification task was adapted on the basis of Frye (Fei et al. 2021; Frye, Zelazo, and Palfai 1995) and used to test whether the children could flexibly recognise the classification rules. The materials used in the test were seven groups of cards; one set was used for the demonstration, and the remaining six sets were used for the formal testing. The cards had three di- mensions: colour (red, yellow, blue and green), shape (triangle, square, circle and rectangle) and size. There were four cards in a set, and the tester prepared seven sets of different card combina- tions for each group, such as 'large yellow circle, large red rect- angle, small blue circle, small yellow triangle'. Before the test,

the tester first provided a demonstration. Once the formal test began, the child was asked to find three combinations in each set of cards and explain the reasons for the combination. Each correct combination was scored as 1 point, and 0 point was given when an incorrect combination was reported; the maximum total score was 18 points. The final EF scores were calculated using average scores. SES. Based on Ren's method for calculating family socioeco- nomic status (Ren 2010), factor analysis was used, and the for- mula was as follows: SES = (0.858 * Z education level + 0.715 * Z family per capita monthly income + 0.804 * Z occupation) /0.631.

5.3 |Research Process and Data Analysis

The study was conducted via parent questionnaires and on- site EF tests. First, with the consent of the principal and teacher, the parents voluntarily signed up, and 10 children for the EF test were selected in each class. Then, the questionnaire was distrib- uted to the parents, and the parents' responses were linked to the results of their child's test. This study mainly used SPSS 23.0 and AMOS 24.0 to analyse the collected data. SPSS 23.0 was used to perform descriptive statistics on each variable; the Harman single-factor test was used to test for common method deviation. Correlation analy- sis and regression analysis were performed on family parenting style, EF and children's SCA. The result of unrotated exploratory factor analysis extracted a total of 15 factors with characteristic roots greater than 1. The maximum factor variance explanation rate was 16.78%, which was less than the critical value of 40%, so there was no serious common method deviation in this study (Podsakoff et al. 2003). AMOS 24.0 was used to test the moderat- ing effect and perform bootstrap analysis. The bootstrap method involved drawing 5000 samples and estimating the 95% confi- dence interval.

6 | Results

6.1 | Descriptive Statistics and Correlation Analysis of Each Variable

The descriptive statistics and correlations of all variables are presented in Table 2. There were significant gender ($p < 0.01$) and age ($p < 0.01$) differences in young children's SCA. In ad- dition, there was a significant correlation between parenting styles and children's SCA.

6.2 |Regression Analysis

We further tested the prediction of parenting style on SCA. Different types of parenting styles were used as independent variables, and children's SCA was used as the dependent vari- able. The forced input method was used to perform linear re- gression analysis. According to Table 3, after controlling for age and gender, dem- ocratic parenting style had a significant positive predictive effect

on children's SCA ($\beta = 0.189$, $p < 0.001$), and Hypothesis 1 was tested. The coddling parenting style had a significant negative predictive effect on children's SCA ($\beta = -0.138$, $p < 0.01$). The permissive parenting style had a significant negative predictive effect on children's SCA ($\beta = -0.203$, $p < 0.001$). The authoritar- ian parenting style had a significant negative predictive effect on children's SCA ($\beta = -0.151$, $p < 0.01$). The inconsistent parenting style had a significant negative predictive effect on children's SCA ($\beta = -0.173$, $p < 0.001$).

6.3 |Test of the Moderating Effect

Before constructing the model, parenting style, EF and chil- dren's SCA were standardised. AMOS 24.0 was used to test the moderating effect and construct the adjustment model. Since the dimensions of the parenting style belong to the division of types, it is meaningless to add and subtract them; they are presented separately according to the division of dimensions.

Models were constructed with the coddling parenting style as the independent variable, and the model fitting indexes were $\chi 2/df = 2.373$, RMSEA = 0.053, CFI = 0.957, GFI = 0.953, AGFI = 0.929, NFI = 0.928, IFI = 0.957. The fitting indicators of all models were within the recommended value range, in- dicating that the model fit the data well and could be further explained (Figure 1). Models were constructed with the demo- cratic parenting style, authoritarian parenting style, permissive parenting style and inconsistent parenting style as independent

TABLE 2 | Descriptive statistics and correlation analysis results.

