



OPEN Relationship between parenting styles and psychological quality of Li ethnic primary schoolchildren

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This study aimed to investigate the latent class characteristics of parenting styles among Li ethnic primary schoolchildren and their relationship with the psychological qualities of these students. The study employed Latent Profile Analysis (LPA) to investigate the underlying categories of parenting styles. It further examined the relationship between these categories of parenting styles and psychological qualities. Moreover, the study investigated how the number of children in a family moderates the influence of parenting styles on psychological qualities. Three distinct parenting styles were identified among Li ethnic elementary school students: Supportive-Guidance, General, and Emotional-Rejection. Variations in psychological qualities and dimensions were noted across these categories. The impact of parenting styles on psychological qualities was not moderated by the number of children in the Supportive-Guidance and General categories ($p > 0.05$). However, in the Emotional-Rejection category, a moderating effect was evident ($p < 0.001$). Specifically, for families with fewer children, parenting styles had a significant positive predictive effect on psychological qualities. This effect weakened in families with more children. The distinct latent class characteristics of parenting styles among Li ethnic elementary school students have implications for their psychological qualities, with family size moderating in some instances.

Keywords Li ethnic primary schoolchildren, Psychological qualities, Parenting styles, Latent profile analysis, Moderating effect

Mental health crisis incidents are increasingly prevalent in primary and secondary schools, with a concerning trend towards affecting younger age groups¹. A meta-analysis conducted in China revealed alarming detection rates of mental health issues among primary school children, including 15.3% for internalizing problems, 12.4% for anxiety, 13.5% for depression, and a high 25.2% for sleep problems². The mental well-being of students at these educational levels has emerged as a significant societal issue, prompting a national focus on improving student mental health^{3,4}. Prioritizing a meticulous and comprehensive approach to mental health education and prevention for primary school children is imperative. Psychological qualities are intricately linked to physiological conditions, shaping stable internal attributes that play vital roles in growth, such as stress management, self-regulation, and resilience⁵. Cultivating psychological qualities in primary school children directly influences their ability to navigate challenges and develop essential coping mechanisms.

Parenting styles not only have a direct impact on students' mental health but also influence the effectiveness of school education, either enhancing or interfering with it⁶. Particularly for primary school children just starting their formal education, parenting styles play a significant role. Children rely heavily on family education for their psychological and behavioral development at this stage. Positive parenting styles, characterized by warmth and support, help establish security and stability, enhance children's self-awareness and self-esteem, and promote healthy psychological development⁷.

The social beliefs of different ethnic cultures influence the distribution of roles within the family and parent-child relationships, leading to specific parenting styles. These styles, in turn, play a significant role in shaping child development outcomes within the family micro-system⁸. In a survey study on parenting styles and psychological qualities among primary school students from different ethnic groups, it was found that parenting styles significantly differed between Uyghur and Han, and the psychological qualities of primary school students also varied significantly across different ethnicities⁹.

The Li ethnic group, the earliest inhabitants of Hainan Island, primarily reside in six autonomous counties within Hainan Province and are dispersed across various cities and counties. Influenced by Li's ethnic culture,

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customs, and traditions, including ancestral hall culture and ancestor worship, family education among the Li reflects ethnic characteristics in family roles, goal orientation, and respect for authority. The Li ethnic in Hainan has been influenced by the development of social productive forces, with matrilineal customs continuing until the mid-20th century¹⁰. To this day, mothers still often take on the traditional father's role in the Li ethnic, not only undertaking more labor but also showing more maternal care towards their offspring¹¹. As a result, their parenting style tends to be more permissive and natural. The minority fertility policy encourages larger families, making multichildren households common among the Li ethnic. Therefore, research on Li ethnic family parenting styles holds significant practical importance.

The Bioecological Theory, proposed by Bronfenbrenner, emphasizes that individual development results from the interactions between multiple environmental systems. This theory consists of the microsystem, mesosystem, exosystem, macrosystem, and chronosystem¹².