	Sex	Age	Reg ion	SES	1	2	3	4	5	6	7
1.CP	0.028	0.026–	0.037–	0.016	–						
2.DP	0.062	0.099*–	0.057–	0.219**	0.246**–	–					
3.PP	0.015	0.007–	0.026–	0.01	0.506**	0.400**–	–				
4.AP	0.017	0.061–	0.043–	0.038	0.354**	0.278**–	0 . 533* *	–			
5.IP	0.01–	0.017–	0.03–	0.014–	0.481**	0.404**–	0.628**	0 . 573* *	–		
6.SCA	0 .155 * *	0.265**	0.026	0.086–	0.141**–	0.169**	0.202**–	0.164**–	0.178**–	–	
7.EF	0.088	0.382**	0.278**–	0.236**	0.05–	0.014	0.019–	0.066–	0.029–	0 .167 * *	–
range		2.00- 7.00		6.24- 6.86–							
M	1.517	5.019	1.747	0	1.604	4.062	1.794	2.363	1.9 0 9	4.322	0 . 815
SD	0.5	1.13 4	0 . 435	3	0 . 552	0.544	0.581	0 . 576	0 .75 8	0.5 41	0.323

Abbreviations: AP, authoritarian parent; CP, coddling parent; DP, democratic parent; EF, executive function; IP, inconsistent parent; PP, permissive parent; SCA, self- care ability; SES, socioeconomic status.
*$p < 0.05$, **$p < 0.01$, and ***$p < 0.001$.

variables. All model fitting indicators were within the recommended range (Table 4), indicating that the model fits the data well and could be further explained by the model. As shown in Table 5, coddling parenting style negatively and significantly predicted children's SCA ($\beta = -0.178$, $p < 0.01$), EF positively and significantly predicted children's SCA ($\beta = 0.215$, $p < 0.001$) and the interaction between coddling parenting style and EF negatively and significantly predicted children's SCA ($\beta = -0.301$, $p < 0.05$). This indicated that children's EF moderated the relationship between coddling parenting styles and children's SCA. Within the 95% confidence interval, the effect value on the high level of EF (one standard deviation above the mean) is −0.456, the CI interval is (−1.665, −0.198), the confidence interval does not pass through 0 and the predictive effect is significant ($p < 0.01$). At the low level (one standard devi- ation below the mean), the effect value is 0.099, the CI inter- val is (−0.130, 1.156), the confidence interval passes through 0 and the predictive effect is not significant (Table 6). As shown in Figure 2, coddling parenting styles and children's SCA were significantly and negatively correlated when children's EF was high rather than low. As shown in Table 5, the democratic parenting style has a sig- nificant positive predictive effect on children's SCA ($\beta = 0.169$, $p < 0.01$), and EF has a significant positive prediction of chil- dren's SCA ($\beta = 0.189$, $p < 0.01$). The interactive term of demo- cratic parenting style and EF had a significant positive predictive effect ($\beta = 0.220$, $p = 0.062$), at the marginal significant level. Within the 95% confidence interval, the effect value on the high level of EF (one standard deviation above the mean) is 0.381, the CI interval is (0.159, 1.039), the confidence interval does not pass through 0 and the predictive effect is significant ($p < 0.05$). At the low level (one standard deviation below the mean), the effect value is −0.058, the CI interval is (−0.599, 0.252), the confidence interval passes through 0 and the predictive effect is not significant (Table 6). As shown in Figure 3, democratic parent- ing styles and children's SCA were significantly and positively correlated when children's EF was high rather than low. Through the path test, it was found that the negative predictive effect of the interaction between the permissive parenting style and EF is significant ($\beta = -0.143$, $p < 0.05$). Within the 95% con- fidence interval, the effect value on the high level of EF (one standard deviation above the mean) is −0.414, the CI interval is (−0.817, −0.138), the confidence interval does not pass through 0 and the predictive effect is significant ($p < 0.01$). At the low level (one standard deviation below the mean), the effect value is −0.128, the CI interval is (−0.318, 0.242), the confidence interval passes through 0 and the predictive effect is not sig- nificant (Table 6). As shown in Figure 4, permissive parenting styles and children's SCA were significantly and negatively cor- related when children's EF was high rather than low. The predictive effect of the interaction between the authoritar- ian parenting style and EF is at the marginal level ($\beta = -0.451$, $p = 0.067$). The predictive effect of the interaction between in- consistent parenting style and EF is not significant ($\beta = -0.104$, $p > 0.05$). EF is not significant in the moderating effect of incon- sistent parenting style and children's SCA. Thus, Hypothesis 2 was partially supported.

TABLE 3 | Results of regression analysis.

Dependent variable	Independent variable	*B*	s	*β*	*t*	*R*2	Adjusted *R*2
SCA	Coddling *P*	−0.136	0.042	−0.138	−3.201**	0 .10 8	0 .10 2
	Democratic *P*	0 .18 8	0.043	0.189	4.375***	0.124	0 .118
	Permissive P	_0.18	0.04	_0.20	_4.752***	0 .13 0	0.124
	Authoritarian *P*	_9	0.0 41	_3 0	_3.490**	0 .111	0 .10 6
	Inconsistent *P*	_0.14	0.031	_.151	_4.021***	0 .118	0 .113

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

2 0.17

0.12 3

3

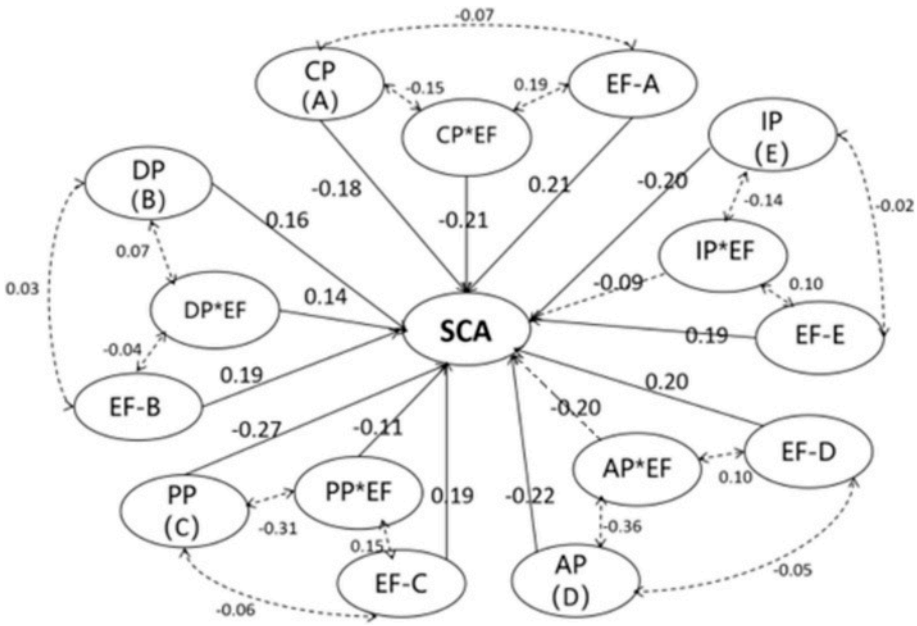

FIGURE 1 |Models of different parenting styles.

TABLE 4 |Model fitting index table.

	*χ*2/df	RMSEA	CFI	GFI	AGFI	NFI	IFI
Coddling *P*	2.373	0.053	0 .957	0 .953	0.929	0.928	0 .957
Democratic *P*	2.602	0.058	0 .9 49	0 .9 47	0.924	0.920	0 .9 49
Permissive *P*	2 .9 47	0.064	0.9 4 0	0 .9 43	0 .914	0.912	0.9 4 0
Authoritarian *P*	2.830	0.062	0 .93 8	0 .9 42	0.912	0.9 0 8	0 .939
Inconsistent *P*	2.242	0.051	0.962	0 .95 6	0 .933	0 .933	0.962
Good	≤3	≤0.05	≥0.09	≥0.09	≥0.09	≥0.09	≥0.09
A c c ept able	≤5	≤0.08	≥0.08	≥0.08	≥0.08	≥0.08	≥0.08

TABLE 5 | Path inspection.

	Path	B	β	S.E.	C.R.	P
Coddling *P*	Coddling →SCA	−0.225	− 0.178	0.071	−3.163	0.002
	EF → SCA	0.300	0 . 215	0.087	3.456	***
	Coddling*EF → SCA	−0.626	−0.277	0.247	−2 . 53	0.011
Democratic *P*	Democratic→SCA	0.171	0.169	0.055	3.114	0.002
	EF → SCA	0.265	0.189	0.082	3.225	0.001
	Democratic*EF → SCA	0 . 416	0.220	0.223	1.869	0.062
Permissive *P*	Permissive→SCA	− 0.475	−0.271	0 .10 9	−4.368	***
	EF → SCA	0.264	0.187	0.082	3. 231	0.001
	Permissive*EF → SCA	_0 .	_0.143	0.222	_2 .031	0.042
Authoritarian *P*	Authoritarian→SCA	_452	_0.222	0.082	_3.182	0.001
	EF → SCA	0276	0 .19 6	0.083	3.289	0.001
	Authoritarian*EF → SCA	_1 .93	_0 . 451	0 . 511	_1. 835	0.067
Inconsistent *P*	Inconsistent→SCA	_8	_0.200	0.078	_3.681	***
	EF → SCA	0278	0 .19 4	0.082	3.294	***
	Inconsistent*EF → SCA	−8.266	− 0.10 4	0 .19 2	−1.386	0.166

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

TABLE 6 | Confidence interval table of interaction term between various types of parenting styles and EF.