Bronfenbrenner and Morris further explain that human development occurs through progressively more complex reciprocal interactions between an active, evolving biopsychological human organism and the persons, objects, and symbols in its immediate external environment. For these interactions to be effective, they must occur on a fairly regular basis over extended periods of time¹³. Such enduring interactions in the immediate environment are referred to as proximal processes¹⁴.

In understanding the impact of parenting styles on children's psychological quality, the bioecological perspective provides crucial insights. Parenting styles, as a core component of the microsystem, directly shape children's emotional regulation, behavioral development, and social adaptation through proximal processes¹⁵. Meanwhile, influences from the mesosystem (e.g., interactions between family and school), exosystem (e.g., parents' work environment), and macrosystem (e.g., cultural values) indirectly shape parenting practices and subsequently affect children's psychological quality. Additionally, the chronosystem highlights the dynamic nature of parenting styles and their cumulative long-term effects on child development.

This research explores the latent categories of parenting styles among Li primary schoolchildren using latent profile analysis (LPA). It seeks to understand the diversity of Li parenting styles and their impact on the psychological well-being of primary schoolchildren.

Method

Participants

From October to December 2023, Randomly selected 22 primary schoolchildren of Li ethnicity in grades 4-6 from 6 minority autonomous counties in Hainan Province, 11,552 questionnaires were recovered, with 11,442 valid questionnaires. (Excluding the demographic variables section, questionnaires that were fully completed are considered valid). Among them, 5795 were boys and 4655 were girls, with a missing value of 992; 4085 were in grade 4, 3746 were in grade 5, and 3432 were in grade 6, with a missing value of 179.

Procedure

Questionnaires were distributed to the selected schools through coordination with the education bureau. At school, School Psychologist was designated to organize students in grades 4 to 6 to complete the questionnaires in the school's electronic reading room.

The questionnaire was uploaded to the data collection platform, and each student logged into the designated website and filled out the questionnaire by logging in with their student number. The questionnaire takes about 20 minutes to complete, and you can get a small gift after completion.

Measures

The Psychological Quality Questionnaire for primary schoolchildren used in this study was compiled by Yi Wenjing¹⁶, with good overall reliability ($\alpha = 0.916$) and strong test reliability. The questionnaire consists of 54 items, including 3 sub-scales of cognition, personality, and adaptability, which can comprehensively reflect the participants' psychological quality status. A 5-point scale was used. For positive questions, the options "Not at all like me," "More like me," "Not sure," "Completely like me," "Exactly like me" corresponded to scores of 1, 2, 3, 4 and 5, respectively. For reverse-scored questions, the scoring was reversed. The higher the score for a dimension of the questionnaire, the better the performance corresponding to that dimension, and the better the level of psychological quality in that area.

The Parenting Styles Scale was developed by Guo Yongxing, which has a reliable reliability and validity of $\alpha = 0.746$, with coefficients of consistency ranging from 0.431 to 0.686 for each factor. The scale contains 7 dimensions of warm companionship, democratic participation, considerate support, sound guidance, inconsistent words and actions, indulgent negligence, and lack of confidence, totaling 28 items, and is scored on a 3-point scale. "Rarely," "Occasionally," and "Often" corresponded to -1, 0, and 1 in that order, and the higher the total score of the dimension, the more the students perceived that their parents' parenting styles were in line with the characteristics described in the dimension.

Demographic variables related to the family environment were also collected, including parents' education, time spent with children, and number of children in the family.

Data-analytic strategy

Parenting Styles were identified using latent profile analysis, Unlike traditional cluster analysis, latent profile analysis is a model-based method that fits a statistical model to the data, classifying each case (person) in the most probable group. The selection of the best model was chosen by the combination of the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), the Vuong-LoMendell-Rubin likelihood-ratio test, the bootstrap likelihood ratio test, the entropy information, and the size of each class of the model¹⁷.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1 WC	1.40	0.55									
2 DP	1.10	0.58	0.579**								
3 CS	1.29	0.62	0.651**	0.598**							
4 GD	1.47	0.54	0.558**	0.508**	0.622**						
5 ID	1.12	0.43	0.441**	0.434**	0.506**	0.563**					
6 NP	1.12	0.35	0.173**	0.148**	0.200**	0.234**	0.143**				
7 IT	1.30	0.38	0.185**	0.118**	0.150**	0.233**	0.173**	0.171**			
8cognition	3.49	0.75	0.355**	0.317**	0.331**	0.366**	0.260**	0.140**	0.151**		
8personality	3.48	0.65	0.293**	0.281**	0.274**	0.334**	0.278**	0.071**	0.122**	0.671**	
9adaptability	3.25	0.59	0.195**	0.210**	0.175**	0.241**	0.225**	0.014	0.057**	0.558**	0.740**