	EF	Estimate	Lower	Upper	P
Coddling *P*	std_high	−0.456	−1.665	−0.198	0.001
	std_low	0.099	−0.130	1.156	0.405
Democratic *P*	std_high	0.381	0 .159	1.039	0.011
	std_low	−0.058	−0.599	0.252	0.578
Permissive *P*	std_high	− 0.414	−0.817	−0.138	0.003
	std_low	−0.128	− 0.318	0.242	0.312
Authoritarian *P*	std_high	−0.673	−2.483	− 0.137	0.009
	std_low	0.228	−0.205	1.918	0.348
Inconsistent *P*	std_high	−0.304	−0.644	−0.072	0.015
	std_low	−0.096	−0.303	0 . 218	0.396

7 | Discussion

Our study examined the relationship between parenting styles and young children's SCA and the moderating role of young children's EF. The results indicated that democratic parenting style was positively correlated with children's SCA, while other parenting styles were negatively correlated with children's SCA. With the exception of inconsistent parenting style and authoritarian style, the predictive effect of parenting styles on young children's SCA was moderated by young children's EF.

7.1 |Parenting Styles and Children's SCA

Positive parenting styles such as democratic parenting styles are conducive to the development of children's SCA, while

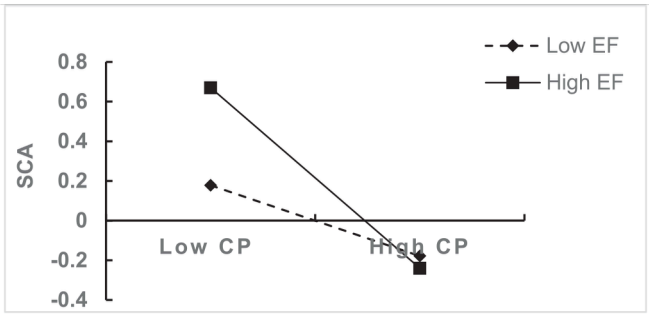

FIGURE 2 | Coddling parenting style and SCA.

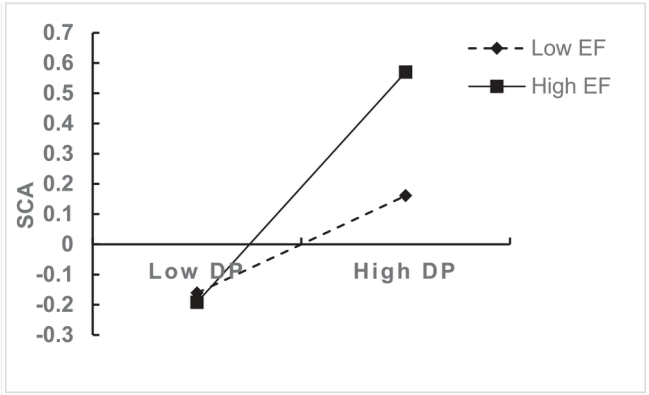

FIGURE 3 | Democratic parenting style and SCA.

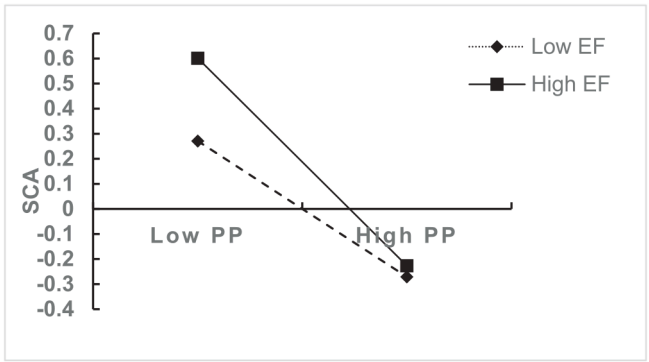

FIGURE 4 | Permissive parenting style and SCA.