Table 1. Correlation between the parenting styles dimensions and psychological quality dimensions. WC warm companionship, DP democratic participation, CS considerate support, GD guidance, NP neglectful permissiveness, IT inadequate trust, ID inconsistency in deeds. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

	<i>M</i>	<i>SD</i>	<i>r</i>
Parenting styles	1.26	0.34	0.396**
Psychological quality	3.41	0.58	

Table 2. Correlation between the parenting styles and psychological quality. ** $p < 0.01$.

To test our model and the hypothese (Family size moderates in some instances), we employed Hayes’s PROCESS computational tool. Specifically, we conducted a moderation analysis (PROCESS Model1¹⁸). We used a bias-corrected bootstrap method with 5,000 bootstrap samples to estimate 95% confidence intervals (CIs) in all our analyses. Statistical significance was determined when the 95% CI did not include zero.

Ethical statement

This study was approved by the Ethics Committee of the College of Psychology at Hainan Normal University. All procedures were conducted in accordance with relevant guidelines and regulations, specifically adhering to the principles of the Declaration of Helsinki. Informed consent was obtained from all participants and their legal guardians, ensuring their full understanding of the study’s purpose, procedures, and potential risks and benefits.

Results

Common method variance (CMV) test

Utilizing Harman’s one-way method, all parenting styles and measures of psychological quality underwent unrotated exploratory factor analysis, resulting in the extraction of 11 common factors with an eigenroot greater than 1. The initial factor accounted for 19.73% of the variance, which fell below the critical value of 40%, indicating the absence of significant standard method bias in the study.

Descriptive statistics and correlation analysis

The results of the Pearson correlation analysis indicated that the parenting styles of the primary school children in the Li study were at a moderate level overall, with a high total score for psychological well-being. There was a significant positive correlation between parenting styles and psychological well-being. Only the correlation between permissive negligence and psychological adaptability was not significant. All other dimensions of parenting styles showed significant correlations with various aspects of psychological well-being. Please refer to Tables 1 and 2 for detailed results of the correlation analysis.

Latent profile analysis

This study used two packages of R language tidy LP^{19,20}. A latent profile model was established using each entry of the Parenting Style Scale as an exogenous variable, with 1 to 6 categories set to estimate the model fit. The results in Table 3 revealed that as the number of categories increased, the AIC, BIC, and SABIC values gradually decreased. This decrease slowed down after 3 categories, indicating an improvement in model fit. When classified into 3 categories, the Entropy values exceeded 0.80. The category probability distributions also showed that categories 4, 5, and 6 had lower probability values than category 3²¹. Considering accuracy and model simplicity, category 3 was chosen as the optimal model.

Three distinct categories of parenting styles were identified among Li ethnic primary schoolchildren, as illustrated in Fig. 1. These categories exhibit significant variations in characteristics across five dimensions: warm companionship, democratic participation, considerate support, good manners, and inconsistent words and deeds. Minor differences were observed in indulgent negligence and lack of confidence within the categories. Category 1, comprising 5706 participants (49.9%), displayed higher mean scores in considerate support, warm companionship, and guidance, leading to its designation as ‘supportive-guiding’. Category 3, with 1209

	AIC	CAIC	BIC	SABIC	Entropy	Category probabilities
1	110287.8	110404.7	110390.7	110346.2		1
2	90515.1	90698.6	90676.6	90606.7	0.848	0.64/0.36
3	84516.5	84766.8	84736.8	84641.5	0.845	0.499/0.396/0.106
4	82632.1	82949.2	82911.2	82790.4	0.797	0.393/0.341/0.216/0.05
5	80900	81283.9	81237.9	81091.7	0.796	0.371/0.278/0.165/0.118/0.069
6	79743.4	80194	80140	79968.4	0.804	0.348/0.253/0.163/0.112/0.094/0.031

Table 3. Latent profile analysis fit information for different parenting styles.

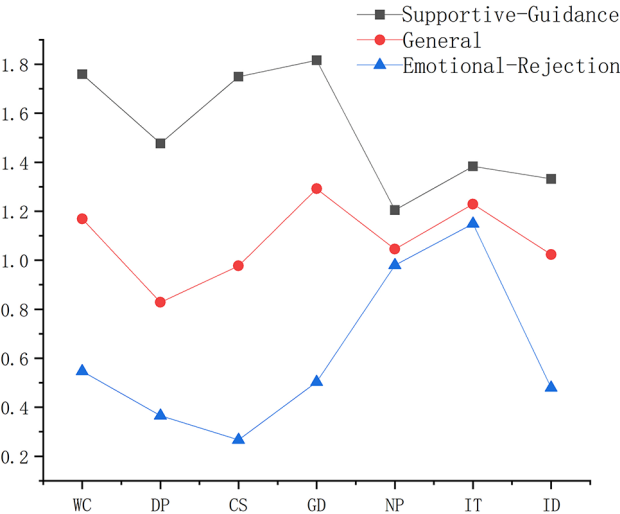


Fig. 1. The analysis of parenting styles in different categories across various dimensions.

<i>r</i>	Supportive-guidance	General	Emotional-rejection
Psychological quality	0.141**	0.136**	0.358**

Table 4. The relationship between different parenting styles and psychological quality. * $p < 0.05$. ** $p < 0.01$.

individuals (10.6%), had the lowest mean scores across all dimensions, particularly in considerate support, indicating strong emotional rejection and earning the label ‘emotional rejection.’ Category 2, encompassing 4527 individuals (39.6%), demonstrated moderate mean scores across all dimensions, suggesting a general parenting style termed ‘general.’

The effect of different categories of parenting style on psychological quality

The previous descriptive statistics have confirmed a significant correlation between Parenting Style and the psychological quality of Li ethnic primary schoolchildren. Following a category analysis, subsequent tests were conducted on the correlation between different categories of Parenting Style and psychological quality. Results revealed that all three categories of parenting styles are significantly correlated with the psychological quality of Li ethnic primary schoolchildren, as depicted in Table 4.

Further analysis of different categories of parenting styles on the psychological quality of Li ethnic primary schoolchildren reveals distinct characteristics in each sub-dimension. The supportive guidance category received the highest average scores across three dimensions of psychological quality, while the emotional rejection category scored the lowest. The general category fell in the middle, with average scores across the three dimensions, the details of which are shown in Fig. 2.

An analysis of variance (ANOVA) was performed to examine the correlation between various categories of parenting styles and the psychological well-being of primary schoolchildren. The study utilized three categories of parenting styles as independent variables and three dimensions of psychological quality as dependent variables, as outlined in Table 5. The results revealed a statistically significant difference in psychological quality among primary schoolchildren based on the different categories of parenting styles across all dimensions.

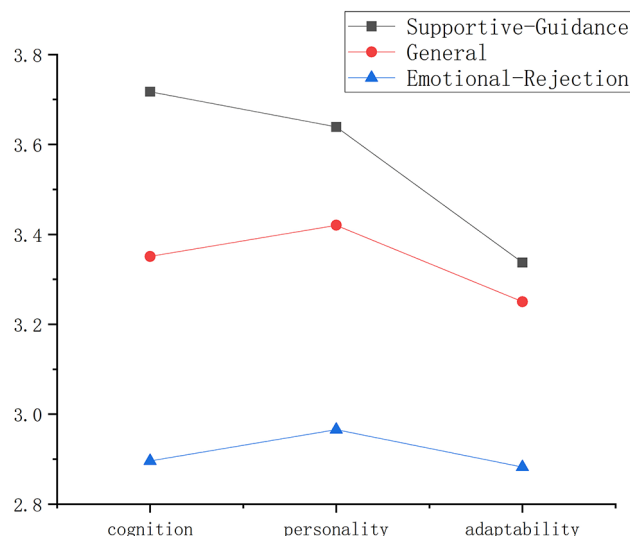


Fig. 2. The analysis of parenting styles in different categories across dimensions of psychological quality.