negative parenting styles such as coddling parenting styles, authoritarian parenting styles, inconsistent parenting styles and permissive parenting styles are not conducive to the development of children's SCA. Democratic parents will encour- age children to engage in self- service or self- care by providing relevant materials. Since democratic parents leave a larger space for children, children usually have more opportunities to take care of themselves, and the children's SCA will there- fore be improved. Coddling parents may do everything for their children, and au- thoritarian parents engage in less consideration of their children's ideas and levels. These two types of parents usually leave fewer opportunities for children to take care of themselves. Permissive parents will not provide space for children's self- service, and it is difficult for children to obtain effective support in the pro- cess of interacting with their surrounding lives. Therefore, the improvement of these children's SCA will be restricted. Since family members are inconsistent with regard to educational concepts and methods, inconsistent parents can also cause conflicts in children's thinking, and it can be difficult to promote effective interaction between children and their surrounding lives. That is, inconsistent parenting styles are not conducive to children's development, and this finding is similar to the results of exist- ing studies (Zhang et al. 2017; Zhang, Liang, and Liang 2021). The negative parenting styles like coddling, permissive, authoritarian and inconsistent parenting styles are not conducive to the development of children's SCA (Gershoff 2002; Garcia and S er r a 2 019).

7.2 |The Moderating Role of children's EF

This study found that with the exception of inconsistent parenting style and authoritarian style, the predictive effect of parenting styles on young children's SCA is moderated by young children's EF: Democratic parenting styles and children's SCA were significantly and positively correlated when children's EF was high rather than low; coddling and permissive parenting styles and children's SCA were significantly and negatively correlated when children's EF was high rather than low. The results of our study show that democratic parenting styles and children's SCA were significantly and positively correlated when children's EF was high rather than low. EF refers to the psychological processes involved in the conscious control of thought and action (Li and Wang 2004). In general, young children with high levels of EF tend to be able to control their attention, thoughts, emotions or behaviours so as to overcome external temptations to do what is more appropriate or necessary and are also able to change their plans in response to changes in tasks or situations (Smith and Jonides 1999). Thus, in families with democratic parenting styles, where parents respect the way their children handle their own affairs, young children with high EF have more ideas, abilities and opportunities to improve their SCA and are more likely to have high levels of SCA. The results of our study show that coddling and permissive parenting styles and children's SCA were significantly and negatively correlated when children's EF was high rather than low. In fami- lies with coddling parenting styles, parents tend to focus on sup- porting their children's development but are less likely to make demands on their children (Steinberg 2001). Particularly in China, parents coddling parenting styles may focus on the development of children's ways of thinking, but fearing that something will hap- pen to their children and cuddling them for long periods of time deprives them of exposure to the environment and opportunities to practise (Liu. 2004). As a result, young children with high levels of EF in families with coddling parenting styles tend to be more capable of and have more opportunities to rely on their parents, ultimately resulting in children with poor SCA.

Parents with permissive parenting styles lack both rule requirements and effective support for their children (Steinberg 2001). Young children with high EF are likely to find ways to get more care from their parents in some form or by sending some kind of message, but the lack of effective parental support ultimately leads to low SCA.

7.3 | Implication and Conclusion

There are certain limitations to this paper. First, this study used cross- sectional research methods that cannot investigate causal relationships among variables. Future studies should apply longitudinal research methods to examine these relations found in the current study. Second, parents reported on their own parenting style and children's SCA. To make the assessment more accurate, it is further recommended that other methods of data collection be used. Moreover, better attention to the hierarchical structure within the data and the use of more sophisticated multilevel analyses to deal with nested data should be addressed in future studies, which would help us to more accurately assess the effects of parenting styles on children's self- care. Third, the sample in this study is mainly a representative of China and has a limited sample size, which should be increased in the future and the applicability of the results of this study to other countries should be explored. At the same time, fathers' parenting styles and mothers' parenting styles may affect young children's SCA differently, and more refined studies should be conducted in the f ut u re. Despite these methodological limitations, this investigation pro- vides findings that contribute to filling the gaps in the present

literature regarding the relationship between parenting style and children's SCA. In particular, the moderating role of young children's EF in this was also specifically examined. The find- ings of this study support that young children's development is influenced by their families and also reveal that democratic parenting styles are effective in promoting the development of SCA in children with high EF.

Author Contributions Zhonglian Yan: conceptualization, methodology, software, data curation, supervision, resources, funding acquisition, writing–original draft, writing–review and editing, validation, formal analysis, project administration. **Wenqi Lin:** conceptualization, writing–review and editing, supervision, writing–original draft. **Jing Ren:** writing–original draft, investigation. **Ping Zhou:** investigation, resources, writing–review and editing, supervision. **Yanling Qin:** investigation, visualization, resources.

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Ethics Statement

This study was approved by the Northeast Normal University's research ethics committee, and we got informed consent from all participants.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement As this study is a topic being led by the first author, the datasets generated and/or analysed in the study are currently not publicly available, and this study is part of the topic but is available from the corresponding author upon reasonable request.

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