	Total		Cognition		Personality		Adaptability	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Supportive-guidance	3.56	0.49	3.72	0.68	3.64	0.55	3.56	0.49
General	3.34	0.51	3.35	0.66	3.42	0.59	3.34	0.51
Emotional-rejection	2.91	0.87	2.90	0.94	2.97	0.94	2.91	0.87
<i>F</i>	752.365***		817.474***		626.848***		306.957***	
Post Hoc test	C1>C2>C3		C1>C2>C3		C1>C2>C3		C1>C2>C3	

Table 5. Descriptive statistics and difference test of psychological quality in different parenting styles. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Moderating effect

The research findings suggest total family psychological resource variations based on supportive guidance and general emotional rejection. According to the theory of family resource allocation, having more children can impact the distribution of these resources. To explore this, the number of children in the family was considered a moderating variable²². The analysis using Process Model 1 revealed that the interaction between the two family upbringing styles—supportive guidance and General, and the number of children in the family was not statistically significant ($p > 0.05$). This implies that the number of children in the family does not moderate the impact of these parenting styles on the psychological well-being of Li ethnic primary schoolchildren. However, there was a significant interaction between the emotional rejection style of family upbringing and the number of children in the family ($p < 0.001$). This indicates that the number of children in the family does play a moderating role in the influence of emotional rejection parenting styles on the psychological well-being of Li ethnic primary schoolchildren, as outlined in Table 6.

Simple slope analysis, as depicted in Fig. 3, indicates that a small number of children in the family results in a significant positive predictive effect of emotional rejection parenting style on the psychological quality of Li ethnic primary schoolchildren ($\beta = 2.781$, $SE = 0.198$, $p < 0.001$). Conversely, when the family has many children, the positive predictive effect of emotional rejection parenting on the psychological quality of Li ethnic primary schoolchildren diminishes ($\beta = 0.353$, $SE = 0.224$, $p = 0.115$).

Discussion

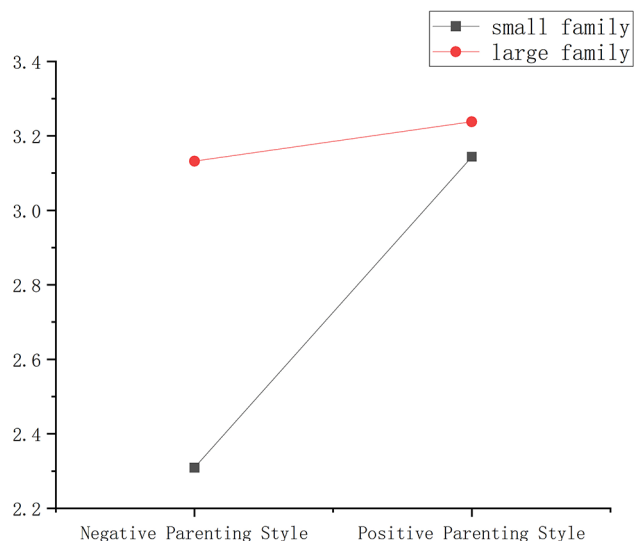
Categories of parenting styles

The parenting styles of Li ethnic primary schoolchildren are characterized by moderation, with high scores noted in gentle guidance and warm companionship. Nevertheless, a noticeable inconsistency between knowledge and behavior is also apparent. This observation aligns with previous research findings on family education status in the Tibet region²³.

This study employed Latent Profile Analysis (LPA) to investigate the latent categories of parenting styles among Li ethnic primary schoolchildren. After carefully considering various indicators, three latent categories were identified: 'Supportive Guidance,' 'General,' and 'Emotional Rejection.'

The 'Emotional Rejection' category (10.57%) represents a small proportion of Li ethnic primary schoolchildren's parenting styles. Scores in supportive guidance are notably lower for this category compared to

		<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Supportive-guidance	Psychological quality	0.501	0.046	10.818	0.000
	Parenting style	0.034	0.008	4.49	0.000
	Parenting style×Psychological quality	-0.017	0.055	-0.314	0.754
	<i>R</i> ²		0.023		0.754
	<i>F</i>		3		
General	Psychological quality	0.467	0.051	9.107	0.000
	Parenting style	0.025	0.008	3.2	0.001
	Parenting style×Psychological quality	-0.085	0.052	-1.623	0.105
	<i>R</i> ²		0.021		0.105
	<i>F</i>		32.711		
Emotional-rejection	Psychological quality	1.567	0.15	10.457	0.000
	Parenting style	0.236	0.023	10.251	0.000
	Parenting style×Psychological quality	-1.25	0.154	-8.137	0.000
	<i>R</i> ²		0.24		0.000
	<i>F</i>		126.833		

Table 6. Moderation effect analysis.**Fig. 3.** Simple slope analysis of family size in the relationship between emotional-rejection parenting styles and psychological quality.

others, suggesting that these children lack parental understanding and support within their family setting. They rarely share their difficulties and frustrations with their parents and do not receive comfort or encouragement from them. This could be attributed to parents being away from home due to economic pressures, leading to an emotional disconnect from their children and a lack of support in the family environment.

The 'Supportive Guidance' (49.87%) ranks highest in providing gentle guidance, followed by warm companionship and considerate support. This suggests that children in such environments are more likely to accept and relate to their parents' guidance and expectations. Effective two-way communication between children and their parents fosters a sense of security and support within the family. This style of parenting, characterized by high support and high demands, positively impacts children's development, especially in shaping their psychological traits²⁴. Children raised in such family dynamics tend to exhibit higher confidence, expressiveness, and receptiveness to parental guidance. Furthermore, these strong family bonds help children form healthy patterns of interpersonal relationships, enhance their emotional intelligence, and improve their social skills, thus laying a solid foundation for their future growth²⁵.

The 'General' category (39.56%) demonstrates a moderate level across all dimensions of parenting styles. This suggests that primary schoolchildren in this category receive a certain amount of care and affection from their family environment, but the positive impact is somewhat limited. While they receive some care and support, there is a lack of more profound emotional connection or positive reinforcement. This could affect their psychological well-being and academic performance, as primary schoolchildren need additional emotional support and encouragement to navigate the challenges they face in life and learning.

The impact of different parenting style categories on psychological quality

The psychological quality of primary school students is significantly correlated with objective and subjective family resources. This suggests that the parenting styles that primary school students experience can impact their psychological well-being. A nurturing and supportive family environment can encourage children to develop a strong sense of curiosity and independent learning skills, directly influencing their cognitive and meta-cognitive growth. Similarly, an environment that is open and democratic can help children build self-confidence, creativity, determination, and a spirit of entrepreneurship. These attributes, in turn, can affect children's self-awareness, psychological resilience²⁶, and social adaptability. Therefore, parents who provide quality family education resources, methods, and practices can contribute to developing children with strong psychological characteristics, improved adaptability to their surroundings, and reduced problematic behaviors²⁷.

Various parenting styles can influence children's cognitive abilities, impacting their psychological adaptability in different environments²⁸. Conversely, diverse cognitive abilities developed by children can shape unique personality traits, subsequently affecting their adaptability in various contexts. Children with varying cognitive abilities demonstrate differences in learning autonomy and their capacity to accept and adapt to new situations. Moreover, their ability to internalize external values and norms may vary.

Research has demonstrated that the psychological quality of primary school students significantly impacts their academic performance. Both cognition and personality directly influence academic achievement, while adaptability indirectly affects academic performance through its relationship with cognition and personality. Family environment, as a precursor influencing the psychological quality of primary school students, can impact their psychological adaptability either directly through parenting styles or indirectly through cognition and personality²⁹. Additionally, certain studies suggest that different parenting styles can serve as a factor in intervening and promoting children's development, particularly in challenging circumstances³⁰.

The moderating effect

The 'Emotional Rejection' category of parenting styles exhibits a moderating influence of family size on the psychological well-being of Li ethnic primary schoolchildren. Specifically, a significant positive correlation between parenting style and psychological well-being is observed in families with few children. However, this positive relationship weakens as the number of children in the family increases. Parents can provide more personalized attention and resources in families with fewer children, leading to enhanced psychological well-being for individual children. Conversely, in families with multiple children, limited resources are divided among siblings, potentially resulting in resource competition and increased stress and anxiety. This can weaken the positive impact of parenting style on psychological well-being. Furthermore, children in smaller families may develop stronger self-efficacy and independence due to receiving more individualized attention and resources, which can help them better manage their emotions and behaviors. In contrast, children in larger families may face challenges developing these positive psychological traits due to resource scarcity and competition.

Conclusion and prospects

Parenting styles among the Li ethnic in Hainan exhibit distinct differences across various categories. The majority of Li ethnic families have established strong positive connections within the microsystem, facilitating children's development and profoundly influencing their psychological quality. However, Bronfenbrenner argued that at this level of development, it is essential to recognize that all relationships are bidirectional. Parents' personalities and capabilities can also impact children's development. Therefore, future research on the family microsystem could focus on how parents' personalities and capabilities influence children's psychological quality. The number of children is an important variable within the family microsystem, which was not extensively discussed in this study. Future research could explore how this variable affects children's psychological development.

Data availability

The datasets generated and/or analyzed during the current study are not publicly available because they are part of a doctoral thesis, but they are available from the corresponding author upon reasonable request.

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References

- Keyes, K. M. & Platt, J. M. Annual research review: Sex, gender, and internalizing conditions among adolescents in the 21st century—trends, causes, consequences. *J. Child Psychol. Psychiatry* **65**(4), 384–407 (2024).
- Guoliang, Yu. & Xiaoxiao, H. A comparison of the rates of prevalence of students' mental health problems: Evidence based on meta-analysis. *Educ. Res.* **44**(06), 105–121 (2023).
- FanZemin, L. et al. Weaving a comprehensive protective network to ensure a bright future for children and adolescents. *People Educ.* **23**, 51–53 (2018).
- Li, W. Exploration of the application of positive psychology in ideological and political education. *Second. School Polit. Teach.* **46**, 86 (2023).
- ZhangDajun, F. & GuoCheng, ChenXu. Problems on research of students' mental quality. *J. Southwest Univ. (Soc. Sci. Ed.)* **03**, 56–62 (2000).
- Guoliang, Yu. Primary and secondary school mental health education: Current status, issues, and development trends. *Educ. Res.* **07**, 70–73 (2002).
- ShenDeli, MaHuixia. On mental health diathesis. *Stud. Psychol. Behav.* **2**(4), 567–571 (2004).
- Mayunqing, Q. X. G. & Xin, X. F. The relationship between parental warmth, rejection, and school-age children's misconduct: The moderating role of callous-unemotional traits. *Chin. J. Clin. Psychol.* <https://doi.org/10.1612/j.cnki.1005-3611.2022.01.028> (2022).
- Xinyan, X. Correlation between parents rearing patterns and psychological health condition of the Han and Uyghur primary school students. *Chin. J. School Health* **31**(12), 12 (2010).

10. Guanying, X. The matrilineal remnants of the Li ethnic. *J. Minzu University China (Philos. Soc. Sci. Ed.)* **02**, 92–93 (1983).
11. Aifen, S., Xiaosong, G. & Bizhu, L. The relationship between mothering discipline, effort control and scholastic achievement of Li and Han children. *J. Guizhou Normal Univ. (Nat. Sci.)* **03**, 115–120 (2018).
12. Tudge, J. R., Mokrova, I., Hatfield, B. E. & Karnik, R. B. Uses and misuses of Bronfenbrenner's bioecological theory of human development. *J. Fam. Theory Rev.* **1**(4), 198–210 (2009).
13. Bronfenbrenner, U. & Morris, P. A. The ecology of developmental processes. In *Handbook of Child Psychology: Theoretical Models of Human Development* 5th edn 993–1028 (Wiley, 1998).
14. Bronfenbrenner, U. Ecological systems theory. In *Encyclopedia of Psychology* (ed. Kazdin, A. E.) 129–133 (Oxford University Press, 2000).
15. Qian, W. Exploring the impact of parenting styles on children's academic and mental health. *J. Ecohumanism* **3**(7), 5067–5073 (2024).
16. Yi Wenjing. A study on revision of questionnaire and development of characteristics of primary school students' mental quality. *Master's Thesis, Southwest University.* (2010).
17. Araújo, A. M., Gomes, C. M. A., Almeida, L. S. & Núñez, J. C. A latent profile analysis of first-year university students' academic expectations. *An. Psicol. Ann. Psychol.* **35**(1), 58–67 (2019).
18. Hayes, A. F. Partial, conditional, and moderated moderated mediation: Quantification, inference, and interpretation. *Commun. Monogr.* **85**(1), 4–40 (2018).
19. Wickham, H. Tidy data. *J. Stat. Softw.* **59**(1), 1–23 (2014).
20. Joshua, R. et al. tidyLPA: An R package to easily carry out latent profile analysis (LPA) using open-source or commercial software. *J. Open Source Softw.* **3**(30), 978–978 (2018).
21. Tein, J. Y., Cox, S. & Cham, H. Statistical power to detect the correct number of classes in latent profile analysis. *Struct. Eq. Model. Multidiscip. J.* **20**(4), 640–657. <https://doi.org/10.1080/10705511.2013.824781> (2013).
22. Aguinis, H., Beaty, J. C., Boik, R. J. & Pierce, C. A. Effect size and power in assessing moderating effects of categorical variables using multiple regression: A 30-year review. *J. Appl. Psychol.* **90**(1), 94–107 (2005).
23. Dang Zangcao. A study on family education concepts in tibetan pastoral areas: The example of the area around Labrang. *Master's Thesis, Tibet University.* (2023).
24. Dong, Z. & Zhang, D. The relationship between family's social economic status and psychological suzhi of middle school students: The intermediary effect of parenting style. *Open J. of Soc. Sci.* **3**(12), 93–99 (2015).
25. Larson, R. & Richards, M. H. Daily companionship in late childhood and early adolescence: Changing developmental contexts. *Child Dev.* <https://doi.org/10.1111/j.1467-8624.1991.tb01531.x> (1991).
26. Bibi, A. et al. Impact of parenting styles on psychological flexibility among adolescents of Pakistan: A cross-sectional study. *Child Adolesc. Soc. Work J.* **39**(3), 1–10 (2021).
27. Shilan, L., Yunyan, L. & Dajun, Z. Socioeconomic status and young children's problem behaviours – mediating effects of parenting style and psychological suzhi. *Early Child Dev. Care* **191**, 1–11 (2019).
28. Rinaldi, C. M. & Howe, N. Mothers' and fathers' parenting styles and associations with toddlers' externalizing, internalizing, and adaptive behaviors. *Early Child. Res. Q.* **27**(2), 266–273 (2012).
29. Dabiriyani, T. H. & Sara, Y. Parenting styles and big five personality traits among adolescents: A meta-analysis. *Personal. Individ. Differ.* <https://doi.org/10.1016/j.paid.2023.112421> (2024).
30. Natasha, K. & Ann, G. A. The relationship between perceived parenting styles and resilience during adolescence. *J. Child Adolesc. Mental Health* **17**(1), 1–12 (2005).

Author contributions

Xiaomin wrote the main manuscript text. Xidan prepared Fig. 1. Shaobei recruited participants. All authors reviewed the manuscript.

Declarations

Competing interests

The authors declare no competing interests.

Additional information

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